



acpes
2019 THE 5th INTERNATIONAL CONFERENCE ON
PHYSICAL EDUCATION, SPORT, AND HEALTH

PROCEEDINGS

THE 5th INTERNATIONAL CONFERENCE ON
PHYSICAL EDUCATION, SPORT, AND, HEALTH



ASEAN COUNCIL OF PHYSICAL EDUCATION AND SPORT (ACPES)

**“PROMOTING EQUITABLE QUALITY ON PHYSICAL EDUCATION, SPORT, HEALTH
AND ENVIRONMENT FOR SUSTAINABLE FUTURE”**

Semarang City, Indonesia, September 11 - 12, 2019

**FACULTY OF SPORTS SCIENCE
UNIVERSITAS NEGERI SEMARANG**



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UNIVERSITAS NEGERI SEMARANG
INDONESIA**

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“Promoting Equitable Quality on Physical Education, Sport, Health, and Environment for Sustainable Future”

UTC Hotel, Semarang, Indonesia, September 10-12, 2019

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PREFACE

ACPES (ASEAN Council of Physical Education and Sport) is a council consisting of some universities across ASEAN namely Srinakharinwirot University Thailand, Mahasarakham University Thailand, PESS NIE NTU Singapore, Universiti Putra Malaysia, Mindanao State University - Iligan Institute of Technology Philippines, Kasetsart University Thailand, Chulalongkorn University Thailand, Institute of Technical Education Singapore, Universiti Teknologi MARA Malaysia and Universitas Negeri Semarang Indonesia. The ACPES annually host an International conference in various countries of its members. The 1st conference on 2015 was hosted by UNNES, Indonesia, The 2nd ACPES was hosted by MSUIIT Philippines, the 3rd ACPES was hosted by Kasetsart University Thailand, and the 4th ACPES was hosted by Universiti Putra Malaysia (UPM). This year, from September 10-12, 2019, The 5th ACPES with the name of the 5th International Conference on Physical Education, Sport, and Health, hosted by UNNES, took place at UTC Hotel, Semarang, Central Java, Indonesia.

This conference brings together academic experts and practitioners from South East Asia and beyond to share new knowledge, ideas, and experiences pertaining to Physical Education and Sport. The scientific program of this conference included many topics related to Physical Education, Sports and Public Health as well as those in related fields in order to accommodate more aspirations and expressions of sport's and health communities.

We would like to express our gratitude and appreciation for all the reviewers who helped us maintain the high quality of manuscripts included in this proceedings. We are very grateful to the International/National advisory committee, session chairs, students' volunteers, and administrative assistants who selflessly contributed to the success of this Conference. Also, we are thankful to all the authors who submitted papers, because of which the conference became a story of success. We would also like to extend our thanks to the members of the organizing team for their hard work.

On the day of completion of this journey, we are delighted to present the proceedings of ACPES 2019 the 5th International Conference on Physical Education, Sport, and Health to the authors and delegates of the event with a high level of satisfaction and aspiration. We hope that you will find it useful, exciting and inspiring. We appreciate that the authors of this conference may want to maximize the popularity of their papers and we will try our best to support them in their endeavors.

Semarang, December 11, 2019
Conference Chair,
Prof. Dr. dr. Oktia Woro K.H., M.Kes.

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FULL PAPER-ORAL PRESENTATIONS
Topic 1. Sports Science

2019

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Effects of Calisthenics and Pilates Core Muscle Training on Agility of Professional Soccer Players

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Abstract—The purpose of this study was to assess the effects of Calisthenics and Pilates core muscle training on agility of football players. Thirty-six men professional football players volunteered to participate in this study and were randomly assigned into 3 groups; a control (C), the Pilates (PT), and the Calisthenics (CT) groups. All 3 groups were measured flexibility, balance, muscle strength, power, and agility before and after the training. The results found that there was a significant interaction effect of time by training methods for the balance, strength, power, and agility; but not for flexibility. The main effect of training methods was significant for balance, strength, power, and agility, but not for flexibility. The C group had significantly increased in balance and agility at posttest but not for strength and power. Both PT and CT groups had significantly increased in power, muscle strength, balance, and agility after training. In conclusion, the Pilates and the Calisthenics training were not difference in flexibility, strength, and agility. The Calisthenics training could increase higher power than the Pilates training; but the Pilates training could increase higher balance than the Calisthenics training.

Keywords---*pilates, calisthenics, agility, strength, flexibility, power, balance*

I. INTRODUCTION

The core muscles are vital in effective body movements. Core muscle consists of the abdominal muscles and back muscles, which plays a role in postural control. It helps to maintain the stability of the spine which supports the body achieve balance and helps to shape the body [1]. Training the core muscle strength will allow better stability and the position of the body [2]. It can directly increase the strength of a muscle that exerts and boosts muscle power [3], increases coordination which resulted in an increase in the ability to animate a body, agility, and the ability to show the skill of body. When core muscles are strong, a muscle can generate more force by doing less exertion. It also makes the body flexibility, prevent and reduce injuries with a gesture that is not valid. Moreover, it adds body control that making the

movement of the arms and legs are smooth and efficient coordination [4]. Therefore, it is important to increase core

muscle strength in order to improve flexibility, balance, agility, and power.

Pilates is a science in the West, by Joseph Pilates, German management. It is a body and mine training with a slow movement in the correct posture, which helps develop muscular strength, flexibility, posture and balance [5]. It is an executive body that focuses on the center of power at the Centre of the body, which is called the powerhouse (which is the position of the powerhouse is located between the abdomen) with an emphasis on movement in the posture gently and combined with rhythmic breathing. It is also to create a fulfilled muscle strength by using power from the internal body to external body by focusing on the abdominal area, called the powerhouse. Concentration on muscle movement, a motion control compliance posture with rhythmic breathing. Practicing regularly will help keep the muscles strong and flexible also helps burn body fat. Moreover, it can also increase strength, endurance, and coordination of core muscle groups and the flexibility of upper and lower extremities [6].

Calisthenics is physical exercise using elevated bars, parallel bars, and rings, with comparable characteristics to gymnastics but primarily conducted outdoors. The objective of this discipline is to improve strength in a variety of its expressions, such as performing the highest amount of repetitions of pull-ups or parallel bar dips with and without external overload, for strength endurance, or to raise the highest possible weight for maximum strength in the aforementioned activities and execute gymnastic abilities of growing difficulty. This discipline is also referred to as street workout [7].

Pilates and calisthenics exercises are common training regimens that have both been used in sports training. Both types of exercises are simple enough for a beginner to master in a relatively short period, fit well with the guidelines set forth by the American College of Sports Medicine, and can be adapted for a workout for skilled athletes that may enhance performance [8-9]. Calisthenics exercises comprise several

short muscle contractions intended to increase body strength and flexibility using only one's body weight with movements such as bending, jumping, swinging, twisting, kicking, and many other activities engaging the arms, legs, torso, neck, and back— essentially every muscle group in the human body [9-10]. In contrast, Pilates has been promoted as an exercise regimen to increase muscle endurance and flexibility of the abdomen, low-back, and hips and improve dynamic postural control, balance, and joint movement around the low-back–pelvic–hip complex [8].

Therefore, the current study aimed to assess and compare the effects of calisthenics and Pilates core muscle training on strength, agility, flexibility, balance, and power of professional soccer players. It is hypothesized that professional soccer player in the calisthenics and Pilates groups would have significant improvements in all variables compared with those in the control groups.

II. METHOD

A. Participants

The number of participants was based on a power analysis conducted on the intervention factor (3 levels), the pretest factor (2 levels) and the interaction effect of the intervention by a pretest. Because intervention and control groups were compared, a large effect size (Cohen's $f=.5$) was assumed for the interaction group. Setting a power of 0.80, the effect size of 0.50, and an alpha level of .05 for the main and interaction effects, 12 participants per group were required. Thirty-six Toyota Thailand Premier League male professional soccer players were randomly divided into 3 groups: a calisthenics exercise group, a Pilates exercises group, and a control group. All subjects were evaluated pre-training and post-training. The calisthenics group consisted of 12 male professional soccer players (25.2±6.2 years; 69.3±8.9 Kg; 171.8±3.9 cm), the Pilates group consisted of 12 male professional soccer players (24.5±6.2 years; 69.7±8.9 kg; 170.4±3.9 cm), while 12 male professional soccer players (25.7±6.2 years; 70±8.9 kg; 171.5±3.9 cm) were in the control group. The physical characteristics of the groups were similar. A three-group, repeated measures (pre- and post-testing) design was used to investigate the effects of a calisthenics and Pilates training on flexibility, balance, strength, power, and agility parameters.

The calisthenics and Pilates groups carried out 6 weeks of training 3 times a week. The control group participated in a normal soccer program training. Written informed consent was obtained from all participants prior to data collection and the investigation was approved by the Institute Review Board for the Protection of Human Subjects of the university (SWUEC/X-148/2561).

B. Procedure

Participants were split into three groups: the calisthenics, the Pilates and the Control groups. Each participant underwent: 1) sit and reach test, 2) crunch test, 3) an agility t-

test, 4) Star Excursion Balance Test and 5) Vertical jump test. The tests were administered in the order listed above to allow a proper fitness evaluation without being influenced by the speed and strength tests. Sit and reach test was used to test flexibility. Crunch and vertical jump tests were used to evaluate endurance-strength and power, respectively. Calisthenics and Pilates are developed as a weight-free discipline, so the evaluation of strength and power was carried out without overload. Star excursion balance test was used to evaluate body balance. Each test was conducted in baseline and 6 weeks later. The same examiner performed all the evaluations and used a standardized protocol to ensure the consistency of subject positioning, instructions, and overall testing procedures, and the examiner themselves were blinded to the groups' intervention. Before the tests, all subjects were informed about the particular requirements of the tests. They performed an appropriate warm-up exercise program including basic stretching exercises for the lower extremities and then started the testing procedure.

TABLE I. CALISTHENICS AND PILATES TRAINING PROTOCOL

Calisthenics training			Pilates training		
<i>Exercise</i>	<i>Reps or Second</i>	<i>Sets</i>	<i>Exercise</i>	<i>Reps</i>	<i>Sets</i>
Plank up down	10reps	2	Bridging	10	3
Side plank up down	10reps		Abdominal Curl		
Spiderman push up	10reps		The Hundred		
Hanging holding	6s.		Double leg stretch		
Hanging knee to elbow	6s.		Roll up		
Hanging bicycle	6s.		Teaser		
Hanging leg raise	6s.		Jack knife		
Ab crunch	10reps		Criss cross		
shredder dip			Cork screw		
Hanging wiper			Swing		
Back extension					

C. Training Procedure

The calisthenics and Pilates groups trained 3 times a week in the morning at 8.30-9.30am., used the protocol presented in Table 1, on non-consecutive days and trained normal soccer program in the evening at 16.00-18.00pm., 5 days a week, whereas the control group continued with their normal soccer program training in the evening at 16.00-18-00pm., 5 days a week.

The calisthenics training program was designed according to the American College of Sports Medicine's recommendations for healthy adults. Core muscle strength, speed, and endurance parameters were taken into account to

design the program. The training program was performed at 60% or 70% of maximal heart rate for 6 weeks, 3 d/week, with 50-minute sessions of low- to moderate-intensity calisthenic exercises. The training program included 10 minutes of warm-up exercises; 30 minutes of exercises for the abdominal, hip, and back muscles; and 5 minutes of cool down and stretching exercises [9-10].

The Pilates training program concentrated on the following main principles: efficient breathing, mental concentration, relaxation, correct spine elongation and alignment, correct abdominal muscle control over spine stability and mobility, correct function of each upper and lower limb, precision, flowing integrated movement, and achieving muscle strength and stamina [11].

TABLE II. MANOVA RESULTS FOR TIME BY TRAINING METHODS FOR DEPENDENT VARIABLES

Variables	Pretest			Posttest			<i>p</i> Time x Training methods	<i>p</i> Time	<i>p</i> Training methods
	<i>Control</i> M (S.D.)	<i>Pilates</i> M (S.D.)	<i>Calisthenics</i> M (S.D.)	<i>Control</i> M (S.D.)	<i>Pilates</i> M (S.D.)	<i>Calisthenics</i> M (S.D.)			
Flexibility	12.74 (2.04)	12.54 (2.09)	13.17 (1.87)	12.74 (2.03)	13.72 (1.62)	13.29 (2.00)	.128	.096	.774
Balance	77.22 (4.83)	73.97 (4.82)	66.59 (2.02)	78.58 (4.48)	79.66 (6.56)	69.52 (6.93)	.000	.000	.000
Strength	63.08 (5.63)	64.41 (6.18)	62.50 (4.35)	63.25 (5.29)	70.66 (5.15)	68.75 (3.62)	.000	.000	.276
Power	54.75 (7.28)	53.50 (6.33)	51.16 (7.46)	54.91 (7.41)	54.75 (5.03)	61.16 (3.81)	.000	.000	.143
Agility	9.84 (.34)	9.71 (.53)	9.58 (.45)	9.80 (.36)	9.57 (.49)	9.26 (.39)	.000	.000	.140

TABLE III. PAIRED-SAMPLE T-TEST AND ONE-WAY ANOVA RESULTS TO FOLLOW-UP THE INTERACTION EFFECT

Variables	Pretest			Posttest			<i>p</i> ANOVA
	<i>Control</i> M (S.D.)	<i>Pilates</i> M (S.D.)	<i>Calisthenics</i> M (S.D.)	<i>Control</i> M (S.D.)	<i>Pilates</i> M (S.D.)	<i>Calisthenics</i> M (S.D.)	
Balance	77.22 (4.83)	73.97 (4.82)	66.59 (2.02)	78.58 (4.48)**	79.66 (6.56)**	69.52 (6.93)**	.000
Strength	63.08 (5.63)	64.41 (6.18)	62.50 (4.35)	63.25 (5.29)	70.66 (5.15)**	68.75 (3.62)**	.019
Power	54.75 (7.28)	53.50 (6.33)	51.16 (7.46)	54.91 (7.41)	54.75 (5.03)*	61.16 (3.81)**	.048
Agility	9.84 (0.34)	9.71 (0.53)	9.58 (0.45)	9.80 (0.36)**	9.57 (0.49)**	9.26 (0.39)**	.029

* Significant difference pretest-posttest at .05; ** Significant difference pretest-posttest at .01

D. Data Analysis

Data analyses of the differences between and within groups were performed using SPSS version 21.0 for Windows (SPSS, Inc, Chicago, IL) software. The results for the measurements of the 2 settings were provided with means and standard deviations. Test of normality for the data has been performed Shapiro-Wilk Test. In order to assess the effects of training methods (3 levels) and time (2 times) on all dependent variables, multivariate analysis of variance (MANOVA) was used. Significant interaction effects were followed up with one-way ANOVA and dependent samples t tests. The Bonferroni method of post hoc analyses was used for a comparison between the 3 groups. The level of significance for all statistical analyses was set at $\alpha < .05$.

III. RESULT

MANOVA showed that there was a significant interaction effect of time by training methods for the balance, strength, power, and agility (all, $p < .05$); but not for flexibility ($p > .05$). The main effect of training methods and time was not significant for flexibility (Table 2).

Paired sample t-tests were used to follow up the interaction effect of time by training methods for the balance, strength, power, and agility (Table 3). The test showed that the control group had balance and agility at posttest higher than pretest (all, $p < .01$) but there was no difference of strength and power (all, $p > .05$). The Pilates group had balance, strength, power, and agility at posttest higher than pretest (all, $p < .05$). The calisthenics group had balance, strength, power, and agility at posttest higher than pretest (all, $p < .01$).

One-way ANOVA was used to follow up the interaction effect of time by training methods for the balance, strength,

power, and agility (Table 2). The test showed that the main effect of training methods was significant for balance, strength, power, and agility (all, $p < .05$; Table 2). Multiple comparisons showed that the control and Pilates groups and the Pilates and calisthenics groups had a significant difference in balance (all, $p < .05$), but not for the control and calisthenics groups. The control and Pilates groups and the Pilates and calisthenics groups had a significant difference in power (all, $p < .05$), but not for the control and Pilates groups. The control and Pilates groups and the control and calisthenics groups had a significant difference in strength (all, $p < .05$), but not for Pilates and calisthenics groups. The control and calisthenics groups had a significant difference in agility ($p < .05$), but no a significant difference between the control and Pilates groups and Pilates and calisthenics groups (all $p > .05$).

IV. DISCUSSION

Our aim in this study was to examine the effects of calisthenics and Pilates core muscle training on strength and agility of professional soccer players. The findings suggest that Pilates and calisthenics training could similarly increase flexibility, strength, and agility. The calisthenics could increase power more than the Pilates training; however, the Pilates training could increase balance more than the calisthenics training. We suggest that calisthenics and Pilates training similarly increases in core muscle strength because they are developed for core muscle training. Reference [12] found that Pilates training could increase core muscle strength and endurance and flexibility. Similar to reference [7] who found that calisthenics training could increase posture and strength. Reference [13] reported that core muscle training with the swiss ball could significantly increase core muscle strength. We found that calisthenics training could increase more power than Pilates training but Pilates training could increase balance more than the calisthenics training. We suggest that Calisthenics training comprises several short muscle contractions intended to increase body strength and flexibility using only one's body weight with movements such as bending, jumping, swinging, twisting, kicking, and many other activities engaging the arms, legs, torso, neck, and back—essentially every muscle group in the human body [9-10]. In contrast, Pilates training has been promoted as an exercise regimen to increase muscle endurance and flexibility of the abdomen, lower back, and hips and improve dynamic postural control, balance, and joint movement around the low-back–pelvic–hip complex [8]. Reference [14] found that calisthenics exercises are more likely to improve coordination of the lower extremity than Pilates exercises. Our findings are similar to previous studies who found that Pilates training could increase body balance [15-18].

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The Effect of Circuit Training Methods on the Endurance of Football Players in Logas FC

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Abstract—The purpose of this study was to determine the effect of the method of circuit training on the durability of Logas Fc. This design of this research is quasi-experimental with a pre-test and post-test design in one group. The population of this study were all football players Logas Fc, which amounted to 18 people, while the sample in this study were all populations sampled or also called a total sampling of 18 people. The test used in this study is run / road test of 2400 m distance to determine the durability of the player. Data were analyzed using t-test statistics (t-test). The results of this study indicate that there are differences in pretest and posttest. So it can be concluded that the circuit training method can improve the soccer player's well-being.

Keywords—Circuit Training, Endurance

I. INTRODUCTION

Football as a sport that is popular with the public and expected to be able to realize the goals of the national sports system law. Therefore, the existence of football is reasonable given the government's attention, so its achievements are always sought through learning and training in schools and soccer clubs. The popularity of football is not only for the general public, but also belongs to the intellectual community. [1] Football is a team sport. It is based on techniques, ball processing, and every player's understand about the games rule. All this factors have an important role.

Physical conditioning was one of the factors that determine achievement in sports, as well as in the football. Physical condition was the important factors that determine the performance of soccer players. The main Components of physical conditions in the football were agility, flexibility of motion, speed,

strength, endurance and balance. In this case the ability of a player is endurance. Endurance is the ability of the player's component to against fatigue that arises when carrying out sports activities for a long period. [2] Explains that endurance is the ability of athlete's organs to resist fatigue that arises when doing sports activities for a long time. In [2] durability is divided into two, namely general durability and special endurance. General resistance is the capacity to carry out activities that involve several muscle groups and the central nervous system, muscle nerves, and cardiorespiratory system for a long time. While special endurance is often shown in durability in game sports, running fast and others that depend on the interests of each sport or repeating movements in each of these sports, in this case the sports of football. The ability of this physical condition is very useful in soccer games, not only to maintain the ability to play for 2x45 minutes, but also to gain efficiency in applying basic techniques of soccer.

To produce a reliable soccer player besides technical training, there must also be physical training because soccer is a complex sport. Therefore, no matter how good they are at playing football and how good the technical trainer is, but if it is not supported by the required durability of 90 minutes, then the tension will not protrude, and this requires proper practice by choosing the right training method with use circuit training.

Circuit training is an exercise program Combination of several training items that are combined in doing an exercise will not be efficient Circuit training will include training for: 1) Muscle strength, 2) Muscle endurance, 3) Flexibility, 4) Agility, 5)Balance, and 6) Heart and lung endurance[3]

Based on the results of observations, there is still a lack of players in performing basic skills in playing soccer, which is due to the endurance of players who are still weak in performing basic technical situations in the game of football. Such as the lack of leg strength when doing a kick, whether it's a goal kick to pass the ball or produce a goal to the opponent's area, lack of player agility in doing basic techniques of soccer game, lack of player speed both when carrying the ball and when chasing the ball that comes from the pass friends and when goals are scored, lack of ability to jump and flexibility when making headers in high ball situations that can produce goals, or pass to teammates.

Besides the above factors, the quality of the coach is how a coach makes an exercise program to increase the durability of his players. Existing facilities and infrastructure also affect the training process in an effort to increase endurance. No less important is the training method used in the training process. The coach must be able to choose the right method for increasing the durability of the player. Although there are many training methods that can be used in increasing endurance including the training method of the circuit.

On this basis, the authors are interested in conducting research, hoping to provide answers to problems that often arise in soccer coaching in Kuantan Singingi District. One of the things that concerns this is the Effect of Circuit Training Methods on the Endurance of Football Players Logas FC.

II. METHODS

Experimental research included in Pre-experimental. In [4] this pre-experimental design is used to reveal causal relationships only by involving one group of subjects. Because in the implementation of this study the sample was given treatment. Before the treatment is carried out, the initial test (pre-test) is carried out in order to see the durability of the football player samples with the test used is a run test or 2400 meter road [2]. with the circuit training method, after the treatment is completed the final test (post-test) run test or 2400 meter road. This research consists of 2 variables, among others, the independent variable is circuit training, while the dependent variable is the durability of football players Logas FC.

The population in this study as many as 18 players with samples in this study were total sampling, namely all football players Logas FC, amounting to 18 people. To determine the extent of the influence of the circuit training method on the durability of football players Logas FC. The data obtained is analyzed using statistical formula Based

on the hypothesis proposed data is processed by analysis technique "t-test. t-test is useful for testing significance [5].

III. DISCUSSION

From the initial data collection, before treatment with the circuit training method, a pre-test or endurance test with a run / road distance of 2400 m was given to 18 samples, with the overall score being 12.54, the lowest score 10.29, evenly (M) = 11.24 and the standard deviation is 0.89. For more details, the data from the initial test (pre-test) endurance of football players Logas FC, amounting to 18 people can be seen in the following table:

TABLE I. FREQUENCY DISTRIBUTION OF PRE-TEST SCORES FOR FOOTBALL PLAYERS LOGAS FC

No.	Interval Class	Frequency	Percentage
1	10.29 – down	3	16.67
2	10.74 - 10.19	4	22.22
3	11.19 - 10.64	2	11.11
4	11.64 - 11.09	3	16.67
5	11.09 and above	6	33.33
Σ		18	100%

Based on the frequency distribution table of the initial test (pre-test) above, the score for the interval 10.29 class is lowered by 3 players or 16.67%, in the interval class 10.74 to 10.19 as many as 4 people or 22.22%, in the interval class 11.19 to 10.64 as many 2 players or 11.11%, in the interval class 11.64 to 11.09 as many as 3 players or 16.67%, and in the interval class 11.09 and above there are 6 players or 33.33%. For more details the distribution data from the initial test (pre-test) obtained by the player totaling 18 people can be seen in the following run / road test evaluation norm table 2400:

TABLE II. EVALUATION NORMS FOR RUNNING / ROAD TESTS 2400 M FOOTBALL PLAYERS LOGAS FC

Time (Minutes / Seconds)	Frequency	Category
<09'40	0	Very well
09'41 "-10'46"	7	Well
10'49 "-12'10"	8	Is being
12'11 "-15'30"	3	Less
> 15'31 "	0	Less once

Based on 2400 m running test results as shown in the table above, it can be said that 7 players are categorized as good, 8 players are categorized as moderate, and 3 people are categorized as less, while those that are categorized as very good and nonexistent). running / walking distance of 2400 m football players Logas FC, amounting to 18 people can be seen in the following histogram:

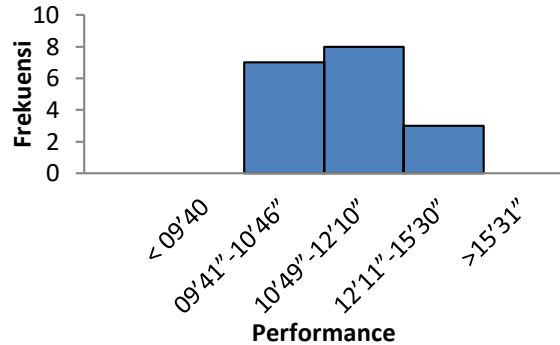


Fig. 1. Soccer players logas FC logas tanah darat district kuantan singingi reGENCY

After the treatment with the circuit training method as many as 12 meetings, in order to increase the endurance of the player, then the final test (post-test) with endurance test by running / walking distance of 2400 m which was mentioned earlier from 18 players, the results obtained the overall score after being changed to a value is with the highest score of 11.47 and the lowest score of 9.50 with the average (M) 10.40 and the standard deviation of 0.68 For more details, data from the final test (post-test) endurance of football players Logas FC, amounting to 18 people can be seen in the following table:

TABLE III. FREQUENCY DISTRIBUTION OF FINAL TEST SCORE (POST-TEST) ENDURANCE OF FOOTBALL PLAYERS LOGAS FC

No.	Interval Class	Frequency	Percentage
1	9.50 - down	1	5.56
2	9,89 - 9,28	3	16.67
3	10,28 - 9,67	4	22.22
4	10.67 - 10.06	4	22.22
5	10.06 - up	6	33,33
Σ		18	100%

Based on the end test frequency distribution table with a run / road distance of 2400 m above, the results of scores in the interval class 9.50 and above were obtained by 1 person or 5.56%, in the 9.89 to 9.28 classes obtained by 3 people or 16.67 %, in classes 10,28 to 9,67 which are as many as 4 people or 22.22%, in the interval class 10.67 to 10.06 that is as many as 4 people or 22.22%, and in the interval class 10.06 and down that is as many as 6 people or 33.33%. For more details, the data from the final test players can be seen in the following norm table:

TABLE IV. 2400 M DISTANCE RUNNING ENDURANCE TEST NORMS ADJUSTED WITH TABLE OF FOOTBALL PLAYERS LOGAS FC

Traveling time (Minutes / Seconds)	Frequency	Category
<09'40	0	Very well
09'41 " -10'46"	12	Well
10'49 " -12'10"	6	Is being
12'11 " -15'30"	0	Less
> 15'31 "	0	Less once

Based on the durability norm table with a run / road distance of 2400 m from the final test (post-test) above, it can be said that 12 people are categorized good, and 6 players are categorized as moderate, whereas in the category it is very good, lacking and not very there is a player getting a score. For more details, the endurance test data with a run / road distance of 2400 m, the players of Logas FC, amounting to 18 people can be seen in the following histogram:

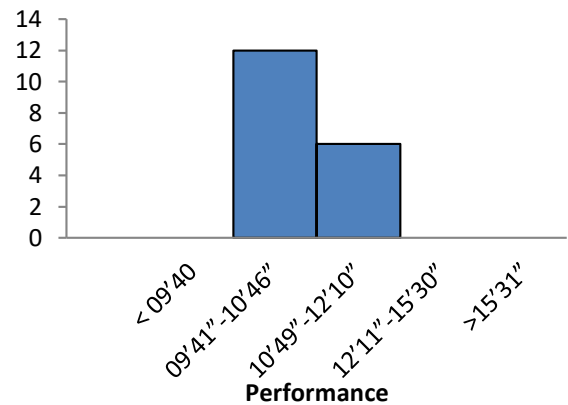


Fig. 2. Histogram endurance test run/road distance 2400 m football players logas FC.

Based on the hypothesis proposed the data is processed by analysis techniques " t-test which aims to test significance. From the calculation of statistical analysis with t-test obtained N (subjects in the sample) 18 people, obtained a pre-test score or initial test carried out that is equal to 202.37 average (mean) of 11.24. Then carried out experimental treatment with circuit training methods for 12 meetings, after which the final test (post-test) is done, namely the durability test with a run / road distance of 2400 m with an overall post-test score of 187.18 with an average (mean) at 10.40.

Then to find out whether or not there is a significant difference between the results before treatment and after treatment with the method used in this study or the presence or absence of the influence of the treatment, then first determine the difference between the pre-test and post-test scores. The overall sample of 18 people is 15.19, with an average (mean) of 0.84 then entered into the formula t with a

result of 6.45. Then the next step is to consult the t value with in appendix V. From the table it is known that with $N-1 = 18 - 1 = 17$, the price of criticism is 't' r that is t a significant level of $0.05/5\% = 2.11$ whit that is = 6.45. for more details, see the following picture.

TABLE V. SIGNIFICANT TESTS OF PREE-TEST RESULTS AND TEST- POST BETWEEN THE EFFECTS OF CIRCUIT TRAINING METHODS ON THE DURABILITY OF FOOTBALL PLAYERS LOGAS FC

Circuit Training	N	Mean			Test results	Explanation
Pre-test	18	11.24	6.45	2.11	Significant rejected be accepted	There is the influence of the Circuit training method on the durability of soccer players
Post-test		50.40				

Thus, the method of circuit training has an influence on the durability of football players Logas FC, where there is a significant difference from the pre-test before the experimental approach to the circuit training method with the final test (post-test) after the experiment (treatment / treatment) given.

Testing this hypothesis when done by the player does a well-programmed, continuous circuit training so that it can increase the endurance of the player. According to [6] explains that "training is the realization or implementation of the material or forms of training that have been planned in advance. Realization of material or forms of this exercise is carried out repeatedly with demands that are increasingly complicated to improve physical and mental abilities".

Based on the above opinion, we can conclude that the essence of the exercise is an activity carried out systematically with certain objectives carried out repeatedly with an increase in burden from the initial burden. Good and right practice will have an effect on what you want to achieve, including increasing the endurance of soccer players.

To practice endurance many training methods can be used. According to [7]"There are four types of physical training methods to improve aerobic fitness, namely, (1) continuous training, (2) fartlek, (3) circuit training, (4) interval training". According to [8] the method of circuit training is a form of exercise that uses posts, where each post is carried out in a different form of training where after moving in the post one moves to the next post in sequence with intervals and is done with several repetition.

Based on the explanation above, then in increasing the durability of Logas FC players, the method of circuit training can affect. Thus it can be concluded that there is a significant difference between the pre-test and post-test, where the mean difference indicates that the use of the circuit training method is better than before doing the exercise with the results = 6.45 which means greater than the significant level $5\% = 2.11$. with a conclusion, H_0 is rejected, and H_a is accepted.

This circuit training method is used to increase endurance in soccer athletes because circuit training has a very high intensity. So that it will be able to improve the performance of soccer players well. In playing soccer it takes a long time so that many athletes incur an oxygen debt while carrying out the game. On this basis, athletes must be trained with an intensity that is getting higher and higher so that the ability to endure fatigue will also increase even longer[11].

By doing this circuit training the athlete will be more use a lot of oxygen, thus the VO2Max capacity of an athlete will be increased[12]. Therefore the circuit training method is very suitable for increasing athlete endurance.

IV. CONCLUSION

Based on the analysis and discussion on the effect of the circuit training method on the durability of Logas FC players, it can be concluded that "there are influences of circuit training methods on the durability of Logas FC players with the average difference is 0.84 from the results of the initial test and final test". a significant difference between the pre-test and post-test, where the mean difference indicates that the use of the circuit training method is better than before doing the exercise.

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Evaluation of Sport Special Class (SSC) Program in Sleman Regency, Yogyakarta Region

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Abstract— Establishment of SSC by the Department of Education aims to accommodate and develop students who have special talents in the field of sports. This research was program evaluation at SSC in high school level in Sleman Regency, Yogyakarta with the CIPP model. Research data was obtained through interviews, observations, and documentation. Research subject was school principal, teacher in charge of implementing the SSC, and coaches. Data analysis technique was done by data triangulation. Implementation of SSC based on decree from the Dinas Pendidikan Pemuda dan Olahraga, Sleman Regency. The budget for organizing the SSC still relies on the provincial budgeting, School Operating Fund, and school committees. Availability of equipment conditions is still limited. The field facilities used are owned by the school and there are those who rent other parties. Coaches who handle sports in the SSC are mostly players in the sport they are training. The learning process to support academic achievement for SSC students using the same curriculum with regular classes sourced from the Education Department. The process of developing talents and sport achievements, schools allocate 2 and 4 times a week's training depending on their respective schools. Each school has budgeted for a match trial activity with other schools, both schools in the neighbourhood and schools outside Special Region of Yogyakarta that have good sport achievements. Many sport achievements achieved by students in SSC at the district level can always be champions I, II and III, and the provinces always have representatives, and some can reach national level. Academic achievement based on academic report cards is not much different from the regular class.

Keywords— *evaluation, sport special class (SSC)*

I. INTRODUCTION

Basically, the condition of sports achievement in the Special Region of Yogyakarta and the national level is because training in sports at the school level has not been carried out correctly, optimally, and programmed. Students need a forum to develop sports achievements in order to improve quality and empower schools need to be supported with a program that can accommodate these activities in the form of sports classes so that schools can conduct sports coaching better and continuously [1]. Further explained, sports class activities are

activities in schools that can be used as a means for fostering student activities in sport fields.

SSC are classes specifically for students who have special excellence or talents in sports. Students in sport special classes will be developed in sport achievements to achieve optimal performance. The country of Australia since 1990, has more than 200 sports schools established internationally [2]. This sports school offers a unique and exclusive pathway through secondary education, which specializes in teaching and training youth who aspire to reach elite sport levels. states that elite sport schools in Germany are promotional facilities, in which collaborating with competitive sports, schools and all accommodation must ensure conditions that support top sports in the future while maintaining opportunities for primary and secondary education for students assessed very talented [3]. talent scouting from an early age is done to estimate or predict the chances of a talented athlete, in order to succeed in carrying out training programs so as to be able to reach peak performance [4]. Development and development of sports achievements are carried out and directed to achieve sports achievements at the regional, national and international levels [5]. Sports coaching efforts are directed at improving physical, mental, and spiritual health and are aimed at the formation of personality, high discipline, and sportsmanship as well as to enhance achievements that can boast nationally[6]. Achieving peak performance needs to be elaborated in comprehensive concept in tiered development system [7].

Preparation of training program that is good and measurable by trainer will enable the training process to succeed well. If the opposite occurs, sport specialties associated with training with high volume can result in psychological stress and excessive injury [8]. Malisoux, L, et al. (2012: 1) On the other hand, high volume and intensity in sports activities make young athletes at higher risk of injury [9]. Coaches of sport special class (KKO) at high school level must be able to develop an exercise program according to development and inherent characteristics in sport special class students (athlete students) they train.

Special education for participants who have special sports talent students is formal education that is organized and managed to provide educational services to students who have

special talent in the field of sports in order to be able to actualize the potential of special talents that exist in themselves so that it becomes an optimal real achievement [10]. SSC a class intended specifically for students who have excellence or special talents in the field of sport.

Coaching and training for students in SSC in the Yogyakarta Special Region need to be evaluated, to see the extent to which students of SSC are able to contribute sports achievements to the Special Region of Yogyakarta. The process of fostering sports achievements in special sports classes needs to be evaluated, because a coaching process can be said to be good or bad if an evaluation has been carried out.

II. MATERIALS AND METHODS

This research was program evaluation type. The program evaluation was focused on overall process of implementing SSC and achievements produced by SSC students at high school level in Sleman Regency, Yogyakarta. This program evaluation research referred to CIPP model which was approached qualitatively. The main instruments in this research were the researchers themselves, in addition to using interview guidelines, and observation sheets. Research data was obtained through interviews, observations, and documentation. Research subjects were school principals, teachers responsible for implementing special sport classes, and coaches totalling 16 people. Data analysis technique of the research employed data triangulation.

III. RESULTS AND DISCUSSION

Implementation of SSC at SMA Negeri 1 Seyegan and SMA Negeri 2 Ngaglik in Sleman, Yogyakarta Regency based on the Decree of the Dinas Pendidikan Pemuda dan Olahraga of Sleman District No: 154 / KPTS / 2013 concerning Appointment of Special Sports Class Organizers at Junior and Senior High School Level in Sleman Regency Academic Year 2013/2014 as the basis for the appointment to hold and implement sport special class. The implementation of the SSC at high school level in Sleman Yogyakarta Regency has not been specifically written for books from the Department of Education and Culture and the Ministry of National Education related to the book "Guidelines for the Implementation of Sport Class Programs" at Senior High School level. Therefore, implementation of program activities is according to the conditions and abilities of every school. The vision and mission in the SSC at the high school level in Sleman Regency are still integrated with the school's vision and mission in general.

Decree issued by the agency owned by the highest leadership, which contains a decision on something related to regulations or the formation of activities in schools, has a strong position to be implemented properly. Decree issued by the agency or government agency or government agency has a function for the appointee. The function of the decree (SK) is: [11]

- 1) To determine / change the status / position of a person / employee / or goods / materials.
- 2) To authorize the validity of a rule.
- 3) To form / change status / dissolve a company.
- 4) To surrender certain authority, to an official (delegation).
- 5) To authorize a government directive or law.

Selection of new students in SSC through two stages: 1) administrative selection conducted by the school; 2) selection of sport skills and skills tests done in Faculty of Sport Sciences Universitas Negeri Yogyakarta by lecturers of Sport Coaching Education Study Program. Budget for operational implementation of SSC comes from provincial budgeting, School Operational Support, and school committees that are common operational budget for schools. SMA Negeri 1 Seyegan and SMA Negeri 2 Ngaglik in Sleman Regency, Yogyakarta, they strive to obtain operational funds to organize SSC by withdrawing funds voluntarily to the community of parents of SSC students. School financial management (BOS, APBN, APBD, and Community) is important to be carried out so that the funds obtained can be used effectively and efficiently [12]. Schools that specifically make details of the budget for the implementation of SSC within a year are submitted to the parents of student parents/guardians to assist operational funds for activities, the amount of which is up to the ability of each student parents.

Availability or existence of SMA Negeri 1 Seyegan and SMA Negeri 2 Ngaglik equipment's to support the training process to improve sports performance, which is sufficient for several sport teams (football, basketball, volleyball and futsal), but for individual sport equipment and facility are strongly supported by the availability of clubs and students themselves. Sports facilities and infrastructure which have a standard size and are in accordance with each branch of sport are resources in fostering sports achievements both in clubs and schools. Sports facilities and infrastructure are supporting resources consisting of all forms and types of equipment and tools used in sports activities that cover all fields and buildings of sports and equipment with an indicator of basic infrastructure principles, and infrastructure completeness [13].

TABLE I. SURFACE AREA CONDITION OF SCHOOLS ORGANIZING SSC IN SLEMAN

No	School Name	Surface Area
1	SMA Negeri 1 Seyegan	30.570 m ²
2	SMA Negeri 2 Ngaglik	31.400 m ²

TABLE II. FIELD FACILITIES OWNED BY SCHOOL

No	School Name	Field Type	Total
1	SMA N 1 Ngaglik	1. Football Field	1
		2. Basketball Field	1
		3. Volleyball Field	1
		4. Futsal Field	1
2	SMA N 1 Seyegan	1. Futsal Field also Used as Basketball Field	1

	2.	Football Field	1
	3.	Volleyball Field	2
	4.	Badminton Field	1

The factors that have a big role in actualizing talents and abilities into optimal performances and achievements are the presence of adequate facilities [14]. Achievement of better sports achievements needs to be supported by adequate supporting infrastructure and facilities [15].

Field facilities owned by these two schools have been somewhat supportive, even though the quality of the field is far from good category for developing sport achievements. There are field facilities that are rent from privates to support better training. For athletics, the field facilities for training use Indonesian Athletics Association of Sleman Regency.

Coaches who handle sports in sport special class are mostly former players in the sport they master in. Some coaches have coach certificate. All coaches who handle sports in State Senior High School 1 Seyegan and Ngaglik 2 are graduates of Faculty of Sport Sciences. Training or coaching is a science or science, because without the support of the sciences that are closely related to training and training, coaches will not be able to help their athletes to the fullest and even athlete's achievements will be difficult to increase [16]. The coach is one of the human resources in sports that plays a very important role in the achievement of the athlete he trains [17]. The trainer should always try to be professional by increasing knowledge and skills related to the sport that is being trained. The trainer is a person who can professionally help athletes achieve maximum performance, by making training plans in accordance with predetermined targets and targets and making evaluations of training programs that have been run [18].

Academic achievement development for SCC students apply the same curriculum with regular class students sourced from the Education Department. Thus, the subject matter and the number of hours of training received by SCC students and regular class students are no difference. Students in SSC are in social science program class. Talent development training and sport achievements for SSC students at SMA Negeri 1 Seyegan are held four times a week, while in SMA Negeri 2 Ngaglik are held twice a week. The training process to develop sports performance in special sports classes should be 10 to 16 hours per week [1]. The process of training in improving sports performance for students of special sports classes in Sleman Regency is very lacking, considering that only one to four times a week is training each week. The implementation of the training process is very dependent on the school's commitment to improve the achievement and financial condition of the school.

Match trials can be performed at the initiative of the coaches themselves or by the school for all sports in the SSC. Away try outs managed by schools for all sports are done with SSC schools in Yogyakarta Special Region and those outside Yogyakarta. More trial matches are conducted at the initiative of the coaches themselves to see the abilities of the students they train. Sports rarely perform trials, are such as athletics,

martial arts (karate, taekwondo, pencak silat), and archery. According to athletic and martial arts coaches, trials were done in the form of sparring partners and participating in championships that are not official agenda as a venue for trials.

After interviewing with the SSC management teachers and the coaches, it is found that they argue that they made annual training program. The results of the training program document study made by the coaches are not available for the management of the SSC as school documents. Obligations and demands of a coach is to make an exercise program for athletes [19]. The results of sports achievements are largely determined by the planning and implementation of a good training program [20]. Benefits of planning / training programs, among others: 1) as an organized guideline for achieving peak performance, 2) avoiding accidental factors in achieving achievement, 3) saving time, biata, and energy, 4) know the obstacles as early as possible, and 5) clarify the direction of achievement development [21].

Many sports achievements are achieved by students in sport special classes, especially at the district level, which always win 1st, 2nd and 3rd place. Provincial level always have representatives and there are those who won 1st, 2nd and 3rd place. A small percentage of achievements made by students of SSC both SMA Negeri 1 Seyegan and SMA Negeri 2 Ngaglik can go to national level representing Yogyakarta Special Region. Physical condition as an absolute requirement needed in achieving sports performance, therefore, every student / athlete must have physical excellence to be able to excel [22]. During exercise, it is necessary to pay attention to the quality of the training which includes: training objectives, selection of training models, use of training facilities, and more importantly, measurements or the dose of exercise described in the concept of FIT (Frequency, Intensity, and Time) [23].

Students who are accepted in SSC automatically come in the social science program. This is based on NEM (National Examination) grade in which SSC students are below the NEM grade of students in the regular class. Academic achievement is based on report card documents obtained in the first semester in previous school year, the grade is not much different from the regular class. Graduates from SSC at SMA Negeri 1 Seyegan and SMA Negeri 2 Ngaglik are mostly accepted in public and private universities.

IV. CONCLUSION

The implementation of sport special class is based on the decree from the Dinas Pendidikan Pemuda dan Olahraga, Sleman Regency. The vision and mission specifically for sport special class do not yet exist and are still included in schools' vision and mission in general. The general objective is held for SSC which are able to contribute to sport achievements at district, provincial and national levels. The budget for organizing SSC still relies on the provincial budget, School Operational Support, and school committees. Conditions for availability of equipment are sufficient and only meet the minimum standards for the training process. The field facilities owned by the schools are still in minimal quality for improving

process of sports performance better. Many coaches do not have coach certificate, and not from sports coaching graduates. Increased academic achievements for SSC students apply the same curriculum with regular classes sourced from the Education Department. The process of developing talents and sports achievements with time allocation is still around 4-8 hours per week. Each school has budgeted for the try-out and try-in activities for sport special trial matches with other schools both in Yogyakarta Special Region and schools outside the Region that have good sports achievements. Many sports achievements achieved by students in SSC at district level can always be first, second, and third place winners, and provinces always have representatives, and a small number can reach national level. Academic achievement based on academic report is not much different from regular class.

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Coaching Behavior Mediates Psychological Capital and Satisfaction among Teacher-Coaches

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Abstract—Although several studies recognize the value of satisfaction plays an important role in competitions, there is a need for a better understanding of its relation with sports coaches. This study investigates if coaching behavior associates between psychological capital and coaching satisfaction. A sample of 570 teacher-coach who are actively engaging in competitive sports participated in the study. Results indicated that coaching behavior, particular training and instructions, demographic behavior and positive behavior significantly mediated psychological capital and coaching satisfaction. This suggests that teacher-coach with techniques and tactics; involving the team in making decisions led to coaches' satisfaction. While those who have autocratic behavior and social support increased the risk of coaching frustration. The behavior of coach to satisfaction is important towards the outcome of the sport.

Keywords: *psychological capital, leadership scale for sport, coach satisfaction for sport coach.*

I. INTRODUCTION

The Philippines Department of Education, the program for sport, having been taken a backseat when it comes to national priority (Phil Sport, 2016). The teachers' role is complex and multifaceted (Richard, et al., 2013) and by adding other responsibilities to the daily regimen (Richard & Templin, 2014). Integration of psychological stability has raised concerns regarding the impact towards job commitment, particular, TC's (Richards, et al., 2017a, 2017b, Templin, 1994). TC's are like to experience the role of Conflict (Hom & Kinicki, 2001), workload-related stressors (Rocchi & Camiré, 2018) and role stressors (Richards, et al., 2014) are like experience negative impact towards the job. Commitment. On the other hand, number of studies has shown that teachers-coaching sport (Grant, et al., 2010; Mcculick et al., 2005; Wilson, 2010) are likely to experience job satisfaction (Dawis & Loquist, 1984; Cheung, et al, 2011; Dixon & Warmer, 2010) which requires higher level effective leadership. (Chelladurai & Carron, 1983; Cheng 1883; Sherman, et al., 2000 and Silva, et al., 2000). Due to the different objectives, characteristics, and personal perspectives of TC's

(Chelladurai & Kuga, 1996). However, positive personal capability and toward fulfillment using different leadership styles have been rarely studied, particularly TC in sport settings. Thus, in the current study, the role of leadership behaviors (i.e. training and instruction, democratic behavior, autocratic behavior, social support, and positive feedback) of TC (i.e. sport settings) towards psychological capacity (self-efficacy, hope, resilience, and optimism) and job satisfaction were explored.

psycap and job satisfaction

Coaching Leadership

leadership and job satisfaction

II. MATERIALS AND METHODS

A. Participants

In this study were 570 teacher-coach (TC) from public and private schools in Northern Mindanao, Philippines. Using purposive sampling, respondents were recruited on the basis that they are actively engaging in competitive sports. The list of TC's was provided by the school administration and validated by the participants themselves. The sample's age ranged from 20 – 60 years ($M_{age} = 38.99$; $SD = 8.157$). Respondents comprised 37% male ($n=211$); 55.6 % ($n=317$) and 7.4% ($n=42$) didn't specified gender.

B. Procedure

Following institutional ethical approvals was sought from the regional director and test administration was conducted in coordination with sports coordinators and principals. Administration approval and coaches of the team had agreed to take part were contracted and receive a letter explaining the purpose of the study. Assessments were conducted privileging their availability, time preference, and comfort. A multi-

section questionnaire, also containing other variables that are not reported was administered by the researcher in the school. At all meetings, instructions on how to fill in the questionnaires were given, emphasizing that they do so as personally and honestly as possible, that there were no wrong or right answers. Confidentiality of the data proceeds to the ethics review committee of Mindanao State University–Iligan Institute of Technology, College of Education.

C. Measures

Psychological Capacity (PsyCap; Luthans, Youssef & Avolio, 2007). This instrument has 24 items, six of each dimension (self-efficacy, hope, optimism, and resilience) designed to measure an individual's positive psychological state of development. On to which respondents should indicate their level of agreement using a six-point Likert Scale, from 1 (“strongly disagree”) to 6 (“strongly agree”). The validity and reliability of PsyCap were evident in numerous studies (most recently, Adil & Kamal, 2018; Georgiou, K., & Nikolaou, I., 2018; Dollwet, M., & Reichard, R., 2013. In this study, the reliability coefficients for the 4 dimensions were .89 (self-efficacy), .88 (hope), .81 (optimism), and .79 (resilience). Coaching Behavior. Leadership scale for sports (LSS) The leadership scale for sports (LSS) (Chelladurai, 1990, 1993, 2012, Chelladurai & Saleh, 1980; Cruz & Kim, 2017; Loughhead & Hardy, 2005) been used in a variety of contexts to measure leadership in sport and to operationalize coaching behavior through coaches' self-perception (Sullivan,

training and instruction (coaching behaviors aimed at improving performance), democratic behavior (allowing athletes to participate in decision-making processes), autocratic behavior (coach makes decisions independently as an authority figure), social support (concern for the welfare of athletes, generating a positive group atmosphere), and positive feedback (behaviors that reinforce an athlete by recognizing and rewarding good performance) which characterize the motivational style of the coach (Cruz & Kim, 2017). Past research indicates that the LSS has adequate psychometric properties, with the results of analyses supporting the validity and reliability of the measure (cf. Chelladurai, 1993; Chelladurai & Riemer, 1998). Cronbach's α for the LSS subscales in the current sample were $\alpha = .94$ for training and instruction, $\alpha = .89$ for democratic behavior, $\alpha = .85$ for autocratic behavior, $\alpha = .85$ for social support, and $\alpha = .88$ for positive feedback. The relatively low α for autocratic behavior has also been found in past research (Wałach-Biśta, 2013). CSSC. Coach Satisfaction Questionnaire for Sports Coach (CSSC). Items to measure satisfaction with various aspects of coaching were collated from earlier extensive works in job

Table 1
 Results of Descriptive Statistics and Bivariate correlations

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. PSY_SEL	28.440	4.657	-											
2. PSY_HOP	28.84	4.2835	.773**											
3. PSY_RES	27.286	4.1465	.644**	.564**										
4. PSY_OPT	28.138	4.4842	.611**	.570**	.703**									
5. LSS_TRA	56.663	7.4261	.427**	.446**	.386**	.375**								
6. LSS_DEM	37.098	5.7981	.269**	.270**	.329**	.347**	.618**							
7. LSS_AUT	16.915	4.8103	-0.053	0.001	.152**	.120**	.068	.441**						
8. LSS_SOC	30.271	6.2068	.107*	.177**	.217**	.208**	.257**	.403**	.482**					
9. LSS_POT	21.398	3.4290	.323**	.303**	.317**	.332**	.590**	.493**	.161**	.474**				
10. CSSC	288.350	45.750	.534**	.521**	.453**	.518**	.589**	.439**	0.018	.143**	.390**			
11. Age	38.99	8.157	-0.086	-.125**	-.026	-.067	-.121*	-.076	.144**	0.092	-0.025	-.144**		
12. Gender	1.6	0.49	-.160**	-.101*	-.090*	-.099*	-0.025	.02	0.034	0.055	-0.019	-.089*	-0.083	
13. years of experience in coaching	5.59	4.394	0.086	0.056	.097*	.106*	0.049	-.008	0.04	0.075	0.066	0.037	.410**	-.090*

Note. A total of 570 teacher-coach participated in the study, PSY_SEL = psychological capital self-efficacy; PSY_HOP = psychological capital hope; PSY_RES = psychological capital resilience; PSY_OPT = psychological capital optimism; LSS_TRA = training and instructions; LSS_DEM = demographic behavior; LSS_AUT = autocratic behavior; LSS_SOC = social support; LSS_POT = positive behavior; CSSC = coaching satisfaction for sport coaches.

*. $p < .05$ level (two-tailed). **. $p < .01$ level (two-tailed).

Table 2
Results of Mediation Analysis

IV	MV	DV	Effect of IV on MV (a)	Effect of IV on MV (b)	Total direct effect	Total indirect effect	Total effect	Indirect Effects	SE	LL	BC 95% CI	
											UL	UL
PSYCAP_SELF	TI	CSSC	.4611**	2.6660**	2.8092**	1.2293*	4.0384**	1.2293	.2187	2.1073	3.2247	
	DB		.2676**	2.1676**	3.4583**	.5801*	4.0384**	.5801	.1567	1.5203	2.8148	
	AB		-.0444	.4235	-	-	-	-.0188	.3848	-.3420	1.1891	
	SS		.0690	.2418	-	-	-	.0167	.0334	-.3458	.8293	
	PB		.1608**	4.0384**	3.6070**	.4314*	4.0384**	.4314**	.1335	3.2284	4.8485	
PSYCAP_HOPE	TI	CSSC	.5380**	2.2961**	2.7552**	1.4504*	4.2056**	1.4504**	.2477	2.1254	3.2668	
	DB		.2691**	2.2461**	3.6013**	.6043*	4.2056**	.6043**	.1722	1.5962	2.8960	
	AB		.0244	.1867	-	-	-	.0046	.0269	-.5873	.9612	
	SS		.2181	-.0145	-	-	-	-.0032	.0704	-.6146	.5856	
	PB		.1665**	2.8172**	3.7365**	.4691*	4.2056**	.4691**	.1457	1.5977	4.0367	
PSYCAP_RESILIENCE	TI	CSSC	.4649**	2.8384**	2.4814**	1.3196*	3.8010**	1.3196**	.2456	2.2734	3.4034	
	DB		.3767**	3.1601**	2.9873**	.8137*	3.8010**	.8137**	.1910	1.4784	2.8419	
	AB		.2100	-.3408	-	-	-	-.0716	.0908	-1.1423	.4612	
	SS		.2901	-.0977	-	-	-	-.0283	.0942	-.7143	.5190	
	PB		.1915**	2.8156**	3.2618**	.5392*	3.8010**	.5392**	.1593	1.5601	4.0711	
PSYCAP_OPTIMISM	TI	CSSC	.3631**	2.7929**	3.0764**	1.0142*	4.0907**	1.0142**	.2180	2.2543	3.3316	
	DB		.3619**	2.0232**	3.3585**	.7321*	4.0907**	.7321**	.1739	1.3551	2.6913	
	AB		.1624**	-.2998	-	-	-	-.0487	.0695	-1.0773	.4776	
	SS		.2282**	-.0740	-	-	-	-.0169	.0727	-.6715	.5235	
	PB		.1815**	2.6032**	3.6182**	.4724*	4.0907**	.4724**	.1441	1.3762	3.8302	

Note. A total of 570 teacher-coach participated in the study. Data were bootstrapped to 10,000 resamples. All coefficients are unstandardized. IV = independent variable; MV = mediating variable; DV = dependent variable; BC = Bias-corrected; CI = confidence interval; LL = lower limit; UL = upper limit; PSYCAP = psychological capital; TI = training and instructions; DB = demographic behavior; AB = autocratic behavior; SP = social support; PB = positive behavior CSSC = coaching satisfaction for sport coach.

a = IV*MV; MV*DV.
*P < .5 ** < .01.

D. Statistical analysis

Before mediation analysis, missing values that appear at random were attributed and replaced using the expectation-maximization algorithm on the assumption that these are unintentional by-products of data collection (Enders, 2010).

Simple mediation analysis was conducted to test whether psychological capital, assigned as the predictor, was related to coaching satisfaction through coaching behavior (i.e. training and instructions, demographic behavior, autocratic behavior, social support, and positive feedback), which were entered as mediators. Certain demographic information such as teacher-coach age and gender were entered as covariates. The process macro for SPSS (Hayes, 2012) was used to perform the analysis. The indirect effect of the mediator was analyzed using nonparametric bootstrapping with 10,000 samples (Hayes, 2012).

III. RESULTS AND DISCUSSION

A. Descriptive statistics

The means, standard deviations, and bivariate correlations between variables of the study are shown in Table 1. Results of correlation analysis revealed that psychological capacity (i.e. self-efficacy, hope, resilience, and optimism) was positively associated with coaching satisfaction for sports coaches. It is also significant to note that leadership scale for sports (i.e. training and instruction, democratic behavior, social support, and positive feedback) was positively associated with coaching satisfaction for sport but not autocratic behavior.

B. Mediation analysis

Table 2 shows the total direct, and indirect effect of psychological capacity (i.e. self-efficacy, hope, resilience, and optimism) and coaching satisfaction

for sport coaches through leadership scale for sport (i.e. training and instruction, democratic behavior, autocratic behavior, social support, and positive feedback). The findings of the study were significant while training and instruction, democratic behavior support and positive behavior were significantly mediated the link between psychological capacity and coaching satisfaction for sport, it was autocratic behavior and social support negatively significant. This implies that coaches help athletes reach maximum physical potential, involve athletes in decision making and maintaining the motivational level of the athletes is crucial to improve the performance level of the athletes.

To create more competitive performance, positive psychological capacity must be considered to emphasize personal growth and quality. However, few studies in sports management have considered leadership behavior particularly teacher-coach. To fill this gap, this study provides empirical evidence on understanding the role of TC leadership scale for sport (i.e. training and instructions, democratic behavior, autocratic behavior, social support, and positive feedback) in psychological capacity (i.e. self-efficacy, hope, resilience, and optimism) and job satisfaction.

Findings of the data provide several interesting results. First, the positive association between psychcap and job satisfaction seemingly inconsistent results findings on the impact of positive psychological on TC job satisfaction. On the other hand, several studies indicated that TC tends to experience workload related stressors (Collie, et al., 2012; Collie et al. 2015); extracurricular coaching (Rocchi & Camiré, 2018) and white-collar workers (Cheung, et al, 2011). On the other hand, several studies indicated that psychcap likely influenced satisfaction (Dawis & Loquist, 1984; Judge, et al., 2001; Kwok, et al., 2014; Larson & Luthans, 2006; Spector, 1997) on the employees (Dixon & Warner, 2010), sport organization (Kim et al., 2017) and collegiate coach (Chelladurai & Osagawara, 2003). The current findings reveal that such inconsistency would likely

depend on the situations as its place positive capability on risk factors. Coach with personal feeling of worthiness (i.e. self-efficacy) tend to handle difficulties effectively and persistence on satisfaction and effective at work; positive motivational state (i.e. hope) tend to be affirmative with goals and strong determination to achieve; flexibility towards failure (i.e. resilience) tend to be more self-confident, assertive, and believe positive towards job; pervasive style (i.e. optimism) tend to believe positive feelings towards life and satisfaction. In other words, coach high level of overall psychop better at work and had a greater job satisfaction significantly improves an individual's physio-psychological qualities.

The second important findings to discourse are the significant relationship in psychop and leadership scale for sport. This result supports the TFL theory (Bass, 1985; Burns, 1978) particularly personality differences among leaders (i.e. coach) leads to enhance behavioral styles. As positive organizations considered resources to achieve sustainable growth and increase performance (Luthans, 2003). In the findings of the study, TC who experienced quality supervision, recruiting support, a reasonable salary and supportive administration (Dixon & Warmer, 2010). This finding supported several studies supported TC's with high psychop likely to a successful strategic alliance and capacity to adjust new conditions to pursue goals (Luthans, et al, 2007; Cheung et al., 2011) and passion for sport who wants to enhance school life (Winchester, et al., 2013). Alternatively, TC's manifested with work-load stressors (Rocchi & Camiré, 2018) and experiences the role of conflict (Hom & Kinicki, 2001) are like to take failure as constraining factors for ideal behavior. This could be well explained by TFL theory "task perception" where coaches with psychosocial outcome enhance team's commitment, engagement, and satisfaction (Bass 1985; Turnidge & Coté, 2016).

Interestingly, the importance of positive capability influence on leadership style for sport is relevant to Filipino culture. Having a positive personality, Filipino approaching style ember significant bond with peers (i.e. team) in setting, situation or context in which are connected (Markus & Kitayama, 1991; Triandis, 1989). The nature of the personality of the Filipino behavior is important to its colleagues, organizational well-being, organizational culture and organizational citizenship's behavior (Toor, & Ofori, 2009).

Interestingly, the importance of positive capability influence on leadership style for sport is relevant to Filipino culture. Having a positive personality, Filipino approaching Thus, the positive function of the self, due to the behavioral style of the TC will result in a positive perspective, if the chance of function becomes derange consequent negative effect to behavioral style is anticipated.

Finally, the results indicating the role of LSS, especially training and instruction, democratic behavior and positive feedback to TC job satisfaction. The current findings find support from several studies indicating leadership to job satisfaction. (Reimer & Chelladurai, 1995, 2017; Wells & Peachey, 2011). This is specifically true to teach-coach whose higher person's perception that job is meaningful, the higher the person's job satisfaction (Bass, 1985;

Hackman, 1994; Richards, et al., 2012; Yusof & Shah, 2008). It is important that only 3 leadership behavior particularly training and instructions (i.e. direct task factor), democratic behavior (i.e. decision style), positive feedback (i.e. motivational style) significantly mediated psychop and job satisfaction. The findings find support in the multidimensional model of leadership (Chelladurai, 1978; Chelladurai & Carron, 1978) preferred leader behavior (Osborne & Hunt, 1975) in the conceptualization of demands and preferences (Chelladurai, 1978; Chelladurai & Carron, 1978). The perceptions of training and instruction dedicated situational requirements (Osborne & Hunt, 1975) reflect the coach's needs and preferences. The present study suggests that the three dimensions of training and instruction, democratic behavior and positive feedback reflect situational requirements while the remaining two dimensions, autocratic behavior, and social support attuned coaches' preferences. This finding indicated that the coach's preferred and perceived greater amounts of autocratic behavior and social support (Eagly & Chaiken, 1993; Riemer & Chelladurai, 1995). Teacher-coaches giving more time giving instructions emphasizing strategies and tactics enhancing performance and skills together with the participation athlete's participation in decision making. Similarly, coach providing positively prescriptive feedback more frequent in coaching situations experience self-rewards indicating that organization (i.e. team) manifesting enjoyment. Thus, leadership characteristics with a clear understanding of teaching and coaching regarding the stressors in sport organizations are likely to perceive high ability, more knowledge, and more experience.

IV. CONCLUSION

There are several limitations to the study. First, the study uses self-report measures, which makes responses vulnerable to social desirability bias. Future studies could use social desirability scales to statistically control of potential biases. Second, as this study has a cross-sectional design, results must be interpreted with caution. Longitudinal designs would provide stronger support to potential causal relationships. Third, the study focused exclusively on teachers with coaching sports and did not examine teachers who facilitate other extracurricular activities such as the performing arts and academic clubs. Also, it will be important to examine if/how teachers' participation in other extracurricular activities also contributes to job satisfaction. Fourth, the focus of the study was mainly directed at the coaching environment and thus, no measures were included to examine the classroom environment or the school administration environment. Finally, although the results support the proposed model and used a large sample of teachers, it is important to point out that this model included self-reported variables that were all assessed at a single time point. Therefore, causality should not be inferred.

Notwithstanding the aforementioned limitations, this study makes an important contribution to teacher-coach literature. First, to the author's knowledge, this is one of the few studies showing the relationship between positive capital and job satisfaction in the sport setting. The current finding emphasizing the

role of leadership style seemingly inconsistent results of the impact of positive psychological capacity and job satisfaction. Finally, while the relationship between psychological capital and job satisfaction

has well studied in the literature, the mediating role of leadership style is yet to be explored particularly in a sports management context

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Sports Promotion through FGTP (FIK Goes to Public)

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Abstract—FGTP (FIK Goes to Public) is one of the programs from Sports Science Faculty, Universitas Negeri Semarang, which is held every week at the Semarang City Free Car Day. This event is implemented to make people aware of the importance of maintaining physical fitness by exercising and to realize the importance of medical check-up. In addition, FGTP can also be used as a promotional event for the citizen, in order to make sports and healthy lifestyles became more popular in the citizen. By interacting with the citizen directly, they will be more motivated to participate. The event was also packaged in a simple and fun way which make the citizen could enjoy and willing to join the event. (*Abstract*)

Keywords : CFD (Car Free Day), FGTP (FIK Goes To Public), Promotion, Sports, Health

I. INTRODUCTION

Semarang is one of the cities in Indonesia with a fairly high level of air pollution, some of the causes of the high level of pollution in Semarang are vehicle smoke, smoke from garbage burning, and factory smoke. To control the environment, it is necessary to carry out a car free day as an area for pedestrians and other activities[1]. The activity had been seen to be effective in reducing air pollution in the City of Semarang. The Semarang City Government through the Badan Lingkungan Hidup Semarang City or Environmental Council Semarang City (BLH) oversees the activity.

Sports or physical activity can be do anywhere and anytime. So the Faculty of Sport Science of Semarang State University organizes FGTP (FIK Goes To Public) activities for the community to be more fond of sports and physical activities. In addition, FGTP (FIK Goes To Public) also aims to serve the community and to promote sports. FGTP (FIK Goes To Public) is carried out in a series of activities in CFD (Car Free Day). In FGTP (FIK Goes To Public) there are a number of activities organized such as aerobics, health checks, massages and traditional games, martial arts, tonnis, and several other activities. This is considered beneficial for the

community to increase public awareness of the importance of exercise for fitness and health.

II. MATERIAL AND METHOD

This is a review of literature related to that CFD and FGTP. Some jurnal that are been used for are, Car Free Day (CFD) : Alteration of Regulation Mayor of Semarang, Number 22 2011 About Car Free Day Semarang City[1] Participation The Citizen in Sport Event[2] Vision of Physical Education and Sports[3] Edial Sanif Primary Care Doctor, Doctor Faculty[4] Sports Behavior The Citizen in Car Free Day Semarang City [5].

FIK Goes To Public (FGTP) : Physical Activity and Diet with Central Obesity on Religion Figure in Manado City[6] Correlation Physical Activity Towards Hemoglobin Level on Student of Pandekar Club Member Universitas Andalas[7] The Improvement Physical Fitness Trough Modification of Run Games “KASVOL” on Physical Education and Health Study[8] The Effect of Sports Activity Toward Physical Fitness[9] Correlation Between Medical Check-Up Status Toward Physical Disabillity Phenomenon on Elderly in Punung Sub-district Pacitan District[11] Free Medical Check-Up Provision for Elderly[12].

Massage : Sport Massage[13]. Aerobic Dance : Benefit of Aerobic Sport Exercise Toward Human Physical Fitness[10].

III. RESULTS AND DISCUSSION

A. Car Free Day (CFD)

CFD (Car Free Day) is a program carried out by the government that aims to reduce air pollution, especially in big cities in Indonesia. Beside that, another purpose of CFD (Car Free Day) is to provide green space for citizen. The activity was carried out in almost all cities in Indonesia, one of the cities that held CFD (Car Free Day) was Semarang.

Semarang is one of the cities in Indonesia with a high level of air pollution. To control the environment, it is necessary to carry out a car free day as an area for pedestrians and other activities[1]. Semarang is a city that holds Car Free Day every Sunday starting at 06.00-09.00 WIB which is located at Jalan Pemuda Simpang Lima Semarang. Activities in Car Free Day are various activities such as sports, including facilities for sports such as walking, cycling, running, rollerblading, skateboarding, street workout, aerobic exercise and so forth. Hopefully the citizen can participate and support these activities, because these activities are considered effective as one way to reduce pollution and as a preservation of the environment.

Sports and sports are the basic rights of every person regardless of race, religion, social class, or gender[2]. Sport for All was promoted by the IOC (National Sports Committee) since 1983 aims to encourage the realization of sports activities that can be carried out by the whole community without recognizing boundaries and differences.

Sports are physical activities that contain the nature of the game and contain struggles with oneself, others, and nature that have certain goals[3]. Sport is a physical activity that is very beneficial for the body, especially in maintaining physical fitness. Besides being beneficial for maintaining body fitness, exercise is also beneficial for maintaining a healthy body. Physical exercise can not cure all kinds of diseases as some people think, but just as we need oxygen, food and sleep, you also need strong physical activity to maintain physiological and mental processes.

In addition to reducing the level of urban air pollution, CFD (Car Free Day) can also be used as a means for various activities and activities for the citizen, one of which is exercise and physical activity.

Besides being one way to preserve the environment, Car Free Day is also a place for people to do physical activities and exercise. Implementation of activities on car free day as part of the initial momentum in the implementation of the movement for the citizen to improve physical abilities and as part of recreational sports both for health and to improve physical fitness in an integrated manner[4].

Community sports behavior in the Car Free Day program is very enthusiastic seen from the large number of people present and community interest in sports activities in the program Car Free Day, with a variety of sports behaviors such as aerobics, roller skates, cycling, jogging[5].

B. FIK Goes to Public (FGTP)

Almost everyday all humans do activities, whether it is physical activity or thinking. Physical activity is any body movement carried out by skeletal muscles that results in the expenditure of an amount of energy expressed in kilo calorie units [6]. Physical activity is any body movement that comes

from skeletal muscle that requires energy expenditure[7]. Physical activity undertaken also varies, ranging from mild, moderate, to severe physical activity. Therefore humans need physical exercise to maintain physical fitness. Physical exercise itself aims to keep the body from fatigue in doing daily physical activities. Physical fitness means how one's physical ability to perform daily physical tasks optimally can even carry out additional physical activities without causing significant exhaustion[8].

To maintain physical fitness, humans must do regular physical exercise and adapt to the needs of each individual. Regular sporting activities can increase heart-lung endurance, muscle strength and endurance, body flexibility and body composition. It was concluded that sports activities can improve fitness[9].

Sports or physical activity can be done anywhere and anytime. So, Sports Science Faculty of Semarang State University organizes FGTP (FIK Goes To Public) activities for the citizen to be more fond of sports and physical activities. In addition, FGTP (FIK Goes To Public) also aims to serve the citizen and to promote sports. FGTP (FIK Goes To Public) is carried out in a series of activities in CFD (Car Free Day). In FGTP (FIK Goes To Public) there are a number of activities organized such as aerobics, health check-up, massages and traditional games, martial arts, tennis, and several other activities. This is considered beneficial for the community to increase public awareness of the importance of exercise for fitness and health.

This activity was also carried out to increase public awareness of the importance of exercise for physical fitness and health. FGTP is organized by the Faculty of Sports Science through Departments in the Sports Science Faculty and is assisted by the Student Association (HIMA) department in the faculty. There are 5 HIMA participating in holding FGTP namely HIMA PJKR (Physical Education), HIMA PKO (Sports Coaching), HIMA IKOR (Sports Science), HIMA IKM (Public Health), every week alternating and helping each other in organizing the program. In addition to the Student Association, students of the Sport Science Faculty also support and assist in organizing these activities because FGTP is also one of the ways students to apply courses that have been received directly to the public. In the FGTP especially those organized by the Department of Sport Science there are several activities organized such as aerobics, health check-up, massages, and traditional sports. With the holding of FGTP, the Faculty of Sport Science hopes that this activity can become one of the community's media to exercise and to health check-up periodically.

In addition, FGTP can also be used as a sports and health promotion event, so that more people are aware of the importance of maintaining physical fitness and physical health. By packaging the program in an interesting way, people will be interested and try to exercise and check their health. So it is

hoped that through this method the public will start to enjoy exercising and doing regular health check-ups

2.1 Aerobic Dance

Aerobic at FGTP is one of the aerobic sports which are very useful for maintaining physical fitness. Aerobic exercise alone is more effective in maintaining physical fitness. Aerobic exercise is a systematic sport activity with a gradual and continuous increase in load that uses energy derived from combustion using oxygen, and requires oxygen without causing fatigue [10].

2.2 Traditional Sports

Many children around us do not know about traditional sports, this is due to the rapid development of technology that makes people especially children play more with gadgets, and almost displace traditional sports. Traditional sports are slowly to be abandoned. Some examples of traditional sports are crank, stilts, betengan, obstacle course, hide and seek, pillow thumps. Traditional sports are often held for public holidays. In the current era, traditional sports have begun to be modified and packaged in various ways, one way is by outbound intended for relaxation and refreshing.

2.3 Health Check-Up

Health is an important thing / central for the sake of adequate life sustainability, healthy itself has a meaning where a prosperous and balanced condition both physically and spiritually that enables a person to live productively socially and economically[11].

Health check-up should be done routinely by the community, this aims to make people aware of the condition of the body. Health check is one of the efforts to prevent diseases and handle diseases more quickly and accurately. Health check-up is also an examination that is more focused on primary and secondary prevention efforts, namely detecting various health factors as a whole that can cause certain diseases in the future[12].

Health check-up services that available at FGTP include blood pressure checks, weight checks, height checks, and BMI (Body Mass Index).

2.4 Massage

Massage has several types such as fitness massage, massage injury and beauty massage. Massage is an art of hand gestures that aims to get pleasure and maintain physical health. Hand gestures mechanically will create a sense of calm and comfort for the recipient[13]. In its development, massage can be divided into several types, including:

1.) Sport Massage

Special massage to people especially sportsmen. The purpose of sports massage in general is to improve blood circulation, especially the drive for venous blood or venous blood to the heart, stimulate nerve supply, especially peripheral

nerves to increase sensitivity to stimuli, and reduce or eliminate nerve tension and reduce pain.

2.) Segment Massage

Massage aimed at helping healing of physical disorders, disorders in certain parts mainly due to weather, work that is too far, rape or coercion (trauma) on the body and physical abnormalities caused by certain diseases.

3.) Cosmetic Massage

Special massage intended to nurture and enhance beauty and beauty, both facial beauty and body beauty and their parts.

IV. CONCLUSION

Maintaining body fitness is very important because to go through daily activities so as not to feel excessive fatigue. Many ways can be do to fit, one of them is by exercise. By the FGTP (FIK Goes To Public) the citizen can do sports activities there. This was felt effective because in addition to being a strategic place, the program was also packaged in a simple and interest way. So that people who come to the CFD (Car Free Day) are only refreshing will interested and try to do physical activities. By doing so, directly and indirectly through the program can promote sport to the citizen.

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“Fun Circuit Training” the Development of Snake Ladder Game for Physical Activity

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Abstract-- Fun Circuit Training is a modification of the snakes and ladders game, which is combined with a variety of physical exercises that contain elements of strength, agility, speed, flexibility and endurance. There are various forms of physical exercise available in each box where each pawn stops. Fun Circuit Training games are played with a minimum of two teams, the number of each team can be adjusted according to the people. The main purpose of this game is to make it easier for someone to do physical activities in order to improve physical fitness.

Keywords— physical training, snake and ladder game

I. INTRODUCTION

sports activities that either improve performance or health. By exercising, it can create people who are physically and mentally healthy and have a disciplined character and become qualified human beings.

Exercise is a sport activity that is integrated in a long time, accelerated and accelerated, designed to make humans who do physiological and psychological to fulfill all tasks [1].

There are various forms of training, one of which is the training circuit. Circuit training is a form of exercise that involves a series of different exercises that are carried out sequentially and continuously for one round / circuit [2]. Circuit training is an exercise program developed by R.E. Morgan and G.T. Anderson in 1953 at the University of Leeds in 23 England. This exercise was originally composed for physical education programs in schools. Circuit training is structured to develop strength, power, muscular cardiovascular endurance, speed, agility, and flexibility which is a combination of cardio and strengthening exercises.

Simple traditional games can be a source of inspiration in media training. It is known that the snakes and ladders game is one type of traditional game that is worldwide. Psychologically, snakes can increase the ability of children to help them with social.

This game originated in India. There, known by the name moksha patamu. In the beginning this game illustrates good deeds against bad deeds. The ladder symbolizes good deeds,

while the snake symbolizes bad deeds. A new version of this game was created and introduced by the colors of the United Kingdom, namely John Jacques in 1892. Then, in 1943, a toy maker from the United States, named Milton Bradley began making and selling games called Snakes and Ladders.

This game is played by two to four people. Each player uses pieces with a different color. The goal of this game is to reach the numbered box 100. The player who can reach it for the first time will be declared the winner.

Material circuit training in physical games in the form of "Fun Circuit Training" that can be applied in the learning process of physical games in the educational and non-educational world.

II. MATERIALS AND METHODS

This development research uses a procedural development model, because this model is descriptive, which is a procedure that describes the steps that must be followed in producing a product.

In each development can choose and find the most appropriate steps for research based on the conditions and obstacles encountered [3]. The steps or procedures carried out in this study are as follows:

- 1) Field survey
- 2) Analyze the product to be developed
- 3) Start to develop
- 4) Analyze the results of product development
- 5) Revision

The data used in this study are qualitative data. Qualitative data were obtained from interviews in the form of criticisms and suggestions both verbally and in writing as constructive input for product revision materials.

The instruments used in product development in the form of interviews, observations, questionnaires, documentation, and games in conducting fun circuit training. Interviews are used to search for and gather information systematically and directed from experts and sources. Observation is used to

determine the state of facilities and infrastructure and its implementation. Questionnaires are used to obtain information to provide input and suggestions about products produced to determine product quality. The questionnaire used in the form of a number of questions that must be answered by students with alternative answers to determine product acceptance. Documentation is used for concrete evidence about an activity.

III. RESULT

That physical fitness training in the form of exercises carried out in the conventional way often becomes a scourge for students. Therefore, fun circuit training is expected to be one of the solutions in fitness training because this fun circuit training has been designed in such a way with the help of traditional snakes and ladders game that is fun if practiced

Before the implementation of fun circuit training, someone tends to be lazy or lack of enthusiasm in physical activity. After the implementation of this fun circuit training, it is expected to have the following benefits:

- 1) Improve physical fitness
- 2) Cultivating the spirit of sportsmanship
- 3) Can practice while playing
- 4) Make it easier when someone wants to do physical activity

And how to do Fun Circuit Training, as follows :

- 1) Divide into 2 groups
- 2) Determine 1 person to be a judge
- 3) Decide on one person to be a timer
- 4) Suit to determine who will play early
- 5) Select the pawn that will be the marker of the group that will play
- 6) Beat the dice and start walking in accordance with the numbers shown by the dice.
- 7) Do circuit training exercises according to where your group stops
- 8) If you meet the stairs, then go up to the end of the stairs.
- 9) If you encounter a snake, it must go down to the block which is the end of the tail.

- 10) When doing circuit training exercises, one group must be compact and will be guided by a timer.
- 11) Of the 10 items of the form of exercise used, each of them is only done for 30 seconds unless the determination is done for 2 minutes.
- 12) For flexibility is divided into three parts, namely the bottom, middle and top. When a group encounters flexibility exercises for the first time it will do the bottom part. If the group encounters flexibility exercises a second time, then there is a middle section flexibility exercise, and so on.

There are 10 types of exercises used :

- 1) Push Up
- 2) Sit Up
- 3) Back Up
- 4) Squat
- 5) Jumping Jack
- 6) Reverse Lunge Knee
- 7) Plank
- 8) Determination
- 9) Squat Thrust
- 10) High Knees Running In Place

Of the 10 items used in the form of exercise, each is only carried out for 30 seconds and will be set by the judge and timer.

IV. CONCLUSIONS

Fun circuit training is one of the solutions in the saturation of physical and fitness training because this fun circuit training has been designed in such a way with the help of traditional snakes and ladders games that are fun if practiced or played.

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Basketball Game as a Media of Achieving Skill Competence

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Abstract— Basketball is one of lesson material that can be found in physical education ranging from elementary until secondary education. Furthermore, Many schools provide a basketball extracurricular to develop the student’s interest or talents. As a sport, basketball has positive values which can be learned by the student. National education in Indonesia set a core competency for the student. One of those competencies is skill competence. Positive values that contained in basketball has the potential to help students achieve skill competence. Based on theoretically and statistically analysis, basketball founded as good media to help the student to be a person that creative, productive, critical thinking, independent, collaborative and communicative. Characteristics of the game and followed by strict regulations give a good effect on the students.

Keywords—*Education, Competency, Basketball, Character, Affective*

I. INTRODUCTION

Growing into a complete individual is a normal thing that humans want. One way for humans to grow into a good person as a whole is through education. Education is a basic need for human beings that cannot be negotiable and must be met. Education is a conscious and planned effort to develop the ability of students to become educated humans to be ready to serve the community, take care of themselves, actively develop the potential to have religious-spiritual strength, self-control, personality, intelligence, noble morals, and cultural donors [1] [3]. Every education was undertaken always has competencies that must be met to be able to continue to the next level of education. The core competencies in primary and secondary education for skills are creative, productive, critical, independent, collaborative and communicative [4].

The easiest place to get education for humans is a school which is formal education. In general, formal education is categorized into two forms, namely intracurricular and extracurricular. Both forms of education complement each other to create an educational atmosphere that supports the achievement of national education. Extracurricular activities are one means of developing the potential, talents, interests, abilities, personalities, cooperation, and independence of

learners optimally to support the achievement of national education goals [5], [6].

Extracurricular activities that are well managed can help the educational process carried out by the school. Generally, extracurricular activities are divided into two types, namely sports-related and non-sports-themed extracurricular activities. Sport is not only a physical activity but also as a means of forming the characters who participate in it [7]. Basketball is a sport that is often a school extracurricular activity in Indonesia. A large number of competitions between students makes it difficult for schools not to facilitate students with basketball extracurricular activities. Besides, the majority of schools at the junior and senior high schools also have certainty of having a basketball court because basketball itself is included in the compulsory material for physical education subjects [4].

Involvement in sports and physical education has a positive impact because it is loaded with character values that can be used to form humans fully [8], [10]. Basketball, which is a physical education material, has positive values that can be learned by students and can be used as a means to help students achieve competency skills. Values contained in basketball are communication, confidence, hard work and discipline, leadership responsibility, cooperation, honesty in playing, respecting friends and opponents, accepting defeat with grace, congratulating the winner, being fair play in play [11], [12]. Based on the competencies that must be achieved by students and the expected role in extracurricular activities in national education, basketball as an extracurricular activity is expected to be able to help achieve competency in the field of skills.

II. RESEARCH METHOD

The approach used in research is quantitative and qualitative. The use of both approaches uses a sequential explanatory design [13], [14]. The data obtained were analyzed statistically and strengthened by the study of the literature “Fig. 1”. The results of the two approaches will be thoroughly analyzed. Data retrieval is done through the distribution of closed questionnaires that are made by utilizing

the Google forms feature and distributed via electronic media. A total of 363 individuals gave responses to the questionnaire and only responses from 339 individuals were used in the study. Not all data provided by respondents can be analyzed further because the data provided is not complete or does not answer well. The questionnaire is distributed through electronic media randomly. The questionnaire is divided into two parts, the first part contains questions about age, status, respondent's assumptions about basketball games, and experiences related to basketballs while the second section contains questions about respondent's opinions on positive values contained in basketball. Experience related to basketball is not only limited to having practiced or played basketball but also as an athlete's parent, basketball coach, physical education lecturer/teacher and the general public who can be interpreted as spectators or supporters. The second part of the questionnaire has a scale of answers ranging from 1 for answers that said "no" or disagree to 3 for answers that said "yes" or agree.



Fig 1. Sequential Explanatory Design Plot

A. Quantitative Data Analysis

At this stage, the data were analyzed statistically using SPSS version 25. The validity and reliability of the questionnaire were analyzed using Pearson Correlation and Cronbach's Alpha. The normality test using the Kolmogorov Smirnov test. In connection with the results of the normality test which shows that the data do not have a normal distribution, so that the correlation test uses non-parametric statistics, the Spearman method.

B. Qualitative Data Analysis

Quantitative data analysis about the correlation between basketball and competency skills is strengthened by theoretical study. The theoretical study is taken from the literature, official rules of basketball, additional regulations by the event organizers, and research journals that lead to character building.

III. RESULT

Total of 339 respondents gave complete answers in this study. The age distribution of respondents showed as many as n = 7 (2.1%) aged <13 years, n = 44 (13%) aged 13-15 years, n = 61 (18%) aged 16-18 years, n = 54 (15, 9%) aged 19-22 years, and n = 173 (51%) aged > 22 years. In the case of basketball-related experience, it was shown that as many as n = 2 (0.6%) had <1 year experience, n = 64 (18.9%) had 1-3 years experience, and n = 273 (80.5%) had experience > 3 years.

The results of testing the validity and reliability of the questionnaire showed that the questionnaire used was valid and reliable. The validity of the questionnaire was measured using Pearson Correlation, while the reliability of the questionnaire was measured using Cronbach's Alpha. The Pearson Correlation test results show that the r count is greater than the r table (0.106), while the results of the Cronbach's Alpha test indicate that 14 question items have values > 0.60.

TABLE I. VALIDITY AND RELIABILITY OF THE QUESTIONNAIRE

Items	Validitas (Pearson Correlation)	Reliabilitas (Cronbach's Alpha)
Basketball Experience	,893	,920
Creativity	,753	,924
Productivity	,725	,925
Critical Thinking	,691	,927
Independence	,740	,925
Communicative	,679	,927
Intelligence Development	,680	,927

Data normality test results using the Kolmogorov Smirnov test indicate the data do not have a normal distribution. The Kolmogorov Smirnov test results indicate all items <0.05. Then the correlation test uses non-parametric statistical methods.

TABLE II. NORMALITY TEST

Items	Validitas (Pearson Correlation)	Reliabilitas (Cronbach's Alpha)
Basketball Experience	,893	,920
Creativity	,753	,924
Productivity	,725	,925
Critical Thinking	,691	,927
Independence	,740	,925
Communicative	,679	,927
Intelligence Development	,680	,927

Based on statistical analysis Spearman correlation shows that there is a positive correlation between basketball experience and skills competence. Statistically, this proves that basketball is a positive activity for students.

TABLE III. CORRELATION TEST

Correlation With:	Spearman's Correlation Result	Category
Creativity	0,620	Strong
Productivity	0,588	Strong
Critical Thinking	0,544	Strong
Independence	0,639	Strong
Communicative	0,650	Strong
Intelligence Development	0,633	Strong

IV. DISCUSSION

The theoretical results of the study on basketball are several things help students to achieve social attitudes and skills competencies. Here are some of the things contained in

basketball results from theoretical studies [12], [15], [16], [17], [18]:

- Basketball is a team sport.
- Basketball is a fast game.
- Playing basketball requires special preparation.
- Regularly scheduled basketball practice.
- The rules in basketball regulate from preparation to the end of the game.
- Rules in basketball also regulate player behavior.
- The organizer of the student basketball competition adds rules that aim positively for the participants.
- Many offense and defense patterns that must be understood by players.
- Many alternatives can be used to print numbers.
- Almost all activities during the game are limited by time.
- Communication inside the basketball extracurricular takes place both horizontally and vertically.
- Communication when competing is also very important to coordinate.

The characteristics of basketball obtained from the results of theoretical studies show that basketball can be used as a tool to help students achieve competency skills. The following is a thorough research discussion:

A. Creative

The many ways to get past opponents and score will provoke the creativity of participants in extracurricular / club activities in stringing basic technical movements. If a basketball player uses the same method continuously, of course, the opponent will easily anticipate his movements. Improvement, when the pattern requested by the coach does not work as it should when competing, is also often and must be done by the player. Accustomed to stringing basic technical movements and finding the most effective and efficient ways of passing an opponent or scoring a number will stimulate creativity.

B. Productive

Trying to improve themselves both after the game and daily evaluation during training will stimulate productive thinking. Targets provided by coaches, schools, or club owners can also make productive thinking because it will make participants extracurricular / club activities to increase their understanding of basketball.

C. Critical Thinking

All basketball activity is limited by time. Official basketball regulations limit the time to score for a maximum of 24 seconds, hold the ball when inbound for a maximum of 5 seconds, control the ball without dribbling with the active opponent only allowed for 5 seconds and master the ball in his area for a maximum of 8 seconds. The time limit makes the player must have a critical mind to decide what steps are taken so as not to violate the rules. Also, when mastering the ball the

player must be quick to decide the ball must pass, shoot or drive. Decisions made also involve other team members, height and abilities to opposing players. Accustomed to deciding the best thing according to the conditions to be done quickly will stimulate critical thinking.

D. Independence

Preparing the needs during training or competition is done by the participants of extracurricular / club activities. No one knows their needs better than themselves. Being accustomed to preparing all of your own needs will stimulate you to be independent.

E. Collaborative

Collaborating with teammates is an obligation of the extracurricular activity participants. The variety of offense and defense patterns that can be arranged requires that the players can work well together. Understanding the pattern of offense and defense cannot be done alone, it must be done collaboratively because it involves the team. The need to collaborate stimulates the growth of collaborative nature.

F. Communicative

Communication is a very important aspect of basketball. Offense and defense systems in basketball require intense communication. Both communication between team members in the field, as well as for instructions from the coach to the players. Without good communication, the offense and defense patterns instructed by the coach cannot run optimally and there will often be mistakes. During training, being communicative is a must. Being someone passive will not help to improve the ability to play basketball. Frequently ask colleagues or coaches to correct weaknesses very much needed by participants in extracurricular.

V. CONCLUSION

Statistical studies show that there is a correlation between basketball experience and skills competence. Plus the discussion theoretically reinforces that basketball games have the potential to help students achieve skills competence. The potential of playing basketball to help education won't become a reality if the physical education coach or teacher involved is not committed to instilling the values that must be achieved. Physical education coaches or teachers must have character, not only able to teach but also able to instill positive values that can be learned from the lesson [11]. Without the role of a coach and physical education teacher, the process of self-improvement cannot run optimally. A person who can provide, educate, direct, guide and evaluate during the process of planting positive values is needed for participants in extracurricular.

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Meditation Influence for Mental Disorders of Athletes

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Abstract—Mental disorders are a form of inability to adapt that are serious to certain environmental demands and conditions. Some examples the forms of mental disorders are inferior and underestimate a thing. This was experienced by the UNNES men's basketball team at the POM Rayon event. When the UNNES men's basketball team was against an unseeded team they are underestimated. And when they agains the superior team they are feel inferior. The purpose of this article is to provide solutions to mental disorders problems in athletes. The research methods used was a one group pre and post design experiment. The sample used was the UNNES men's basketball team. Conclusion, after being given meditation, the men's athlete of the UNNES basketball team changed be better.

Keywords—*mental disorders, meditation, underestimate.*

I. INTRODUCTION

Mental disorders are one of the causes of discordance due to the inability of someone who has to overcome the behavior. Mental disorders represent the totality of pathological mental expressions of social stimuli, combined with other secondary factors. Just as a feeling of pushing, shortness of breath, high fever, and pain in the stomach as a sign of the onset of physical ailments, mental disorders have early signs including: anxiety, conversation, bitter heart, envy, apathy, jealousy, envy, explosive, asocial, activate, and so on. Mental disorders are serious problems that must be resolved immediately. Because this problem can cause problems in the achievements and psychology of an athlete or coach.

In the men's basketball at "POM Rayon 1" event, men's basketball team Universitas Negeri Semarang (UNNES) against the Universitas Sultan Agung (UNISSULA). During the match there were mental disorders where the men's basketball team at Universitas Negeri Semarang (UNNES) was seen belittling the men's basketball team from the Universitas Sultan Agung (UNISSULA). Based on the results of the matches that have been undertaken, and based on the material of the players from both teams it is certain that the basketball team from Universitas Negeri Semarang (UNNES) is more favored. Universitas Negeri Semarang should be able to win with scores far adrift, but in reality the Universitas Negeri Semarang basketball team is only able to excel 9 points over the Universitas Sultan Agung basketball team with a final score of 47-38.

In another match the men's basketball team Universitas Negeri Semarang (UNNES) was met with the men's basketball team from Universitas Kristen Satya Wacana (UKSW). Not much different from the previous match, the Universitas Negeri Semarang team experienced mental disorders. The men's basketball team at Universitas Negeri Semarang appeared to lack confidence during the match. This can be seen with the difference in the players' material from the two teams, where the Universitas Kristen Satya Wacana men's basketball team is more favored. The men's basketball team at Universitas Negeri Semarang suffered a landslide defeat with a final score of 35 - 55.

Based on these results it can be seen that the men's basketball team of Universitas Negeri Semarang (UNNES) experienced mental disorders during the game in the basketball championship at "POM Rayon 1" event 2019. Mental disorders experienced were an attitude of lack of confidence and underestimation of its opponents. Mental disorders can be treated by giving meditation practice. This meditation practice is expected to reduce the athlete's pressure, so that when competing can give the best performance.

Meditation as part of spiritual life has been known for decades ago. In what century did meditation for the first time take place, no one ever knew. Meditation is an exercise in concentration on something to achieve a higher awareness so that individuals can feel more positive which ultimately improves the body's condition, provides psychological comfort and decreases stress levels in the individual. Meditation is often interpreted incorrectly, is considered the same as daydreaming so that meditation is considered to be a waste of time and no use. In fact meditation is not the same as daydreaming. Meditation is precisely a conscious act because the person who meditates knows and understands what he is doing.

Meditation is carried out in three stages: concentration, contemplation and samadhi. When people do meditation, the frequency of vibrations of brain waves drops, breathing slows down, and oxygen used becomes frugal. Brain waves will reach the subconscious and brain waves will be horizontal and in an alpha state, this condition is called a homeostatic or balanced state so that the brain will secrete endorphin and self-healing occurs.

Meditation exercises can duplicate physiological changes. Meditation has been used successfully in the treatment and

prevention of high blood pressure (hypertension), heart disease, and stroke. It has also been proven that meditation can reduce obsessive thoughts, anxiety, depression and hostility.

One study of an experiment conducted by Susana, Hendarsih, and Majid (2003), which had discussed evaluation techniques as stress-reducing nursing care for the development of cardiovascular health functions, with 59 respondents. The intervention group that carried out the discussion once a week for four weeks increased systolic blood pressure 4 mmHg. The study states that meditation techniques can be for the prevention of cardiovascular disease (hypertension) because it can reduce systolic pressure.

It can be concluded that after being given meditation training, men's basketball athletes at Universitas Negeri Semarang (UNNES) who competed in "POM Rayon 1 Central Java 2019" underwent significant changes. Where initially they often underestimate the opposing team that is below them, after being given a meditation exercise the underestimation is reduced. And the inferiority attitude when meeting with opponents who are above them is reduced, after being given meditation practice. Until finally their performance can be optimal.

II. MATERIALS AND METHODS

The method used is to use the One Group Pretest and Posttest design approach. Initially there will be follow in a competition (Pretest) against a superior team, then immediately given a meditation exercise for a predetermined time, after that will be follow others competition (Posttest), to determine the effect of meditation practice on athlete performance.

The subjects in this study were all men's basketball athletes from Universitas Negeri Semarang (UNNES) who competed in "POM Rayon 1 Central Java 2019". Data collection techniques used were using purposive sampling technique. Analysis of the data used using the T test of statistics.

III. RESULTS AND DISCUSSIONS

The men's basketball team at Universitas Negeri Semarang (UNNES) consists of various characters for each athlete. One of the attitudes that appear in a match is to underestimate opponents who are considered easier, and also feel inferior

towards superior opponents. Then the authors provide meditation training on the men's basketball team

of the Universitas Negeri Semarang (UNNES) to measure the changes that occur from before being given a meditation practice until after being given a meditation exercise. Meditation exercises are considered appropriate given to athletes who experience mental disorders.

After doing the meditation exercise, there was a significant change in the performance of men's basketball athletes at Universitas Negeri Semarang where initially they looked down on opponents who were judged to be easier to be more alert. And feel inferior when meeting with a much better opponent then turns into motivated and makes the performance more optimal.

IV. CONCLUSIONS AND SUGGESTIONS

A. Conclusions

After doing the meditation exercise, there was a significant change in the performance of men's basketball athletes at Universitas Negeri Semarang where initially they looked down on opponents who were judged to be easier to be more alert. And feel inferior when meeting with a much better opponent then turns into motivated and makes the performance more optimal.

B. Suggestions

For athletes, this article can be used as a reference as a form of mental training. For the coach, this article can be used on training programs for athletes. For the researchers, this article can be used as a reference and then used as a research

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Development Table Tennis Management Information System of PTMSI Jawa Timur

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Abstract— *The role of science and technology will be the right solution to help management system in being more effective and efficient. Those are by creating a system model that facilitates the performance of its members in planning, analyzing and evaluating the implemented management system. PTMSI Jawa Timur experienced declining performance lately. The involvement of information technology hopefully will ease the managerial process of all the activities related to the responsibility of PTMSI Jawa Timur. The purposes of this research are: 1) to produce Table Tennis Management Information Systems (SIMTM-Sistem Informasi Manajemen Tenis Meja) that is appropriate for PTMSI Jawa Timur; 2) to examine the effectiveness of SIMTM product on PTMSI Jawa Timur; 3) to know the acceptance rate of SIMTM product on PTMSI Jawa Timur. So, it is expected that the SIMTM product plays a significant role in decision-making process of daily operations up to long-term planning. The method used are Borg and Gall development model. However, this research only used three steps, consisting of: 1) research and information collection; 2) planning; and 3) development. The process of data collection was done by field observation, questionnaire, and data collection from documents and archives. The results of this study are: 1) the relevance of the content display, weak (0.6%), sufficient (21%), strong (54.5%), and very strong (23.9%); 2) the accuracy of the content information, very weak (2.6%), weak (6.2%), sufficient (24.7%), strong (33.1%), and very strong (33.4%); 3) the relevance of the time information, weak (6.2%), sufficient (24.7%), strong (33.1%), and very strong (33.4%). The conclusions based on the results showed that the relevance of content display was strong, the accuracy of content and the relevance of time information was very strong. The implication of this research is to facilitate the performance and improve the managerial process in determining policies at every level of PTM/ Club and PTMSI regency/city level committee through SIMTM. The suggestion is that this research hopefully will be used as a reference for managing all PTMSI activities using the web-based SIMTM software in PTMSI Jawa Timur.*

Keywords— *Development, Software, Management Information System, PTMSI Jawa Timur, Table Tennis*

I. INTRODUCTION

The current information management system is inseparable from the management of a modern organization [1]. In Japan and other developed countries, the use of information systems is highly optimized. We can take an example from the

Japanese sites such as <http://www.jtta.or.jp/> and <http://www.ittf.com/>. All of the supporting variables of achievement in those sites has been arranged and well documented in terms of administration, competition, agenda, schedules, added with the constantly developed and updated sport science, making their achievements hard to snatch by other countries that don't have the information system flow such as Indonesia, this is the proof that without the existence of a good information and management system in an organization, the optimum achievement is very difficult to achieve, thus, a good modern organization will maximize the use of management information systems for planning, managing, and evaluating the organization [2].

Regarding the condition of table tennis sport branch in the country in general, and the PTMSI Jawa Timur, we can understand that the scientific touch in the organization is very low therefore it is necessary to reconstruct the management development model by utilizing a standard information system so that the work agenda can be organized, integrated and systematic. It is important for PB and all Provincial Committee of PTMSI to keep the coaching process for athletes' cadet, to relay their way to the better junior and senior level, one of the weakness of PB PTMSI is many athletes succeed as cadet but fail in senior level. Here are the results of a preliminary study conducted by researchers to 21 (twenty-one) members of PTMSI Jawa Timur.

TABLE I. The East Java Provincial Committee Members' Knowledge on Information System Condition

No	Question	Answer			
		None	Non-existent	Exist	In Process
1	The existence of an information system that manages the athlete's database, competition agenda and point system which is applied in PTMSI Jawa Timur	50%	50%	0%	0%
2	The athletes age theft rate at PTMSI Jawa Timur	Very High	High	Low	Very Low
		0%	75,0%	25,0 %	0%
3	The definite/scheduled match agenda and carried out by	None	Non-existent	Exist	In Process

	PTMSI Jawa Timur	50%	50%	0%	0%
4	The point system in every match/competition that has been held by PTMSI Jawa Timur	None	Non-existent	Exist	In Process
		50%	50%	0%	0%
5	The results of all competing categories and knowing the increase or decrease in ranking of athletes	Don't know at all	Don't know	Know	Really know
		50%	50%	0%	0%

The robustness of information systems and table tennis management will contribute to the appearance of athletes and their supporting teams [3], therefore a proper evaluation of management procedures need to be held so that the treatment given can be right on the target. By involving information technology that is currently developing, it is expected to facilitate analyzing, evaluating, and planning all the activities related to PTMSI Jawa Timur. The roles of science and technology will be one of the right solutions to help the management system in being more effective and efficient [4] by using the discriminant analysis technique in the field of statistics will be able to create a system model that will facilitate the members in analyzing, evaluating and planning the management system applied. To assist with operating the system, a web-based Table Tennis Management Information System (SIMTM) software is needed. SIMTM is a web-based information system that manages the data and information about the developments of Table Tennis in PTMSI Jawa Timur. A computer that is connected to internet is needed to operate the SIMTM. One of the computer programs that can be use to help applying the web-based information system model are HTML (Hypertext Markup Language), PHP, javaScript, and MySQL database [5].

II. MATERIALS AND METHODS

This study is a research on developing the web based information system management for PTMSI Jawa Timur. The development of this management information system in this study refers to the model expansion that is developed by Borg and Gall, that is procedural model. Procedural model is a model with descriptive traits that represent the flow or steps needed to be followed in order to create certain product [6].

The expansion procedure according to Borg and Gall in Putra [6] consists of the steps as follows: 1) research and data collection; 2) planning; 3) product draft development; 4) preliminary field testing; 5) main product revision; 6) main field testing; 7) operational product revision; 8) operational field testing; 9) final product revision; 10) dissemination and implementation.

The procedure stated above is certainly not the steps in development research that is absolutely needed to be followed. Each developer definitely can choose and determine the best procedures that fit themselves based on the particular condition that they are facing in the development process [7].

According to that fundamental, the development model applied in this study will be modified and simplified so that the steps used are in the spectrum of: research and information collecting, product planning, and product development. The developed software is a web-based SIMTM with basic computer.

III. RESULT AND DISCUSSION

After the expert and limited testing is done through several revisions, it is known that there are 8 (eight) main contents to be made available (see TABLE II). Therefore, the final product development for SIMTM software is declared as complete and ready to deploy.

TABLE II. Final Product Result of Table Tennis Management Information System (SIMTM)

No	Visual Display of Contents	Description
1	HOME	This menu displays the outlines of the website contents that have been presented by the Central Administrator which includes: 1) List of Committee; 2) Latest Agenda; 3) Sponsors; 4) Latest News; 5) Latest Articles; 6) Available Toolbar (see picture 1).
2	PROFILE	This menu shows information about the details and identity of: 1) Branch Committee Profile; 2) Athletes Profile; 3) Referees Profile; 4) Coaches Profile (see picture 2).
3	AGENDA	This menu shows Tournament Schedule and Tournament Details: 1) Tournament List; 2) Classifications (see picture 3).
4	RANKING	This menu contains information of the ranks acquired by the athletes after they took part in tournaments and get the title or points. There are filter to see and classify the rankings based on each year and class data. (see picture 4).
5	ARTICLE	This menu contains information of the articles data that has been posted or saved in the software SIMTM database. On the left side of the page, there is an Archive menu that serves to provide article information based on annual and monthly data archives.
6	NEWS	This menu is a website page that contains information of news that has been posted or saved in the software SIMTM database. On the left side of the page, there is an Archive menu that serves to provide news information based on annual and monthly data archives.
7	INTERACTIVE	This menu is serves to facilitate users to send messages or suggestion after visiting the website. From this guest book, admin can find out who are the visitors and to know the users' response to the website. This menu contains: 1) Guest Book; 2) Critics; 3) Suggestions; 4) Discussion Forum (see picture 5).
8	LOGIN	This menu is the page that functions as the entrance

to administration page (login) in accordance with each user's respective access rights (Central Admin or Regency Admin – Super User).



Fig. 1. Interface of 'HOME' Page



Fig. 2. Interface of 'PROFILE' Page When The Mouse Hover on 'PROFILE' Toolbar



Fig. 3. Interface of 'AGENDA' Page When The Mouse Hover on 'AGENDA' Toolbar

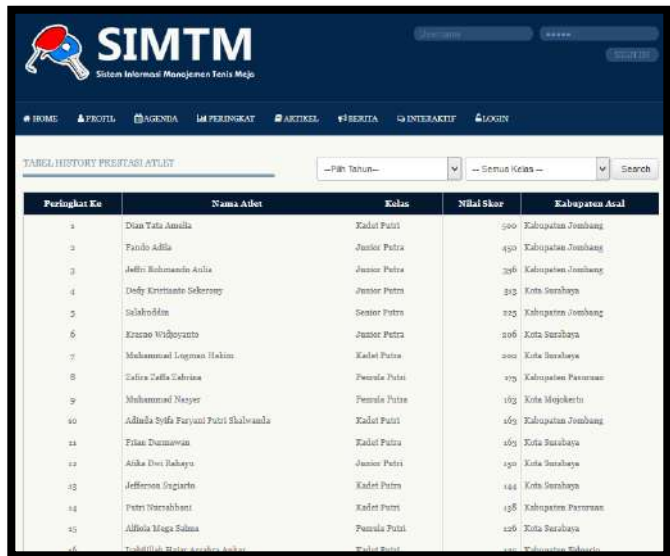


Fig. 4. Interface of 'RANKING' Page When Mouse Hover on The 'RANKING' Toolbar

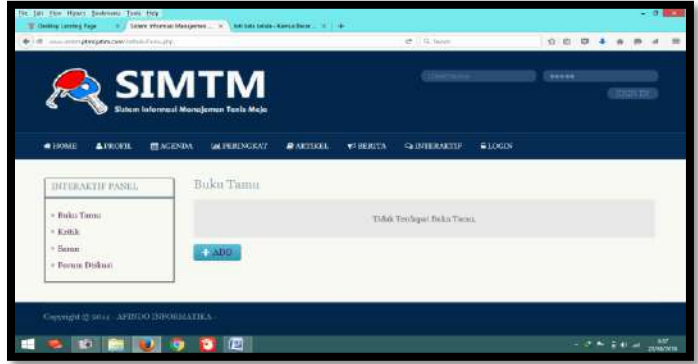


Fig. 5. Interface of 'INTERACTIVE' Page When Mouse Hover on The 'INTERACTIVE' Toolbar

The stage of research and data collection covers initial analysis, character analysis, and work program analysis. At the initial analysis, the researchers found that the low quality of Management in the PTMSI Jawa Timur was due to the lack of scientific touch in structuring a decent, measurable and systematic information system management in the organization, which led to the declining work program productivity, lack of innovation development and causing instability to the athletes of PTMSI Jawa Timur.

The characteristic analysis aims to examine the characters of Regency/City Committee as members of PTMSI Jawa Timur, which covers: 1) stewardship and management; 2) coaching and training programs; 3) facilities and infrastructure; and 4) athletes and coaches. Stewardship and management are built on the efforts of several parties who have competence, attention, and sense of responsibility towards the advancement of table tennis in the region. Formation of the new management is done when the term of office ends after 5 (five) years. The new management will be formed through an open forum by involving the old committee, volunteers, activists and table tennis observer in the region. The source of fund is obtained from the Regency/City APBD which is channeled through the local KONI as the parent of all sports branch in East Java region.

The athlete coaching program is done by grouping the athletes based on their skill level and age. There are 5 class for the classification, they are: pre-beginner, beginner, cadet, junior, and senior [8]. The training program given to athletes covers all aspects of the exercise, including: physical training, technical training, tactics training, and mental training. The training given are written training and spontaneity, mostly done adjusted to the ability and condition of the athletes. Some obstacles would arise in the coaching process, for

example exhausted athletes, saturated, or lacking motivations. These can be overcome by giving the stimuli about match agenda that will be fulfilled, also by reviewing the points earned by the athlete, or it can also be done by giving the kind of exercise that works as refreshment, so that athletes can stay spirited and motivated.

The facilities and infrastructure are sufficient and proper to use to hold competitions at limited scale on some branch of PTMSI in regencies/cities across East Java. In the character analysis stage for athlete and coach, the process of finding the talents were assisted by the talent guide team by looking for talents and prestigious students at schools in regency/city area, and when there is a competition, athletes are obviously recruited based on some criteria, such as, the candidate must have won Regency/City level tournament at least once. As for deciding the coach, it is based on several criteria or qualifications standard that must be possessed, such as having a training certificate, and an influential person who is believed to be able to advance current achievement and develop the potentials. The result of this analysis are taken into consideration in making work program that are suited to the problems faced so that problems can be resolved immediately.

Work program analysis aims to identify, detail, and systematically compile the work program for both long term and short term. The short-term plans are: 1) data collection and compilation of database on athletes, coaches, referees; 2) organize and coordinate all events/tournaments based on athletes age group; 3) establish standard for point system in every level of event/tournament. Meanwhile, the long-term plans are: 1) evaluate the events/tournament system; 2) hold a coaching clinic for coaches, athletes, and referees along with the results; 3) arrange the uniform design with the standard models and sizes.

In product planning stage, there are choosing media/software format, initial product plan. The software used in this study are PHP, HTML, JavaScript and MySQL database. Assets are done by utilizing Adobe Photoshop and Adobe Illustrator. Whereas the format includes: program strategy design, coaching method approach. The strategy includes: regular match agenda and non-regular match agenda. Regular match are matches with the continuous competition system implied. Non-regular match are matches where the competition is a free system. The coaching method includes training athletes, coaches, and referees done by providing 'coaching clinic', regional athlete training centers, and continuously scheduled seminars. The achievement indicator for athletes are: the athletes' attendance in competition, results of achievements, the points obtained, and the ranking of athletes.

Initial product designs are: 1) organizing the PTMSI Jawa Timur data along with the active athletes and coaches. The data includes: profile of PTMSI Jawa Timur management, organization charts, athletes and coaches profile of PUSLATDA (regional training center) including age, achievements, and background; 2) compile data of the

organization/club members of PTMSI Jawa Timur along with the number of active athletes and coaches. The data includes: organization/club profile along with the organization structure, athlete and coach profile of age, achievements, and background; 3) compile agenda of activities such as match agenda, coaches and referee training agenda, report on match results, athletes ranking.

In the product development stage, there are several actions to be carried out, there are: experts validation and due diligence, initial product revisions, limited trials, final product revisions, and final product results. The expert validation test shows that the components of SIMTM overall are great and can proceed to trial, but there are some items to be revised. As for the limited trials about the context relevance of content displays, content information accuracy, and information relevance are all stated to be valid and reliable. Therefore, they can be used to measure SIMTM. The full results of the final product of SIMTM software can be access on the website <http://simtm.ptmsijatim.com/>.

IV. CONCLUSION

The right product for PTMSI Jawa Timur is the web-based product of SIMTM that contain the long-term and short-term work agenda that can give the concise and transparent information flow. The result of SIMTM product for PTMSI Jawa Timur is valid and reliable according to the experts and various field test that has been done.

Results of product development got the positive response from the experts and users, they are: 1) product content display relevance, which are relevant information display, complete and relevant athletes ID, relevant match report content, relevant visual SIMTM, compatible, server accessibility by administrator, the ease to download 'download' page; 2) accurate content information accuracy, which are: information on rank and points acquired by athlete, complete and accurate coaches and athletes data, accurate relevant event location, the time information of the PTMSI events are scheduled well, information on equipment and tools needed for table tennis are accurate, information on the needed transportation and accommodation are accurate, information on data processing according to the procedure is complete and accurate, the false data can be changed if there is a mistake in data input, registered data are well and easy, the generated information can be trusted; 3) the time information relevance, which are: the agenda for organizing coaching clinic for referees and coaches is good, the agenda for organizing matches is good, information generated when needed is accurate, system can generate quarterly, monthly, and yearly report when needed, the update for athlete ranking and points is punctual (maximum 3 days after competition), coach and referee licenses update is punctual (maximum 3 days after coaching clinic), update on sport science is punctual (maximum 3 days after coaching clinic), identity update for

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athletes, coaches, and referees are punctual (maximum 3 days after request to update).

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Sport Commitment, Demographic Factors and Sports Participation among Secondary School Students

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Abstract — The present study has been conducted to investigate the relationship between sport commitment, sport enjoyment, personal investments, social constraints, involvement opportunities, involvement alternatives and social support variables and sports participation among secondary school students. A 27-items scale adapted from the Sport Commitment Models by Scanlan et al. [1] and Casper et al. [2] was used to measure the sport commitment variables. Differences between mean values for demographic factors (i.e. gender and race) in the sports participation were also examined. A total of 105 students attending two public secondary schools in the Kuala Lumpur area, volunteered to participate in the study. Pearson correlation indicated significant relationship between sport commitment, sport enjoyment, personal investments, involvement opportunities, involvement alternatives variables and participation in sports. In terms of social constraints and social support factors, no significant association were found in the study. Independent-samples t-test shown no significant differences between mean values for school boys and girls in the sports participation. One-way ANOVA test indicated no statistically significant results among the race groups. The present study demonstrated that sport commitment, sport enjoyment, personal investments, involvement opportunities, involvement alternatives have decisive roles to play in the sports activity behavior of the secondary school students and these factors may foster the students' participation in the sports activity. Therefore, we may suggest that programs to promote sports participation among secondary school students are urgently needed, with consideration of the sport commitment, sport enjoyment, personal investments, involvement opportunities, and involvement alternatives factors.

Keywords — *Sport commitment, demographic factors, sports participation.*

I. INTRODUCTION

Lack of participation in sports and physical activity has long been recognized as among the alarming global problems which in need of serious attention and crusades. Many studies have been conducted investigating this global issue of low sports participation and physical activity [3-7]. This issue of

lack of sports participation and physical activity is also affecting the young adolescents' population [8-12].

Lack of sports participation and physical activity may lead to harmful effects and evading the advantages that adolescents can gain as sports participants. Researchers have shown that participation in sports can offer many benefits to its sports participants. For instance, there are studies shown that participation in sports can give advantages to adolescents and school students in terms of their psychological and social benefits [13], positive mental and physical conditions [14], lower levels of cigarette smoking and illegal drug use [15][16], experienced lower depression [17], and advantages in the academic and social functioning [18]. Although there are many studies shown on the positive outcomes of involving in sports still, there is low sports participation among the Malaysian adolescents' age and school students. Many local studies have found a low physical activity and sports participation among its adolescents and school students [19-21].

According to the former Malaysian Youth and Sports Minister, YB Khairy Jamaluddin, there is only about 40 per cent of Malaysians who are actively doing sports activities at least three times a week (News Straits Times online, September 2016). Given this, participation in sports has been revealed to be one of Malaysia's national agenda. Many policies such as Sport For All and One Student One Sport have been introduced to encourage its citizens, including adolescents and students, to participate in sports. Moreover, various sports programs have been conducted, aiming to increase the participation of its people in sports. Furthermore, the Malaysian school curriculum itself emphasize on sports by having the physical education subject, extracurricular activities, and schools sports competitions etc.

In spite of that still, exist phenomena of Malaysian adolescents and students who are inactive or low in sports participation and physical activity as reported in many studies[22-25]. Therefore, more efforts need to be done to increase participation in sports among the students. In the aim of increasing participation in sports among the students, we

need to consider the factors that could have influence students' participation in sports. In view of this, previous researches have shown the need and empirical evidence of considering the sport commitment [1,2,26,27] and demographic factors in understanding and explaining an individual's sporting behavior or participation in sports [28][29].

Considering the empirical evidence of the sport commitment and demographic factors in understanding and explaining ones participation in sports, the researchers should utilize the two factors (i.e. sport commitment and demographic factors) in examining the secondary school students' sporting behaviour (i.e. recreational sports participation). However, there is a lack of empirical and theoretical research done to investigate the sport commitment in understanding and explaining sporting behavior or recreational sports participation among secondary school students at school. It is conveyed that the sport commitment model has been widely used in the youth athletes samples and a small number of studies among adult samples [30][31]) indicating a lack of study conducted among school students. Given this may suggest that research in predicting recreational sports participation in relation to sport commitment among school students in the school-based context may not adequately address. Moreover, there are conflicting findings on the demographic factor (i.e. race and gender) in explaining one's participation in sports in the school context [32-35] which need more attention and further investigation.

This minimal empirical attention of sport commitment in being devoted to replicating such findings in the realm of school context and conflicting demographic results have brought to the limited data on the demographic and level of recreational sports participation among the secondary school students in the school context. Hence, this will lead to the difficulties of the ministry and relevant parties to organize a more effective and efficient sports programs or activities that could increase the recreational sports participation among its school students.

With regards to this, the present study will examine the sport commitment and demographic factors (i.e. gender and race) in studying recreational sports participation among Malaysian secondary school students. Hence, the present study is an attempt to investigate the relationship between sport commitment and recreational sports participation of secondary school students. Also, it is seeking to examine the differences between mean values for gender and race in the recreational sports participation among secondary school students.

II. MATERIALS AND RESULTS

Secondary school students attending two public secondary schools in the Kuala Lumpur area participated in the present study. The convenience sampling method was utilized and a total of 105 secondary school students volunteered to participate in the study. Initially, permission was sought from the University Ethics Committee, Ministry of Education, State Education Department and school principals to conduct the survey at the respective schools. After all the permission has

been obtained, the questionnaires were distributed to the volunteer male and female secondary school students. Administration of the questionnaires was done by the school representatives. The completed questionnaires were then collected by the researcher at agreed upon date and time.

A 27-items scale adapted from the Sport Commitment Models by Scanlan et al. [1] and Casper et al. [2] was used to measure the sport commitment variables. Self-reported items on gender and race were also examined in the present study. All the measures were translated into Bahasa Malaysia before being administered due to the Malay language is the national language in Malaysia. The method of back-to-back translation was used to translate the scales into the Malay language.

The studied variables were analyzed using descriptive and inferential statistics. The sample characteristics were reported using the frequencies. Independent-samples t-test was used to analyze the differences between mean values for school boys and girls in the sports participation. Differences between mean values for race in the sports participation were also examined using the One-way ANOVA test. In addition, Pearson product-moment correlation was utilized to examine the interrelationship among the proposed variables.

III. RESULTS AND DISCUSSION FINDINGS

A. Sample characteristics

In the present study, the respondents' age was ranged from 13, 14 and 16 years old with 33% aged 13, 33% aged 14, and 33% aged 16. The majority of the respondents were Malays (93.3%), followed by Indians (3.8%), Chinese (1.9%) and others (1%). Regarding the educational level, 33% were from form 1, 33% were from form 2 and 33 % were from form 4. In terms of gender, 60% of the respondents were male and 40% were female. The breakdown of the characteristics of the sample is reported in the following Table I.

TABLE I. SAMPLE CHARACTERISTICS (N= 105)

Variables	Categories	N	%
Gender	Male	63	60%
	Female	42	40%
Age	13	35	33.3%
	14	35	33.3%
	16	35	33.3%
Race	Malay	98	93.3%
	Indian	4	3.8%
	Chinese	2	1.9%
	Others	1	1.0%
Education Level	Form 1	35	33.3%
	Form 2	35	33.3%
	Form 3	35	33.3%

B. Intercorrelations among Study Variables

The intercorrelations of variables used in the analysis are presented in the following Table II.

TABLE II. INTERCORRELATIONS AMONG STUDY VARIABLES

Variables	1	2	3	4	5	6	7	8
1. Sport Commitment		.56**	.50**	.36**	.51**	.52**	.38**	.34**
2. Sport Enjoyment			.43**	.31**	.54**	.55**	.38**	.28**
3. Personal Investments				.45**	.45**	.55**	.41**	.28**
4. Social Constraints					.44**	.47**	.47**	.19
5. Involvement Opportunities						.48**	.51**	.20*
6. Involvement Alternatives							.47**	.25*
7. Social Support								.11
8. Recreational Sports Participation								1

N =105 ; *P<.05 ; **P<.01

In general, Table II above shows the intercorrelations among the studied variables indicating that the correlations among the predictor variables ranged from low to moderately high.

The correlations between sport commitment, sport enjoyment, personal investments, social constraints, involvement opportunities, involvement alternatives and social support variables and the outcome variable are investigated in the present study. As shown in Table II the findings indicate that correlation between sport commitment and recreational sports participation (i.e. total minutes per week) was $r = .34$. The results also showed that the correlation between sport enjoyment and recreational sports participation was $r = .28$. Personal investments was correlated with recreational sports participation (i.e. total minutes per week) ($r = .28$, $p < .01$). The correlation between involvement opportunities and recreational sports participation was $r = .20$ and correlation between involvement alternatives and recreational sports participation was $r = .25$. Therefore, these Pearson correlation results indicated that there is significant positive relationship between sport commitment, sport enjoyment, personal investments, involvement opportunities, involvement alternatives variables and participation in recreational sports among secondary school students in Malaysia. Hence, this showed that the higher the sport commitment, sport enjoyment, personal investments,

involvement opportunities, and involvement alternatives variables reported by the students, the higher their participation in recreational sports. On the other hand, there is no significant relationship found between social constraints and recreational sports participation (i.e. total minutes per week) ($r = .19$). In addition, no significant relationship was reported between social support and recreational sports participation ($r = .11$).

Hence, the research objectives of the study, which investigate that there is relationship between the sport commitment, sport enjoyment, personal investments, social constraints, involvement opportunities, involvement alternatives and social support variables and students' recreational sports participation, were supported by these findings.

C. Demographic Factors (i.e. Gender and Race): Mean Values for Gender and Race in the Recreational Sports Participation

In the present study differences between mean values for the demographic factors (i.e. gender and race) in the sports participation were also examined.

An independent-samples t-test was conducted to compare the recreational sports participation scores for males and females. The independent-samples t-test found no significant difference in recreational sports participation scores for males ($M = 188.29$, $SD = 161.59$) and females ($M = 140.41$, $SD = 138.69$); $t(103) = 1.57$, $p = .12$, two-tailed). This indicating that no significant differences between mean values for school boys and girls in the recreational sports participation.

Furthermore, One-way ANOVA was used to explore the impact of race on scores of recreational sports participation. The One-way ANOVA test shown no significant difference in recreational sports participation scores for the three race groups: $F(3, 101) = .40$, $p = .75$ indicating no statistically significant results among the race groups.

Hence, the aims of the present study, which investigate that there are significant differences between mean values for gender and race in the sports participation were not supported by these findings.

IV. DISCUSSION

The present study findings suggest that sport commitment, sport enjoyment, personal investments, and involvement opportunities variables are significantly and positively associated with students' recreational sports participation. The results of this study are consistent with the previous study by Jeon and Ridinger [27], who reported that commitment was associated with the respondents' participation frequency in windsurfing and purchase behavior. Also, Wang and Chu [26] found that sport enjoyment, personal investment, and involvement opportunities are important determining factors for participation retention among the older adult ballroom dancers.

Hence, based on the present study and previous studies' findings, it can be suggested that students who are highly

committed and dedicated with the recreational activities they are participating will increase their participation in the recreational sports. Thus, programs and interventions which consider the elements of cultivating this positive value of commitment and dedication towards recreational sports activities should be taken by the Malaysian educational administrators in its effort to encourage participation in recreational sports activities among its secondary school students.

The present study findings which are consistent with Wang and Chu [26] study showed that students who experience fun in the sports they are participating would increase their participation in recreational sports. This reflects us that element of fun should be taken into account in designing the recreational activities for the Malaysian school students. Massie and Shephard [36] stated that people engage in physical activity over a long period of time due to they have found something that offers them a sense of fun and happiness. Thus, the fun element needs to be given more attention to sustain one's interest in physical activity.

The present findings also indicate that considering of amount of investment that the students have invested in terms of time, effort and money may have increased their recreational sports participation. Students who have evaluated the costs that they have spent such as their time, energy, and expendable resources in performing the recreational activities, will tend to continue and increase their participation in the activities that they have invested. Hence, the number of investments may act as essential and triggering factors to maintain and increase participation in recreational sports activities among high school students in Malaysia. This is consistent with the assumptions underlying in many theories of action, leverage-salience theory and various cost-benefit perspectives in economics, in which actors will consider the cost benefits perceived which then will influence their decision to participate in certain actions [37].

Furthermore, the present study found that students who have valued the opportunities they experienced and gained from participating in recreational sports such as the chance to meet and be with their sports friends and anticipated good times with the coaches and sports they participated have increased their recreational sports participation. Hence, effective techniques and strategies that relevant parties may consider in increasing the recreational activities among the students would be to encourage students performing their recreational activities in group activities such as using small group and partner activities and establishing buddy systems rather than individual and isolation/alone activities. This positive social experience gained by participating in recreational activities can act as a means of meeting some of the social need of participants, which in turn will help to boost and increase their participation in the recreational activities. Passer [38] provide evidence that social experience, such as affiliation is a vital motive for the participation in youth sports.

The findings from this study also reported that involvement alternatives variables are significantly and positively associated with students' recreational sports participation. This may indicate to us that even though students may have involved themselves in other sports/non-sport activities, but these do not impede their recreational sports participation. As children age, they need to increase and acquired many skills from various activities to face the difficulties and challenging life situations. Also, by trying something different on alternate days or time, it will keep them from being bored with the same routine of recreational activities that they are currently participating. So by doing this, it will indirectly help them to keep their interest in recreational activities and increase their recreational sports participation.

The present study found that social constraints have no significant association with student's recreational sports participation. This is consistent with the study by Hoyle and Leff [39], which suggested that no evidence that parental pressure is an important influence on participation and performance of young tournament tennis players. However, a study by Anderson et al. [40] suggests that parental support and pressure are variables that may be central to understanding how to optimize children's extracurricular involvement. The results of the present study indicated that the students do not feel the pressure or obligation to participate. This may be explained and supported by the findings of the present research on the enjoyment they experienced with their recreational sports participation.

The present study suggests that social support has no significant association with the student's recreational sports participation. This result contradicts with the study by Loucaides and Tsangaridou [41] that found parents and friends may influence their children's physical activity behavior and time spent outside playing, but friends' influences may have a stronger impact on children's behaviors. Moreover, Kubayi et al. [42] in their study among adolescents in secondary schools found that sports participation among the students is likely to increase when they receive informational, tangible, emotional and appraisal support from their parents and peers. Also, Ullrich-French and Smith [43] in their study demonstrated that combinations of parental and peer relationships might predict and provide an understanding of continued youth sport participation. However, a study by Wu and Pender [44] demonstrated that parental influences did not have direct effects on physical activity among Taiwanese adolescents. Significant others, such as students' parents'/ families' work commitments and hectic schedules may contribute to this situation of low parental/ family supports in the present study.

The findings from this study suggest that no significant differences between mean values for school boys and girls in recreational sports participation. These findings are not supported by Eime et al. [28] study that found that people who were female, older, married or had a disability were less likely to participate in sport. Also, a study by Gracia-Marco et al.

[33] found that Spanish male adolescents were shown to engage in more extra-curricular sports than females. However, the findings of Matteo [35], which no sex differences were found for levels of sport participation among the students is consistent with the present findings. The present study found no significant difference between mean values for school boys and girls in the recreational sports participation may due to both the males and females' students have high commitment and determination that in turn may boost and facilitate their participation in recreational sports.

The One-way ANOVA test indicated no statistically significant results among the race groups. The findings of the present study are not consistent with the study of Galloway et al.[45], which found significant differences in PA levels across sex and race, supporting the need for enhanced attention to influential factors on PA engagement. Furthermore, Armstrong et al. [29] reported that female adolescents and young adults were not meeting the recommended guidelines for physical activity, and substantial disparities by race and income levels were noted. Moreover, Edwards et al. [32] study found gender and race differences in school sports participation. The small number of non-malay students in the present study may have influenced the results obtained.

V. CONCLUSION

The outcome of the present study suggests the importance of sport commitment, sport enjoyment, personal investments, involvement opportunities, and involvement alternatives factors which can reinforce and influence student's recreational sports participation. Sport commitment, sport enjoyment, personal investments, involvement opportunities, involvement alternatives have decisive roles to play in the sports activity behavior of the secondary school students, and these factors may foster the students' participation in the sports activity. The present study may provide the demographic and baseline data on sport commitment factors for recreational sports participation among secondary schools students in an urban area. Future studies may consider to replicate the study in a rural area and make a comparison. Also, future researchers may utilize objective measure on sport commitment factors as self-reported data may comprise potential sources of bias (e.g. exaggeration).

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Effect of Exercise and Endurance Body against Menstrual Pain Response at SMK Students Ignatius Semarang

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Abstract—This study aims to determine: (1) the difference between the influence of gymnastics pilates and yoga on the response of painful menstruation (dysmenorrhea); (2) the difference between the effect of high endurance and low immune response against painful menstruation (dysmenorrhea); (3) the interaction between exercise and endurance to the response of painful menstruation. This study used an experimental method in a 2x2 factorial design. The sampling technique sampling techniques purposive as many as 20 people from a total population of 27 students of class X. The data analysis technique used ANOVA test two lanes with SPSS 20.0 and significance level of 5%, followed by Tukey test. Results of data analysis obtained one answer hypothesis that there is a difference between the effects of pilates and yoga exercises against menstrual pain response with the information value of $F > F_{table}$ or $74.462 > 4.20$ and a significance value $0.000 < 0.05$. Hypothesis 2 that there is a difference of influence between students who have high endurance and low against menstrual pain response with the description of $F > F_{table}$ or $138.462 > 4.20$ and a significance value $0.000 < 0.05$. Hypothesis 3 that there is interaction between gymnastics and endurance against menstrual pain response with the description of $F > F_{table}$ or $5.538 > 4.20$ and a significance value of $0.032 < 0.05$. Tukey test for comparison between variable and obtained only two that do not have a difference in the gymnastics group pilates and endurance levels high with yoga exercises and endurance levels high with a description q_{hitung} (1,520) $< q_{tabel}$ (2,27), and for gymnastics yoga on a high endurance with pilates exercises on low immunity with information q_{hitung} (0,760) $< q_{tabel}$ (2,27). The conclusions of this research are: (1) there is a difference between the effects of pilates and yoga exercises on response to painful menstruation (dysmenorrhea), gymnastics pilates give better effect; (2) there is

a difference between the effects of endurance of high and low immune response against pain (dysmenorrhea), and students who have a high durability is better; (3) There is no interaction between gymnastics and endurance to the response of painful menstruation (dysmenorrhea). Suggested gymnastics pilates and yoga can be applied to reduce menstrual pain response, this is because of both the exercisers had a good change to the conditions of the student menstrual pain

Keywords— *endurance, menstrual pain respon (dysmenorrheal) and exercise*

I. INTRODUCTION

Growth and development of puberty, experienced by every teenager. Puberty is the beginning of sexual maturation, which is a period in which a child experiences physical, hormonal, and sexual changes and is able to carry out the process of reproduction. Puberty in adolescence generally occurs at the age of 9-15 years marked by menstruation. Menstruation is part of a regular process that prepares a woman's body every month for pregnancy, which is controlled by the interaction of hormones secreted by the hypothalamus, glands under the forebrain, and ovaries. In general, women experience physical discomfort for several days before the menstrual period comes. Some women must have experienced pain during menstruation in the form of pain. Pain during menstruation in medical terms is called Dysmenorrhea.

According to Yatim, "Dysmenorrhea is pain during menstruation in the pelvic region due to increased

prostaglandin hormone substances. Often begins after experiencing the first menstruation (menarche)". The cause of pain comes from the uterine muscles, like all uterine muscles can contract and relax. When menstruation is stronger contractions. Contractions that occur due to a substance called prostaglandin. Prostaglandins are made by the inner lining of the uterus. Before menstruation occurs this substance increases and once menstruation occurs, prostaglandin levels decrease. This dysmenorrhea occurs between the ages of 15-25 years and then disappears in the late age of the early 30s. The pain usually occurs a few hours before the menstrual period and can continue for up to 48-72 hours. Pain is reduced after menstruation. Pain during menstruation causes discomfort in daily physical activity. The number of menstrual pain events in the world is very large, on average more than 50% of women in each country experience menstrual pain. Research in the United States, the number of menstrual pain is 30 –70% of women of reproductive age, and 60–70% of occurrences in students who often do not attend school and do not attend school sports subjects. Research in Sweden found about 72%, while Indonesia estimated that 55% of women of childbearing age who experience pain during menstruation the incidence (prevalence) of pain. Other abnormalities occur in 60-70% of women in Indonesia with 15% of them complaining that their activities become limited due to dysmenorrhea [1]. About 70-90% of cases of menstrual pain occur at the age of teenagers and adolescents who experience menstrual pain will be affected by academic, social and sports activities. According to Yatim, the incidence of menstrual pain in the world is very large, on average more than 50% of adolescents in each country experience it.

Menstrual pain can be divided into 2 namely primary menstrual pain and secondary menstrual pain. Primary menstrual pain is defined as recurrent cramping pain that occurs during menstruation without any pathological abnormalities in the pelvis. Secondary menstrual pain is defined as menstrual pain that occurs due to gynecological disorders such as endometriosis. The incidence of primary menstrual pain in Indonesia is around 54.89%, while the rest are sufferers with secondary types. The United States of America is estimated that almost 90% of adolescents experience menstrual pain 10-15% of them experience severe menstrual pain, which causes them to be unable to do any activities and this will reduce the quality of life in each individual.

At the beginning of menstruation some women endurance there is a decrease, because at the beginning of menstruation the volume of blood that comes out quite a lot and there is a decrease in energy levels. Decreased immune system can be influenced by a decrease in the body's immune system. The body's immune system can be measured in the blood by checking CD4 cells by using the Alere Pima CD4 tool. The examination is carried out in a laboratory. CD4 cells are a marker on the surface of human white blood cells, especially lymphocyte cells. CD4 cells in people with a decreased immune system become very important, because the reduced value of CD4 cells in the human body shows a reduction in

white blood cells or lymphocytes that should play a role in fighting infections that enter the human body. In people with a good immune system, the value of normal CD4 cell counts is somewhere between 500 and 1500 cells / mm³, whereas in people with impaired immune systems (for example in people infected with HIV) the value of CD4 cells will progressively decrease (even in some cases up to zero).

The function of CD4 cells to fight various infections, around us a lot of infections that circulate, such as being in the air, food or drinks, but we do not always get sick, because CD4 cells can still function properly to fight this infection. If CD4 cells are reduced, pathogenic microorganisms around us can easily enter our bodies and cause disease in the human body.

A study in Australia found that women not only become sluggish in the early weeks when menstruation starts but also burn less fat. At the beginning of the menstrual cycle estrogen and progesterone will be low so as to make energy levels and fat metabolism decrease. Menstruation events for some female students are often regarded as something that inhibits physical activity and physiological aspects, where the general physical condition and tone (muscle tension) which marks the level fitness of body organs and joints, can affect the enthusiasm and intensity of students in following the lesson. The condition of weak body organs, especially if often accompanied by dizziness in the head and abdominal pain during menstruation, for example, can reduce the quality of the realm of creativity (cognitive) so that the material learned is also lacking or no trace and pain in the abdomen that is often experienced during menstruation some female students experience unstable emotions. According to Munandar "in adolescence there is a distinctive emotional tension so that this period is called a period of storm and typhoon (strom and stress) heightened emotionality, a period that describes the emotional state in adolescents that are erratic, unstable, and explosive explosion, faced with the search for knowledge about himself, what and where and how about him ". Complaints like this that often occur just before menstruation. One example is often female students who do not attend sports lessons during menstruation and reduced concentration when attending lessons, due to a combination of factors that influence psychological, social, and biological that makes it easy emotions and experiencing symptoms that make mood disturbed. One way to deal with the symptoms that occur during menstruation is to exercise. Sport is able to increase the production of macrophages, which are cells that defend the body from bacterial attack and encourage physiological changes in the body's immune. When exercising, the cells of the body move throughout the body at speeds that exceed the average so that they are better prepared to fight viruses and bacteria. Although after exercise the body's immune system can return to normal within a few hours, exercise is believed to make changes that are relatively more durable.

Based on preliminary observations made by researchers by distributing demographic data questionnaires including name, age, menstrual cycle, first menstrual date, many pads used, symptoms experienced and pain intensity scale wong-baker

faces pain rating scale, to students at SMK Ignatius Semarang , that normal 3 people (11.11%), danger 2 people (44.44%), absent / sick 1 person (3.70%), no longer attend 1 person (3.70%), and have problems 20 people (74.07%). Symptoms experienced such as high emotions, headaches, nausea, weakness, vomiting and fainting. At the time of menstruation students who experience menstruation are reluctant to attend Penjasorkes lessons. This is reinforced by the statement of the sports teacher at SMK Ignatius Semarang, that some students who experience Menstruation tends to be unable to attend Physical Education lessons and based on observations from Physical Education teachers, students look pale during menstruation.

Light exercise exercises such as walking, running, pilates, aerobics and yoga are highly recommended to reduce menstrual pain. Exercise exercises that can be used to reduce menstrual pain that is easy and practical, namely gymnastics. Six that are easy to do and easy to follow, namely pilates and yoga exercises. Six pilates and yoga exercises are one of the relaxation techniques that can be used to reduce pain because when doing gymnastics, brain and spinal cord structure will produce endorphins, hormones that function as natural sedatives and cause feelings.

Pilates Gymnastics is a sport method developed by Joseph Hubert Pilates who came from Germany in the early 20th century. Pilate exercises have improved symptoms related to primary dysmenorrhea. According to Joseph Pilates, the creator of 34 basic gymnastic movements since 1920, the advantage of Pilates is a sport that combines flexibility, strength, breathing and relaxation. The main principles in it, include: precision movement control in doing movements, isolation of the muscles being trained and routines, using a series of controlled movements and breathing, pilates exercises designed to strengthen the inner postural muscles and Pilates exercises build a kind of " corset muscles "around the torso that can protect the back from possible injury, aches, and pain during menstruation. Light movements in Pilates exercises are designed as physical exercises that refresh while at the same time forming body posture and improving blood circulation, respiratory system, and lymph system. Pilates exercises are also beneficial for making the body tighter and ideal, Pilates exercises also provide benefits to maintain the balance of the abdominal muscles and also increase energy so that oxygen supply increases and gives effect to the body's energy.

Yoga gymnastics is a sport that unites the mind, body, and soul through a series of exercises, stretching, meditation techniques, or breathing exercises. Yoga exercises are useful for driving out bad days, because during menstruation a person's mood changes, such as easy emotions or anger. Relaxation techniques yoga exercises can stimulate the body to release endogenous opioids, endorphins and encephalins (compounds that function to inhibit pain), so yoga is useful when menstruating. Menstrual cycles are related to the chain of hormone interactions that occur in women during menstruation each month, a series of the incident allows the egg.

During menstruation some women's immune systems are decreased and some are not, because it is caused because during menstruation some women decay blood in the lining of the uterine lining of the body caused by reduced levels of the hormones estrogen and progesterone. There are two sports that can overcome menstrual pain, namely Pilates and yoga exercises. Is there an influence of Pilates exercises, yoga exercises and endurance to the response of menstrual pain and which is more effective between Pilates and yoga exercises to reduce menstrual pain. Based on the description above, researchers are interested in conducting a study entitled "The Effect of Gymnastics Models, and Body Immunity Against the Response of haid pain (Dysmenorrhea) to Vocational School Ignatius Semarang " often occurs in the productive age of beginners from the age of 14-16 years. Menstrual pain occurs due to ovarian walls that are not fertilized so that there is no smooth decay of blood from the uterus so menstrual pain occurs. the results of the survey occurred a lot of students during menstruation experience menstrual pain, so that it interferes with the learning process at school. especially in ignatius students in Semarang there are many students who experience menstrual pain.

II. MATERIALS AND METHODS

This study used an experimental method in a 2x2 factorial design. The sampling technique was by using a sampling technique and obtained a sample of 20 people from a total population of 27 people. Data analysis technique used two-way Anova test with SPSS 20.0 program and a significance level of 5%, followed by Tukey test.

TABEL I. RESEARCH DESIGN

Body endurance (B)	Gymnastics	
	Pilates (A ₁)	Yoga (A ₂)
High (B ₁)	A ₁ B ₁	A ₂ B ₁
Low (B ₂)	A ₁ B ₂	A ₂ B ₂

Researchers conducted research on students who according to the inclusion criteria obtained a sample of 20 people. The initial stage in this study is to distribute a questionnaire to the sample, but the researcher first tells the sample how to calculate the menstrual period and the menstrual cycle so that the sample knows and can fill in the instrument / questionnaire to be given properly and correctly. After the learning session how to find out the menstrual cycle and understand when they will menstruate the following month, the sample is given the task to mark their menstrual cycle, which then they fill in the questionnaire pain response as initial data stages to be able to determine the sample to be examined and the pre test data for research samples .

III. RESULTS AND DISCUSSION

The research process carried out produces comparative data between pre-test and post-test as a form of data to obtain

answers to the research hypothesis. The data can be seen in the following table:

TABEL II. DATA PRE-TEST DAN POST-TEST
 BODY FAT MEASUREMENT

Gymnastics	Body endurance	Average value		
		Pre-Test	Post-Test	Change
Pilates	High	10,8	3,2	7,6
	Low	12,8	7,6	5,2
Yoga	High	9,6	3,6	6
	Low	12,4	10	2,4

The description of the table above is obtained by pre-test and post-test values as a whole based on high and low endurance levels which are then obtained by comparison values as a form of value that will determine the results of the pilates exercise that the sample applies to the results of menstrual pain reduction.

Samples with pilates training at a high endurance level obtained an average pre-test 10.8 and post-test 3.2 had a change in mean value of 7.6 and at a low endurance level obtained an average value pre-test 12.8 and post-test 7.6 have changes in the average value of 5.2. Whereas in yoga practice samples at a high endurance level obtained an average pre-test value of 9.6 and post-test 3.6 had a change in the average value of 6 and at a low endurance level obtained an average value of pre -test 12.4 and post-test 10 have a change in value an average of 2.4. The data is data obtained as a value which will then provide information on the research hypothesis. In an effort to provide accurate and correct information, the entire process of data acquisition will be analyzed as a form of validity of the data obtained.

Data were then tested for normality using Kolmogorov Smirnov at a significant level of 5% ($\alpha = 0.05$) and the provision that the data were normally distributed if the significance value > 0.05 . In this case the researchers used the SPSS 20.0 program to conduct the Kolmogorov Smirnov test and it was found that the significance value of each data was for the pre-test 0.695 and for the post-test data of 0.960 it was stated to be greater than 0.05 then the data was declared to be normally distributed. Then the data were tested for homogeneity with the Levene test (SPSS 20.0) and the variance test (Ms. Excel 2007). Obtained that a significance value of $0.828 > 0.05$ which means that the data variance between groups is not significantly different or homogeneous.

Hypothesis testing is done by analysis of variance (anava) two paths through the SPSS 20.0 program and data obtained:

TABEL III. ANAVA TWO PATH SUMMARY

Dependent Variable: Lemak Tubuh					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	71,000 ^a	3	23,667	72,821	,000

Intercept	561,800	1	561,800	1728,615	,000
A	24,200	1	24,200	74,462	,000
B	45,000	1	45,000	138,462	,002
A * B	1,800	1	1,800	5,538	,040
Error	5,200	16	,325		
Total	638,000	20			
Corrected Total	76,200	19			

a. R Squared = ,932 (Adjusted R Squared = ,919)

The results of data analysis obtained answers to hypothesis 1 which states that there is a difference in the effect between pilates and yoga exercises on menstrual pain reduction with information on the calculated F value $> F$ table or $74.462 > 4.20$ and a significance value of $0.000 < 0.05$. Hypothesis 2, there are differences in the influence of high endurance and low endurance against menstrual pain with information F count $> F$ table or $138,462 > 4.20$ and a significance value of $0,000 < 0.05$. Hypothesis 3, there is an interaction between the types of exercise and endurance against the reduction in menstrual pain with information F count $> F$ table or $74.462 > 4.20$ and a significance value of $0.000 < 0.05$.

Then the data is calculated by Tukey test to see the comparison of differences in variation variables, following the results of calculations with Tukey test:

TABEL IV. HASIL UJI TUKEY

Compared Group	Q_{hit}	Q_{tabel}	Information
A1B1 $>>$ A1B2	2,281	2,27	Different
A2B1 $>>$ A2B2	3,421	2,27	Berbeda
A1B1 $>>$ A2B1	1,520	2,27	No different
A1B2 $>>$ A2B2	2,661	2,27	Different
A1B1 $>>$ A2B2	4,941	2,27	Different
A2B1 $>>$ A1B2	0,760	2,27	No Defferent

1. Hypothesis 1

There is a difference in the effect between Pilates and yoga exercises on decreasing body fat. Provision of pilates exercises with yoga turned out to have a different effect on decreasing menstrual pain. This difference is shown in the Anava calculation results obtained $F_{count} = 74.462$ and $F_{table} = 4.20$, this means $F_{count} > F_{table}$. The results of Anava calculations and different decreases prove that the reduction in menstrual pain using pilates exercises is better than those using yoga. This happens because each exercise has different techniques and characteristics.

2. Hypothesis 2

There is a difference between the group of high endurance and low endurance against menstrual pain. This difference is shown in the Anava results obtained because $F_{count} = 138.462$ and $F_{table} = 4.20$ this means $F_{count} > F_{table}$. The result of decreasing menstrual pain in the group that has high endurance is better than the group that has low endurance, because

someone with high endurance will have the availability of endurance to move in the process of menstrual pain reduction.

3. Hypothesis 3

It is known that from each variable can provide a different effect on the reduction in menstrual pain, or in other words that the proposed research hypothesis is verified. This is shown from the Anava results obtained $F_{\text{count}} = 5.538$ and $F_{\text{table}} = 4.20$, this means $F_{\text{count}} > F_{\text{table}}$.

4. Tukey Test

Groups that have differences are, groups A1B1 with A1B2, A2B1 with A2B2, and A1B2 with A2B2. The difference is known from the q_{count} which is greater than the q_{table} , where q_{count} for the A1B1 group with A1B2 is $2.281 > q_{\text{table}} 2.27$, q_{bitung} A2B1 with A2B2 is $3.421 > q_{\text{table}} 2.27$, and q_{count} is A1B2 with A2B2 which is $2.661 > q_{\text{table}} 2.27$. While the groups that do not have differences, namely groups A1B1 with A2B2, A1B2 with A2B2, and A1B1 with A2B2. The difference is known from the q count score that is smaller than q table, where the q count for groups A1B1 with A2B2 is $1.520 < q_{\text{table}} 2.27$, A2B2 with A2B2 is $2.661 < q_{\text{table}} 2.27$.

IV. CONCLUSION

Based on the results of research and discussion about the application of exercise and endurance to the response to menstrual pain in students of Ignatius Vocational School in Semarang, the following conclusions can be drawn.

1. There is a difference in the effect between Pilates and yoga exercises on menstrual pain response (dysmenorrhea). Pilates exercises have a better effect than yoga exercises.
2. There is a difference in effect between high endurance and low endurance against menstrual pain responders (dysmenorrhea). Students who have high endurance are better than students who have low endurance.
3. There is an interaction between gymnastics and the body's resistance to menstrual pain response (dysmenorrhea).

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Media Models of Soccer Games for Early Childhood 6-8 Years

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ABSTRACT—The purpose of this research and development is to produce media models of soccer games for early childhood. In addition, this research and development is carried out to obtain in-depth information about: the development and application of media models of soccer games for early childhood and to know the effectiveness, efficiency and attractiveness of children towards the models made. This research and development uses Research Development Research methods & Development (R & D) from Borg and Gall. The subjects in this research and development were students of the Garuda Putra Football School with as many as 25 students. The instruments used in this research and development are questionnaires, while the stages in this research and development are, in stages: (1) needs analysis, (2) expert evaluation (initial product evaluation), (3) limited trials (group trials small), and (4) main trial (field testing). Test the effectiveness of the model using a questionnaire. The treatment provided is in the form of a media model of soccer games that have been developed to determine the motivation to learn soccer. From the initial tests carried out obtained the level of motivation for learning soccer for early childhood especially SSB students amounted to 2129, then after being given treatment in the form of a soccer game media model with a modified tool obtained soccer learning motivation level of 2596. Then the media game of soccer for early childhood effective to increase motivation to learn children's soccer. Based on the results of the development it can be concluded that: (1) With the media model, this soccer game is suitable for early childhood 6-8 years.

(2) With this developed media model of soccer games for early childhood, it can increase the motivation to learn soccer for early childhood 6-8 years.

Keywords—Football game media, Borg&Gall Method, Motivation to Learn , Early Childhood

I. INTRODUCTION

Sport is every activity carried out to train the human body so that the body feels healthier and stronger, both physically and spiritually. Sports can be in the form of games, matches, and peak achievements in the formation of people who have a complete and quality ideology.

Sports is the best way to deal with stress. Sports can divert the human mind from worry, such as walking can relieve various muscle tension in the body.

Indonesia is one country with many types of sports. Of the many sports in Indonesia, there are some that are really popular with the public. One of the popular sports of the community is soccer. Soccer is a popular sport that is very popular throughout the world from children to parents who are very idolized for this worldwide game. Football is one type of cheap sport that is very "populist" in this world. The game of soccer among the community has grown rapidly, supported by the presence of soccer games in various regions, both in rural and urban areas. Football games for elementary or early school children between children 6-8 years old are not too many. The activities carried out were about the way he began to recognize his body, the introduction of the ball

and the field, and the game. More soccer activities are done into the game or modify the tool so that they look happy when playing it.

Playing is a very important activity for children, such as the need for nutritious food and health for the growth of the body. Through playing too, children can practice physical abilities, processes of thinking, understanding and following rules, learning to socialize, working with other children, and can also be a place for recreation for them. Playing can not be separated from the daily lives of children. Everywhere, anytime and however the child will always try to play with the environment around him.

Playing soccer is a fun activity performed by every child, it can even be said that the child fills most of his time playing. Many benefits are obtained by playing soccer which include forming good posture including anatomy, physiology, health and physical abilities. The benefits for spirituality are mentality, personality and character will grow in the direction that is in accordance with the demands of the community that focuses on children's skills. This can be physical and motor skills, thinking skills and problem solving skills, and can also be emotional and social skills.

Many people are of the view that soccer is just a game to lead and put the ball into the goal. Apparently, this view is wrong, because there are many things outside of football techniques that provide a myriad of benefits to children. However in order to be able to play good football you need guidance and guidance on basic techniques and skills for playing soccer. At present the development of the game of soccer is very rapid, this is marked by the many football schools (SSB) that were established. To be able to play soccer properly and correctly the players need to master the basic techniques of soccer. To play football well, players are equipped with good basic techniques, players who have good basic techniques, these players tend to be able to play football well too.

There are so many conditions that the coach does not understand the child's growth process. The

trainer must be right in directing the child to channel his fun in playing. In this case soccer is a very appropriate sport to channel children's fun in playing because soccer is an easy-to-play game and a very simple game. The media that will be used is such as balls, cones, and modified goal so that children are interested in playing soccer. The variety of football media models that are not monotonous will make children better understand the purpose of playing soccer and able to develop their own abilities so that they have a sense of security, pleasure, joy and high motivation when learning soccer.

The model of soccer media in question is a modified football media model that will adjust to the characteristics of children aged 6-8 years so that with a model that adjusts it will be easily remembered and understood by children, and will increase the motivation of children to practice because of the pleasant form of training.

There are various problems, including the lack of soccer media that is suitable for ages 6-8 years. Invite children to play soccer so that they are happy and subconsciously children will move through the development of soccer media. Modifying the media of the right game tool will facilitate understanding and mastery of the material by the child.

Regarding the problem, researchers applied a media model of tools, such as colored balls and goalkeepers hung with media so that children were more enthusiastic to play soccer. The media development approach can be used as an alternative in inviting children to move and play soccer.

Based on the description of the background above, in this study the researcher will lead to "Media Models of Football Games for Early Childhood 6-8 Years" so that children can be motivated to carry out activities in learning soccer. It is hoped that this research can help early childhood exercise again, especially in soccer. With the hope of an insight into innovation in learning soccer through a media modification that produces and can also be motivated in every activity carried out.

II. METHODS

The approach in a study can be seen by the number of variables in the study. Besides that the number of research approach variables must also be adjusted to the number of subjects in a study that can be seen from the population and the sample used as the subject. In addition, an approach also depends on the objectives and limitations of the study in the form of time and research costs. Research and development aims to create new products or modify or improve existing products, the results of which can be used by many people.

Research and Development research and development aims to produce new products through the development process so that a product becomes more effective and efficient in the area it has determined. To be able to produce a particular product, it is used research that needs analysis that examines the effectiveness of the product.

According to Sugiyono, research and development is a research method used to produce certain products, and test the effectiveness of these products. All development research always strives to create new products and improve existing products.

This study seeks to model a football game for early childhood 6-8 years in the Bekasi Putra Garuda SSB. The product in the form of a soccer game media book model is expected to be useful in the wider community, which is beneficial for the development of basic motion, children are more motivated to learn soccer and reduce the boredom of Bekasi's Garuda Putra SSB. Which is more specific to media modification games and can also help referrals for trainers' teaching with playing methods especially for children aged 6-8 years at the Bekasi Putra Garuda SSB.

This research and development uses quantitative and qualitative approaches and uses the Research & Development (R & D) development model of Borg and Gall which consists of ten steps. The research begins with collecting data in the form of needs analysis. Where the needs analysis will describe the needs that are the problem of the research subject.

After knowing the necessity of what is needed by the subject of research the next step is to determine the product development plan. Products developed will

be evaluated first before testing to find out the weaknesses and disadvantages. In a field trial involving 15 trial subjects in children 6-8 years with their training time on Monday and Wednesday at the Bekasi Garuda Putra SSB.

After the initial trial the product is re-evaluated by revising and refining the results of the trial through observation. After the revised product was then tested again with a scale of 25 subjects greater for children 6-8 years with their training time on Tuesday and Thursday at the Bekasi Putra Garuda SSB.

The results of data collection are evaluated as a basis for mixing products. After the product is refined, the product is reported in a meeting in the journal.

So from the definition of experts above it can be concluded that development research is a type of research that is used to make new products or improve existing products according to the needs of the community, which is carried out systematically to solve problems and always try to obtain knowledge that has the right truth fact. This research uses the Research & Development (R & D) method to validate products in the form of developing media models of soccer games for early childhood 6-8 years.

Design in research and development is based on systematic data that comes from practice. Through systematic studies there are design, development and evaluation processes with the aim of forming an empirical basis for creating instructional and non-instructional products as well as new or improved tools and models. This is a way to test theory and for product validation, in addition to creating new procedures, techniques and tools based on certain analyzes.

The stages of this research are the procedures adopted in making a media model for soccer games for early childhood 6-8 years. The final result of this research is to provide knowledge to children because playing football is very exciting.

III. RESULT AND DISCUSSION

There are general objectives that will be revealed in the preliminary study, namely: The media

model of soccer games can be applied in learning soccer for children aged 6-8 years. The above general objectives then become the basis of the researchers conducting preliminary studies using in-depth interview instruments to soccer school coaches, as well as conducting surveys because the main objective is to make technical preparations by visiting the characteristics of the research subject and the place research will be conducted.

Analysis was carried out to find out how effective the media model of soccer games would be applied. The researcher conducted a preliminary research or needs analysis carried out on December 1, 2018, the researcher observed through direct observation of soccer school students and interviews with soccer school coaches about the media model of soccer games.

From the analysis of these needs, it can be seen that: (a) soccer school students, especially early childhood, desperately need modified football media, (b) soccer school coaches express the need for a soccer game media model that is attractive to SSB students when training session. From the explanation of the results of the initial research needs analysis above, it can be concluded that the importance of applying the media model of football.

A. Making Initial Products

After conducting the data collection stage and drafting the media model of soccer games. The next step is to do an expert test where the goal to be achieved is to get the feasibility or validity of the model made with a direct assessment from the expert.

The researcher presented 2 experts in evaluating the feasibility of soccer media where 1 person was an expert in the field of football and 1 was an expert in the field of play. Then the results of the soccer game media model for children aged 6-8 years

B. Evaluation of Experts

In this study involving experts in conducting the feasibility test of the model, expert judgment was carried out to get input into the design model of the soccer game media for early childhood 6-8 years. After validating, evaluating, and revising the model based on experts, the results obtained are as many as 10 valid game models.

- Data from game experts validation

The product design has been prepared by the researcher in the validation of the game expert, Abdul Gani S.Pd, M.Pd, who has a position as a lecturer at the Faculty of Sport Sciences, Jakarta State University. Validation was conducted in November 2018.

- Data on the results of validation of football experts

The product design has been prepared by researchers in soccer validation Aris Yuliantoro S.Pd who has a position as an Alumni at the Faculty of Sport Sciences, Jakarta State University and a soccer school coach. Validation is done in November 2018.

Based on data collected from each expert, consisting of 1 game expert and 1 soccer expert there are several product designs that need to be revised before a small group trial is conducted.

A. Product Revision

Based on data collected from each expert, there are several product designs that need to be revised before becoming the final model and tested in small groups and large group research. Product revisions are intended so that product designs are made more perfect.

Based on the results of a small group trial conducted by researchers that 10 media models carried out are feasible to use and can be tested to the next stage, namely large group trials.

B. Final Model

After being declared valid, the media model of the soccer game that is final is obtained, there are 10 games that can be applied, both in terms of tools, forms of play and rules of the game. The following are the results of a large trial carried out with the time they studied football on Tuesday and Thursday at SSB Garuda Putra. Bekasi City.

Tabel 4.4 Final Models

No.	Nama Model Media Permainan	Saran dan Masukan
1.	Bola Berbuntut	It Can Be Applied Because It Can Be Done
2.	Shoot the Ballons	It Can Be Applied Because It Can Be Done
3.	Botol Magic	It Can Be Applied Because It Can Be Done
4.	Hulahup Gol	It Can Be Applied Because It Can Be Done
5.	Kaleng Bowling	It Can Be Applied Because It Can Be Done
6.	Gawang Minimalis	It Can Be Applied Because It Can Be Done
7.	Balloon Matika	It Can Be Applied Because It Can Be Done
8.	Bola keranjang	It Can Be Applied Because It Can Be Done
9.	Passing terowongan	It Can Be Applied Because It Can Be Done
10.	Heading Ball	It Can Be Applied Because It Can Be Done

Based on the results of a large group study conducted by researchers that 10 media models of soccer games for early childhood 6-8 years are worthy of being used as material variations in the media model of soccer games that are applied to children aged 6-8 years on the Garuda Putra SSB.

IV. CONCLUSION

Based on the data obtained from the results of the study consisting of expert validation, small group trials, large group trials, and discussion of the results of the study, the researcher can draw the conclusion that the soccer game media model for early childhood 6-8

years is feasible and can be applied to early childhood 6-8 years. The development of the model obtained as a whole from game experts states that the models made are included in the appropriate and appropriate categories of use. So the media model of soccer games for early childhood 6-8 years can be applied. In this study 10 media models of soccer games were found that

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were feasible and applicable. And the media model of soccer games for early childhood 6-8 years is effective for increasing motivation to learn soccer in early childhood 6-8 years.

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Coaching Management Athlete Martial Arts Cempaka Putih

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Abstract — Objective : to determine coaching management in Cempaka Putih athletes in North Maluku. **Method :** this research is a qualitative descriptive study with a survey methods. The population of this study were all martial arts Cempaka Putih athletes in North Maluku. The sampling technique is the total sample technique, namely all Cempaka Putih athletes in North Maluku, the test instrument used is a questionnaire consisting of planning, organizing, coordinating, and monitoring. Data analysis using percentage techniques with struges formula. **Results :** The findings in this study indicate that management and trainers have poor management understanding. The results of the calculation of data analysis from the test results studied showed that, the percentage of management understanding that the management and trainers had in Cempaka Putih North Maluku only reached 17.28 %. **Conclusion :** management at Cempaka Putih has not run effectively and efficiently. This is evident from the 4 test items that appear to have been obtained such as Planning only reaches 17.28%, Organizing 26.84%, Coordination 29.78% and Supervision of 26.10%, so if on average the management in tertiary institutions only reaches 26.84%.

Keywords—*coaching, management, martial arts*

I. INTRODUCTION

Sports activities certainly have positive and negative aspects. The positive aspects are: 1) Able to move social, economic and political activities: the interaction between humans (individuals and groups), the existence of service activities, the absorption of labor. 2) Able to lift the self-esteem of sportspeople / athlete / trainer / builder / organization / regions and nations, welfare of sports coaches, and national dignity. While the negative aspects, such as the tendency of many athletes to take part in a competition using all means in an effort to win a match / race, for example not fair play, undisciplined, manipulate, violate the provisions (competition rules), and doping use.

Achieving success in the field of sports, especially the sports of Martial Arts, requires many factors that play a role, including good management, structured training programs, motivation from athletes themselves and many other factors such as sports science and technology. However, in tune with the progress of time in the field of science and technology knowledge, to conduct its own motion to raise achievement and increase the dignity of society itself. However, with the existence of science and

technology, the achievements of the Cempaka Putih should be more developed.

One of the most unsuccessful sports fields is the Martial Arts sport because there are several factors that cause a decrease in achievement. One of them is the factor of exercise program implementation has not been as much as possible. So there is no improvement in performance Cempaka Putih college. The implementation of training programs from many trainers is in the form of theory, but the implementation is not good and without any meaningful supervision so that the implementation of the training program from several training variables does not reach the maximum target. This condition is called stagnant without any significant development, especially in the field of Martial Arts sports. For this reason, the role of science and technology relating to the management of the Cempaka Putih Martial Arts trainers should be used by the community and coaches to improve achievement in the field of Martial Arts sports, for example in other countries that utilize science and technology in an effort to improve achievement sports always through a scientific approach.

So to improve the achievement of Martial Arts in the Cempaka Putih college there are various factors, one of which is good management factors. Management According to Paturusi (2012: 29) in his Management Book Today, said that management is planning, organizing, directing, planning, coordination, controlling.

In addition, achievement training for Martial Arts athletes, especially in the Cempaka Putih college not enough attention and achievement guidance in the sport of Martial Arts. Therefore, interest arises to begin to explore how the management of a coach in fostering Martial Arts athletes. To represent these interests who want to be first known, some of the actual factors that are considered important and urgent are fostering the ability of a prime physical condition, especially the overall immune system needed by an athlete to improve achievement.

Considering that there are so many and wide-ranging problems identified and limited time and funds, the research studied is variables related to management to improve achievement. Cempaka Putih Martial Arts athletes.

II. MATERIAL AND METHODS

The method is a very important aspect and has a large influence on the success or failure of a study, especially for collecting data. According to Nazir (2003) research is an attempt to find, develop and test a knowledge by using scientific methods, so that direction and goals can be scientifically accounted for with applicable rules. For this reason, the researcher uses quantitative descriptive methods with survey methods.

The study of this research is a qualitative descriptive study with a survey methods. The population of this study were all martial arts Cempaka Putih athletes in North Maluku. The sampling technique is the total sample technique, namely all Cempaka Putih athletes in North Maluku, the test instrument used is a questionnaire consisting of planning, organizing, coordinating, and monitoring. Data analysis using percentage techniques with struges formula.

Retrieval of data on management training of Martial Arts athletes. This research was conducted at the Cempaka Putih college Martial Arts athlete. Data collection in this study is planned to be carried out in June.

Population is a generalization area consisting of objects or subjects that have quality and certain characteristics set by the researcher to be studied and then conclusions drawn (Sugiyono. 2005: 90). So the population in this study are athlete, manager, trainer Cempaka Putih college. The sample is partially taken from the entire object under study and is considered to represent the entire population (Notoatmodjo. 2005: 79). While according to Issac and Michael obtained from the table determining the number of samples with a significant level of 5%, if the population is 25, the sample is 23 people (Sugiyono. 2005: 98).

Variables are variable symptoms which are the object of research (Arikunto. 2013: 99). In this study only one variable was obtained, in this study there were Cempaka Putih college management.

The instrument is a tool used to do something. Whereas research means examination, investigation, activities of collecting, processing, analyzing and presenting data systematically and objectively. With each definition of the word above, the research instrument is all tools used to collect, examine, investigate a problem, or collect, process, analyze and present data systematically and objectively with the aim of solving a problem or testing a hypothesis. So all tools that can support a study can be called research instruments. The research instrument was used to measure the value of the variables under study.

This type of research is an important factor in a study because it relates directly to the data obtained, to obtain the appropriate data. So in this study researchers used data collection techniques with questionnaire tests.

Data analysis or data processing is one of the important steps in research, because errors in the analysis will have an effect in drawing conclusions. the technique used in data

analysis in this study is descriptive analysis of percentages using formulas.

$$P = \frac{F}{N} \times 100\%$$

P : percentage number

N : number of frequencies

F : frequency sought

III. RESULT AND DISCUSSION

The study used a single variable, namely the level of understanding of the management of the training of Cempaka Putih Martial Arts athletes, the data collected from the results of each item, will then be used as an analysis material. The following will be presented in the discussion of the results of the research from each item as follows.

TABLE I. RESULTS OF THE STUDY

No.	Interval class	Absolute Frequency	Relative frequency
1	3-4	5	12.50
2	5-6	12	30.00
3	7-8	15	37.50
4	9-10	8	20.00
TOTAL		40	100%

Based on the results of the above table it obtained 20% of 8 persons are at highest score and 37.50% of 15 people over of average and 30% or 12 persons are currently on average and 12.50% or 5 under average.

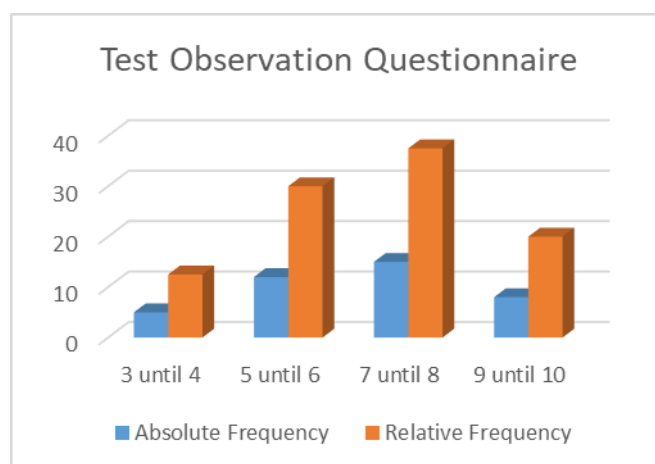


Fig. 1. Graphics Test Observation Questionnaire

Based on the graph above, it is known that 9-10 are at 8 or 8 people at on average and 7-8 are on 15 or 15 people on average, and 5-6 are at 12 or 12 people average, whereas 3-4 are in 5 or 5 people below the average.

TABLE II. TABULATION DATA FROM QUESTIONNAIRE RESULTS

Dimension	Indicator	Confession	
		Positive	Negative
Management	a. Planning	1,2,3,5,6,7,8,9,10	4,
	b. Organizing	11,12,13,14,15,16,17,18	19,20,
	c. Coordination	21,22,23,24,25,28,30, 31,33,34,35,38,39,40	26,27,29
	d. Supervision		32,36,37
TOTAL		31	9

TABLE III. TABULATION DATA FROM QUESTIONNAIRE RESULTS

NO	Planning		Organizing		Coordination		Supervision	
	Yes	Not	Yes	Not	Yes	Not	Yes	Not
1	3	7	8	2	10	-	8	2
2	10	-	10	-	8	2	7	3
3	6	4	4	6	9	1	5	5
4	2	8	7	3	7	3	5	5
5	6	4	8	2	8	2	10	-
6	-	10	8	2	3	7	1	1
7	4	6	8	2	3	7	2	2
8	8	2	6	4	8	2	9	1
9	1	9	4	6	-	10	4	6
10	8	2	2	8	5	5	10	-
SCORE	47		73		81		71	
Σ	272							

Based on data analysis, the results of data analysis can be found on the management of Cempaka Putih Martial Arts athletes as explained above, the results of the analysis will be presented as can be seen in the table in the following sheet.

TABLE IV. FREQUENCY DISTRIBUTION OF OBSERVATION RESULTS OF MANAGEMENT QUESTIONNAIRE TESTS TRAINING OF CEMPAKA PUTIH MARTIAL ARTS ATHLETES

Management Indicator	Score	Percentage
Planning	47	17.28%
Organizing	73	26.84%
Coordination	81	29.78%
Supervision	71	26.10%
Σ	272	100%

Source: Observation Results

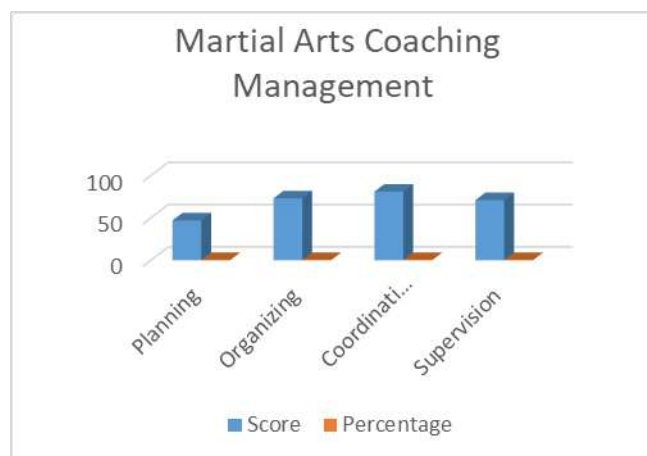


Fig. 2. Graph Histogram Martial Arts Coaching Management Colleges Cempaka Putih

To achieve a goal management then in need of implementation of the management functions well.

Management is part of every management activity. Without management the implementation of an activity will experience difficulties and even failure in achieving the desired goals. There are four management functions that need to be improved from the way they are implemented.

These four management functions are generally used by the parent organizations of the Cempaka Putih College of Sports. The managers are expected to be able to carry out the management functions properly. But from the results of the tests at Cempaka Putih College the facts show that management at the cempaka college is white has not been effective and efficient. Trainers must have the ability and knowledge of standard motion based on biomechanical science on the basic movements of pencak silat to create outstanding athletes. This is a part of coaching management in improving the achievement of Cempaka Putih Martial Arts College athletes.

Based on the analysis in the above table it be interpreted that: planning 17.28% gain with a good value and organizing predicate 26.84% unfavorable, for coordinating 29.78%, 26.10% thereby control the management of coaching athletes arts Cempaka putih martial arts college is very lacking.

1. Management percentage at Cempaka Putih College is very less. This can be seen from the 4 items of the management test that were researched, it turned out that they were obtained: (a) Planning has only reached 17.28%; (b) Organizing 26.84%; (c) Coordination 29.78%; (d) Supervision 26.10%
2. Overall the data percentage of the 4 items is a management questionnaire test that is understood by administrators and athletes in the Cempaka Putih College just reached the average 26.84% so it was concluded that the administrators and athletes were still very lacking.

3. Results research describe that management coaching take effect directly to achievement sports. Training process should follow rules gift motion standar d / motionraw for create Effective motion on athlete so that realized the best performance.

IV. CONCLUSION AND SUGGESTION

Based on the discussion above, it can be denied that management at Cempaka Putih has not run effectively and efficiently. This is evident from the 4 test items that appear to have been obtained: (a). Planning only reaches 17.28% (b). Organizing 26.84% (c). Coordination 29.78% (d). Supervision of 26.10%, so if on average the management in tertiary institutions only reaches 26.84%.

Cempaka Putih colleges need to improve their management both in planning, organizing, coordinating, and supervising in order to improve the achievements of college athletes.

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The Effect of 10 Km Inline Skating on Body Fluid Levels Decrease in DKI Jakarta Inline Skate Athlete

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Abstract—This study aims to determine the effect of 10 Km of roller skating on the reduction of body fluids in DKI Jakarta roller skates athletes. This research was conducted at the Bekasi Roller Skate Field on December 22, 2018. The method used in this study was the experimental method, using experimental research designs, *One Group "Pre Test and Post Test Design"*. And the sampling technique used was *Purposive Sampling*, the sample in this study amounted to 30 people from a population of 102 people. Data processing techniques used was statistical techniques with t-test. Based on the results of research from 30 DKI Roller Skating athletes, the number of decrease in body fluid levels at the beginning and end after 10 km of Roller Skating activity is obtained by the average difference (M_D) 0.77 with a standard deviation of difference (SD_D) 0.07 average standard error difference (SE_{MD}) 0.013. The calculation of the t-value was 59.23 and the value of t-table with the degree of freedom (n-1) and the significant level of 5% is 2.04. Which means t-value = 59.23 was greater than t-table = 2.04 which shows that the hypothesis of Roller Skate Activity 10 Km accepted. From the results of these calculations, it can be concluded that there is a decrease in body fluid levels in DKI Jakarta Roller Skates athletes when doing 10 km Roller Skating activities, with an average fluid loss of 770 ml.

Keywords: effects, body fluid, inline skate.

I. INTRODUCTION

Roller skates (*Inline Skate*) is one of the sports found in Indonesia, where at this time roller skates are in great demand from various circles of society, in the city of DKI Jakarta there are several roller skating clubs, such as *Vini Vidi Vici* (V3), Monastana and Funskate. There are even some roller skate communities that have become popular with the people of Jakarta. This can be proven by the many people who are interested in learning roller skates, so that it can be easily found in several parks in Jakarta.

Roller skates (*Inline Skate*) is nothing new for some people in Jakarta, this sport has been entering Indonesia since a long time ago. Roller skates are increasingly popular and become one of the trends among Indonesian teenager, especially in Jakarta. At that time, these shoes became very popular and were considered as a trait of modern *fashion*, thus roller skates became a 'fever'.

Roller skate associations have been appeared, such as in the IMADA or Djakarta Student Association. On October 7, 1979, a regional committee was formed for Perserosi (Persatuan Olahraga Sepatu Roda Seluruh Indonesia) in DKI Jakarta that began holding events - special event for Inline Skate. Perserosi held its first National Conference in 1981 which scheduled the formation of administrators for the period 1981 to 1985. The management was later confirmed by Sri Sultan Hamengkubuwono as the chairman of the KONI Pusat at that time. Perserosi is a forum and organizer of all *events* related to this sport in Indonesia, both regional, national and international events such as the Olympics, *Sea Games*, and also the *Asian Games*.

Roller skates in particular the type of *inline speed skate* is one of the measured sports, where the principle of measurable sports is the fastest that will win the match. Therefore, the development of the physical condition of roller skate athletes is very necessary, because in order to develop the achievement of roller skate athletes, good physical condition is also very important.

At the time of doing activities in skate shoes 10 km count as aerobic activity. The aerobic energy

system is the dominant system for producing ATP (*Adenosine Tri Phospate*) for a long time. This pathway, which is most closely related to the type of endurance activity, depends on the presence of oxygen to break down proteins, fats, and carbohydrate nutrients to produce energy because these substances are available in large quantities, the aerobic system has a large capacity to produce ATP (*Adenosine Tri Phospate*). In terms of training duration, the aerobic system is the dominant contributor to energy in activities that last longer than about two to three minutes. As training time increases, the aerobic system increasingly dominates, while the anaerobic pathway contributes less energy predicted. The aerobic energy system is undoubtedly the most important for *in-line skaters* competing within 5 Km and 10 Km.

While doing inline-skate the sweat will release from our body. Sweat is one form of the release of substances from combustion in the human body in the form of liquid. Body fluids are the most important factors and supporting factors in exercising to provide maximum appearance and in burning energy and also regulating body temperature.

Inline skates or Rollerblading is the development of "*ice skates*" which as the name suggests, is always used for surfing on the icy surface that hard in the winter, while the skate since it is designed specifically for use in the summer and to be played on the hard non-ice surface (asphalt, concrete, wood parquet, etc.). Then the part of the knife contained in "*ice skates*", modified in the form of a set of wheels in line that resembles a knife. with the advancement of technology, both *ice skating* and *inline skating* , can be played in all seasons *indoors*, the closed atmosphere with temperature and the floor can be adjusted, according to their individual needs. While for tropical countries, it can be done year-round outside the room

Roller Skates (*Inline Skate*) is a one of measurable sports that began to be known among the people of Indonesia and the world, inline skates is a type of shoe that uses several wheels under his shoes. Regular competitions in roller skates, such as competitions between clubs, PON, SEA GAMES and ASEAN GAMES , can be the direction of achievement for enthusiasts of this sport.

Roller skate sports have 4 categories of races namely short distance, medium distance, long distance, and marathon. Roller skate games use 200 meters of trajectory some long distance numbers have variations in the game, namely: *Point to Point* (PTP) is a game modification by taking *points* in each round depending on mutual agreement, and *Relay* is a game modification with a team of 3 people taking turns in each the rotation and substitution of players must go through the process of pushing the hips of a fellow team player before crossing the finish line.

Numbers that are contested in roller skates:

1. Short Distance
 - 200 meters
 - 300 meters
 - 500 meters
2. Medium Distance
 - 1,000 meters
3. Long distance
 - 3,000 meters
 - 5,000 meters (*Relay*)
 - 10,000 meters (*Point to Point*)
 - 15,000 meters (*Elimination*)
4. Marathon
 - 42,000 meters

In Roller Skate there are several parts of the muscle that work dominantly or work more than other body muscles. The following are some of the dominant muscles used in roller skating activities, namely:

A. *Lower Back* .

Lower back muscle is widely used when on roller skate activities, especially when athletes are in a hunchback position or when sliding position. This is because athletes need to maintain the body's balance point needed when sliding on roller skates with high speed. In this position, of course, athletes need strong *lower back* muscles because they will be in a bent position for quite a long time, especially when doing along distance numbers and marathons where the travel time reaches 20 minutes to 60 minutes.

B. *Lower body (Quardiceps, hamstring, gluteus, calves)*

Because the activities of roller skates use the *lower body*, all the *lower body* muscles play an important role here. Same with running, the activities of roller skates involve muscles ranging from *gluteus, quardiceps, hamstrings* to *calves* .

This is because the activity of roller skates with high speed and low speed requires lower body strength to support the body and swing the legs of course. If at high speed the athletes need a lower position to avoid the force of the wind pressure from the front which allows the athlete's body position in wheelchair activity to be lower or more like the *half squad* position which requires strength from the *gluteus, quardiceps, hamstring* to maintain that position.

As for the *gluteus* muscle (*calves*), it is necessary for a *double-push* shoe technique where the body position of the athlete moves to the left and right to get a stronger pressure and boost.

Body fluid is a solution consisting of water and dissolved substances. Electrolytes are chemicals that produce electrically charged particles called ions if they are in solution. Fluids and electrolytes enter the body through food, drinks and intravenous fluids and are distributed to all parts of the body. Humans need fluids and electrolytes in the correct proportions in various tissues so that the body's condition remains healthy. Lack of fluid will be more severe than lack of food ingredients. Water is a large part of the tissue that functions to maintain the normal concentration of salt in the tissue and regulates various processes in the body so that the *osmosis* process occurs. Fluid and electrolyte balance involve the composition and transfer of various body fluids. Liquid and electrolyte balance mean that there is a normal distribution of total body water and electrolytes into all parts of the body.

The functions of body fluids include:

1. Adjust body temperature. If you lack hydrated, your body temperature will get hot and rise.
2. Blood circulation. If our body lacks fluids, the blood will thicken. This is because the liquid in the blood is sucked in for the needs of the body. This process will affect the performance of the brain and heart.
3. Dispose of poisons and food scraps. The availability of adequate body fluids can help remove toxins in the body. Water cleanses

toxins in the body through sweat, urine, and breathing.

4. Skin. Water is very important for regulating the structure and function of the skin. Adequacy of water in the body is useful to maintain the moisture, softness and elasticity of the skin due to the effect of air temperature from outside the body.
5. Digestion. The role of water in the digestive process to transport nutrients and oxygen through the blood to be sent immediately to body cells. Consumption of enough water will help the digestive system work in the large intestine because the bowel movements become smoother, so that the stool comes out smoothly.
6. Breathing. The lungs need water for breathing because the lungs must be wet in the work of entering oxygen into the cells of the body and pumping carbon dioxide out of the body. This can be seen when we exhale into the glass, it will show the liquid in the form of dew from the breath exhaled on the glass.
7. Joints and muscles. Body fluids protect and lubricate movements in joints and muscles. The body's muscles will deflate when the body lacks fluids. Therefore, it is necessary to drink enough water during the activity to minimize the risk of muscle spasms and fatigue.
8. Disease recovery. Water supports the recovery process when sick because adequate water intake serves to replace wasted body fluids.

The human body consists mostly of the largest fluid in the cell (intracellular) and outside the body's cells (extracellular). In an adult male, the liquid forms around 60% of his body composition, while in women it is around 50%. Most of the total fluid (66%) or 40% of the total body composition is in cells that are part of the components of the body's tissue cells. While (33%) or about 20% of the total body composition is in extracellular. Of the 20% extracellular fluid only a quarter (25%) or 5% of the total body weight in the blood vessels (intravascular). Schematically can be seen in table 1.

TABLE 1. BODY FLUID COMPOSITION

No.	Fluid	Total (%)		
		From body composition	Of total fluid	From extracellular fluid
1	Intracellular	40%	66.3%	-

2	Extracellular	20%	33.3%	100%
	a. interstitial	15%	24.8%	75%
	b. intravascular	5%	8.2%	25%

Source: Hadirman, *Physiology and Clinical Aspects of Body Fluids and Electrolytes* (Yogyakarta: Gosyen Publishing, 2015) h.2.

The amount of fluid in the human body depends

on :

1. Age
2. Gender
3. Body type (thin or fat)
4. Level of physical activity

Age and gender:

1. In infants aged around 12 months, it contains body fluids around 58%.
2. Children 6-7 years: 62%.
3. Adolescents: 59% male, 45% female.
4. Adult male: about 60%, female 50%.

TABLE 2. TOTAL BODY FLUID

	Baby	Man	Woman
Thin	80%	65%	55%
Average	70%	60%	50%
Fat	65%	55%	45%

Source: Rusbandi Sarpini, *Anatomi Dan Fisiologi Tubuh Manusia*, (Jakarta: In Media, 2016), h. 16.

People who do a lot of physical activity generally contain more body fluids than those who lack physical activity. This is because active people sweat more so they need replacement fluids more often, thereby increasing their body fluid levels. A trained male athlete, body fluids can be up to 71%, as well as a woman who often exercises, body fluids can be up to 70%.

People who are obese have fewer body fluids (around 48%).

Body Fluid Distribution, namely:

The total amount of fluid in the body \pm 42 liters or 60% of body weight. In the body, according to location and function, 2/3 of body fluids are inside the cell (intra-cellular) and 1/3 are outside cells (extra cellular), including in blood plasma.

The volume of water in the body must be maintained so that the amount is relatively fixed. The body regulates this balance by giving signals, for example with thirst when body fluids are

lacking. When excessive fluid in the body will be released through the intestine (*faeces*) or kidney (*urine*). Kidney function as a washing / filtering residual substances will run smoothly and well if we drink enough water.

Apart from thirst, a sign that our body fluids are lacking, urine becomes concentrated, the amount is small and darker in color. The source of water in the body comes from food, drinks, and from the results of food metabolism. While water comes out of the body through the skin (sweat), lungs (evaporation results when breathing), *urine* and *faeces*.

The balance of body fluids is the balance between the amount consumed and the amount of fluid released by the body. The body needs constant fluid to function optimally. Body cells are covered by interstitial fluid (inter cell fluid) which contains nutrients. This liquid will also carry the remnants of metabolism that the body will release.

The balance of daily body fluids can be described as follows:

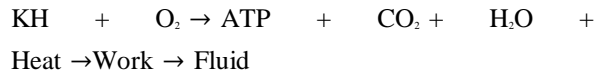
TABLE 3. BODY FLUID BALANCE

DAILY FLUID BALANCE					
Intake			Output		
Metabolism	10%	250 mL	Sweat	8%	200 mL
Food	30%	750 mL	Feces	4%	100 mL
Drinks	60%	1500 mL	Exit through the skin / lung	28%	700 mL
			Urine	60%	1500 mL
TOTAL	100%	2500 mL	TOTAL	100%	2500 mL

Source: Rusbandi Sarpini, *Anatomi Dan Fisiologi Tubuh Manusia*, (Jakarta: In Media, 2016), h. 18.

We recommend that you drink about 8-10 glasses (2-2.5 liters) in a day, while a teenager with high activity (including athletes) must drink at least 10-12 glasses a day. After strenuous exercise, one of your priorities should be to replace fluids lost due to sweating. The best choices to replace lost sweat include one or more of the following:

1. Juice, which provides water, carbohydrates and electrolytes.
2. Water, which tends to be very commonly used because it is very tolerant.
3. Eating containing liquids such as melon, grape, and soup, which provides fluids, carbohydrates, vitamins, and minerals (electrolytes).
4. Sports drinks are high in carbohydrates or soft drinks, which contain liquids and carbohydrates (but at least, there are vitamins or minerals).



Information: KH = Carbohydrate, O₂ = Oxygen, ATP = Energy, CO₂ = Carbon dioxide, H₂O = Water

Based on the information above if it is defined that carbohydrates and oxygen enter the body. Carbohydrates are formed into glucose which will be processed by oxygen to produce energy (ATP) and flow throughout the body. In the body there is the content of carbon dioxide and the water is processed so that the body temperature will increase because the activity will produce heat and sweat. The brain will react by sweating from the eccrine glands in the body. Sweat will appear in the pores of the body where the temperature is lower. Sweat is not necessarily triggered by gestures, but is triggered by receptors from the part of the brain called the hypothalamus.

Aerobic reaction is a chemical reaction that occurs between carbohydrates and oxygen will produce ATP which then reacts chemically with hydrogen coupled with body heat will cause the effectiveness of the body's work so as to produce body fluids from the body's metabolism which functions as a regulator of body temperature when working aerobically referring to oxygen presence. In the case of exercise, aerobic activities such as jogging, swimming, or sports that move without any lag, increase heart rate and breathing. During aerobic exercise, the body converts oxygen to energy.

The function of water for the body is very clear and important, so that if there is a shortage of fluid in a person's body, especially for athletes, it will interfere with the appearance of the athlete. Water is obtained from fluids, food and the body's metabolic processes. In a day someone usually drinks 1200 ml of water and will increase when someone is doing physical activity and will increase even more if the exercise is carried out in a hot environment.

As the biggest component, water has very important benefits, namely:

1. As a medium for transporting nutrients, removing metabolic waste, hormones to target organs
2. Regulates body temperature especially during physical activity.
3. Maintain blood volume balance.

The state of dehydration and disruption of body temperature regulation can cause fatigue and it seems that in the early stages of fatigue it is directly related to increasing body temperature. Disorders of water and electrolyte balance, as well as temperature regulation can jeopardize one's bodily functions. For example, mild dehydration can interfere with physical activity or achievement, while severe dehydration can cause *heatstroke* and even death.

TABLE 4. DUE TO LACK OF FLUIDS

Lack of liquid	Consequence
1% of body weight	Declining Achievement
3-5% of body weight	Disturbed Circulation Function
25% of body weight	Dead

Source: Djoko Pekikrianto, *Panduan Gizi Lengkap Keluarga dan Olahragawan* (Yogyakarta: Penerbit Andi, 2007) h. 22.

A person's need for water varies according to the amount of water lost through sweat; people who work hard or practice hard, or people who work in a hot environment, will need more water. How do we know, losing large amounts of sweat requires replacing salt beside water. Hot weather, heavy physical activity (sweating a lot), diarrhea, vomiting and too much *urine* output causes a lot of loss of body fluids.

This level of dehydration is divided into:

- a) Mild dehydration, if you lose <5% of body fluids.
- b) Moderate dehydration, losing 5-10% of body fluids.
- c) Severe dehydration, losing 10-15% of body fluids. Severe dehydration can cause death.

Dehydration can occur if someone experiences the following things:

- a) Excessive sweating during exercise or in a high temperature environment / room.
- b) Vomiting and severe diarrhea.
- c) Wide burns.
- d) Lack of eating and drinking.

Clinical signs and symptoms of dehydration.

Symptoms of dehydration depend on the cause and whether it has something to do with salt imbalance. Symptoms include:

- a) Dry skin.
- b) Dry mouth.
- c) Confused.
- d) Weight loss.
- e) Tired.
- f) Urine less.
- g) Dark urine.
- h) Thirsty.
- i) Mild headache.
- j) Rigid muscle decreases skin elasticity.

To overcome mild dehydration is usually enough to drink containing electrolytes, but the cause of dehydration must be overcome. Severe dehydration may need treatment at the hospital, to overcome fluid deficiency through intravenous fluids.

Dehydration occurs when the amount of water that leaves the body is greater than the amount carried in the body which is very dynamic and ever changing. This is especially true with water in the body. K lose water regularly when:

1. Moist air that breathes and leaves the body.
2. Sweat to cool the body.
3. Urination or defecation to cleanse the body of waste products.

Some factors that influence fluid and electrolyte balance include:

1. Age

Intake requirements fluid *intake* varies depending on age. Because age is very influential on body surface area, metabolism, and weight, infants and children easily experience fluid balance disorders compared to adulthood.

2. Climate

People in hot areas (high temperatures) and low air humidity have increased loss of body fluids and electrolytes through sweat.

3. Diet

A person's diet affects fluid and electrolyte *intake*. When *the* nutritional *intake* is not strong, the body will burn protein and fat so that it is rich in serum albumin and the protein record will decrease even though both are very necessary in the process of fluid balance so that this will cause edema.

4. Stress

Stress can increase cell metabolism, blood glucose, and breakdown of muscle glycogen.

Fluid balance occurs when the liquid needs or the entry of fluids is the same as the liquid released:

a. Liquid *Intake*

In normal conditions of temperature and activity on an average in adults drink between 1300-1500 ml per day, while the body fluid needs around 2600 ml, so that the deficiency of 1100-1300 ml. deficiency of the liquid is obtained from digestion of food vegetables containing 90% water, 85% fruit and 60% water. Lack of fluid can be obtained from food and oxidation during the digestive process of eating. Fluid *intakes* include:

TABLE 5. NEEDS FOR AGE AND WEIGHT BASED LIQUID *INTAKE*

No.	Age	Weight (kg)	Liquid Needs (ml / 24 hours)
1	3 days	3.0	250 - 300
2	1 year	9.5	1150 - 1300
3	2 years	11.8	1350 - 1500
4	6 years	20.0	1800 - 2000
5	10 years	28.7	2000 - 2500
6	14 years	45.0	2200 - 2700
7	18 years	54.0	2200 - 2700

Source: Rusbandi Sarpini, *Anatomi Dan Fisiologi Tubuh Manusia Untuk Paramedis*, (Jakarta: In Media, 2016) h. 25.

b. Liquid *Output*

Fluid loss can go through 4 (four) routes, namely:

1. *Insensible Water Loss (IWL)*

Insensible water loss that occurs through the skin does not depend on sweat, and even occurs in people born without sweat glands; the average amount of water loss by diffusion through the skin is about 300 to 400 ml / day. This loss is minimized by the skin's corneum layer containing cholesterol which provides protection against excessive loss through diffusion.

2. *Sweat*

The amount of water lost through sweat varies greatly, depending on physical activity and ambient temperature. The normal volume of sweat is about 100 ml / day, but in very hot weather or during strenuous activities, loss of fluid through sweat sometimes increases to 1-2L / hour. This will quickly deplete body fluids if intake is also not increased by activating the thirst mechanism.

3. *Feces*

Normally only a small amount of fluid is released through feces (100 ml / day). This amount can increase up to several liters a day during severe diarrhea. Therefore severe diarrhea can be life-threatening if not handled within a few days.

4. *Urine*

Another loss of water from the body is through urine which is excreted by the kidneys. There are various mechanisms that regulate the speed of urinary excretion. Even the most important way in which the body maintains the balance of fluid intake and output and the balance between the intake and output of most electrolytes in the body is to regulate the speed of excretion of these substances from the kidneys. For example, urine volume can be reduced to 0.5 L / day in people who are dehydrated or can be as much as 20 L / day in people who drink large amounts of water.

According to Sadoso Sumosardjuno in his book entitled Practical Knowledge of Health

in Sports 2, saying that an easy way to help find out if we have enough to avoid dehydration is as follows: weigh your body before and after training and competition. The weight lost from your body at that time is water. You should drink enough to replace weight loss, before you do the exercise again.

The simplest way to say if the body replaces lost sweat is to check the color of the urine. If the urine is very dark and slightly dense because it is a metabolic waste, it needs to drink more water. If the urine is clear, your body returns to normal water balance. Urine may be dark in color if the body consumes extra vitamins, in this case, the number becomes more an indicator than color.

1. 1% lack of fluid from body weight can cause thirst and disrupt athletes' achievements.
2. A liquid deficiency of 2% of body weight will affect the ability to exercise, and maximum aerobic capacity will decrease by 10-20%.
3. 4% lack of fluid from body weight will experience nausea, vomiting and diarrhea.
4. A 5% lack of fluid from body weight experiencing aerobic capacity will decrease 30%.
5. 8% fluid deficiency of body weight will cause dizziness in breathing weakness, and confusion.

Constant water consumption is very important. Long-fasting people can live from a reserve of protein, fat, hydrates and other nutrients in the body for several weeks, provided that water is still available; whereas in a situation without water, people might leave within a few days.

So we can know in every day we need fluids as a metabolic process of the body. Giving fluids must be planned and programmed. The liquid given must also contain carbohydrates with certain concentrations.

To restore normal fluid balance after exercise, researchers recommend that you consume about 1.2 - 1.5 times the weight of the fluid lost during exercise. The easiest way to find out how much you need to drink is to weigh yourself before and after practice.

Everyone who does exercise will sweat or sweat. Even many people say: let's exercise to find

sweat. People sweating are certainly commonplace, but sweat can also be a danger.

Sweat is water released by the sweat glands on the skin. On humans, sweat is released to regulate body temperature. Evaporation of sweat from the surface of the skin has a cooling effect because hot latent evaporation of water that takes heat from the skin. Therefore, on weather hot, or when the muscle heats up because it works hard, sweat is produced .

There are two different types of sweat glands in the composition of the sweat produced and their functions:

1. Eccrine sweat glands spread throughout the body surface but more are present palms , feet , and face . The sweat produced is water that contains various kinds of salt. This gland serves as a regulator of body temperature.
2. Apocrine sweat glands produces fat-containing sweat. This gland is mainly found in armpit and around genitals . This gland activity produces odor due to activity bacteria which breaks down the organic components from the sweat it produces.

When losing water because we sweat. What the body means is sweat. The purpose of the body to sweat is to cool the body. Body temperature is controlled by the central regulating breath contained in the hypothalamus in the brain.

The mechanism for sweating is also spurred, and the sweat glands of the whole body begin to make respiration (perspiration). Sweat itself does not cool your body, but if the sweat evaporates from the surface of your skin it means you lose heat and your body temperature will drop.

If sweat evaporates, then the liquid turns into gas. Energy in the form of heat is needed in the process, and this is supplied by your body, which usually has excess heat. We can see sweat on our skin, because sweat is formed faster than what can be evaporated.

Although this sweat process is the same in everyone, but each individual is different in terms of the speed of sweating and different areas of the body. These differences are genetic influences,

depending on the number of sweat glands they have and where they are. The amount of sweat, also determined by the weather where it is usually located.

If we do regular exercises in hot weather, our bodies will make adjustments. We sweat faster and more abundantly, so this all causes the cooling system in our bodies to be more efficient.

For example an unusual athlete with heat, will sweat at a speed of approximately 1.5 liters every one hour, if you train hard in very hot weather. Athletes who are accustomed to a hot place will sweat with a speed of about 4 liters per hour in the same heat conditions.

With the occurrence of sweat, it means that athletes must take into account their needs for fluids. Keeping the body sufficient with water is as important as eating well enough.

Roller skates in particular the type of *inline speed skate* is one of the measured sports, where the principle of measurable sports is the fastest that will win the match. Therefore, the development of the physical condition of roller skate athletes is very necessary, because in addition to equipment that supports the development of the achievement of roller skate athletes good and good physical condition is also very important.

Roller skate matches are divided into several sports competition numbers one of which is a long distance number of 10 km, in this long distance number athletes are required to have good physical endurance. At this prestigious number, which is always crowded with each participant, all athletes will be competed with a distance of 10 km together with the cue from the competition committee.

With a distance of 10 km it is believed the participants will experience a decrease in body fluid levels, because in the distance of 10 km participants will paddle or play roller skates without stopping or resting considering the type of sport, roller skates are a measurable sport where the first participant steps on the finish line will be the winner.

When participating in a 10 km match all the body works to produce energy and the body's metabolism and increase in body temperature. Because the combustion of carbohydrates and fats produces an energy and the results of combustion produce residual combustion in the form of solid and liquid substances. The remnants of combustion in the form of liquid are released through the skin in the form of sweat. Sweat is released to regulate body temperature which has increased due to the body's metabolism to produce energy when traveling a distance of 10 km.

II. METHODS

Research Methods . The method that will be used for this research is the experimental method, and the form of experimental research design, namely *One Group "Pre Test and Post Test Design "*, which is giving pretest before treatment and posttest after being treated. According to Sugiyono the experimental research method is a research method that is used to find the effect of certain treatments on others in controlled conditions. Thus the results of the treatment can be known more accurately, because it can compare with the situation before being treated.

Sampling Techniques. In this study the technique used in sampling is *purposive sampling*, namely the technique of determining samples with certain considerations. From a population of 102 people and based on the specified criteria, the sample used in this study amounted to 30 people.

Data Collection Techniques. In this study the data was taken by means of the testers performing body fluid tests using digital weight scales.

Data Analysis Techniques. The data analyzed were samples that had followed the initial test and the final test. To process the results obtained from the sample that took the initial test and the final test, this study used the T Test statistic.

$$t = \frac{M_D}{SE_{MD}}$$

III. RESULTS AND DISCUSSION

TABLE 6. DESCRIPTION OF DATA ON LOSS OF BODY FLUIDS IN ROLLER SKATING ACTIVITIES

Variable	Liquid Loss (ml)
The Maximum Value	900
Minimum value	700
Average	770
Standard Deviation	64.03
Standard Error	11.90

Source: Data Processing Results

1. Data on Body Fluid Loss Test Results at Roller Skates

The collected data regarding the loss of body fluids in Roller Skating activities with a distance of 10 Km, shows the range of the highest value of 900 ml and the lowest value of 700 ml with an average loss of fluid of 770 ml, standard deviation (SD) of 64.03, standard *error mean* (

SEm) of 11.90 (see attachment 7). This can be seen in the following frequency distribution:

TABLE 7. DISTRIBUTION OF LOSS OF FLUIDS IN LINE SKATER

No.	Interval class	Middle value	Absolute frequency	Relative frequency
1	700-799	749,5	12	40%
2	800-899	849,5	15	50%
3	900-999	949,5	3	10%
total			30	100%

Source: Data Processing Results

Based on the table, it can be concluded that the largest data frequency in the 800-899 interval class with a percentage value of 50%, and the smallest data frequency in the interval class 900-999 with a percentage value of 10%.

IV. CONCLUSION

Delivered about the average value (x) of the results obtained in the initial test of 55.52 kg and in the final test 54.74 kg from the average data on the initial test and the final test on body weight showed a decrease in the results obtained. From the results of data analysis, the average difference (M_d) is 0.77 with the standard deviation difference (SD_d) 0.07 standard *error* difference average (SE_{md}) 0.013. In the next calculation, the t-value is 59.23 and the value of t-table with the degree of freedom (n-1) which means t-value = 59.23 is greater than t-table = 2.04.

This shows that the hypothesis of 10 km of roller skates is accepted, meaning that there is an effect of decreasing body fluids in athletes when doing roller skating activities. From the results of these calculations it is stated that the activities of 10 Km in roller skates with a temperature of 30⁰ C affect the decrease in body fluids of DKI Jakarta Roller Skate athletes with an average fluid loss of 770 ml.

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Traditional Sports & Games: Promoting Physical Activity And Cultural Connectedness among Indigenous People

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Abstract_This study investigated the effectiveness of Traditional Indigenous Sports and Games among Higaonon people in Rogongon, Iligan City, Philippines to improve physical activity and cultural connectedness .

This research employed two methods, observation and interview among the Higaonon children and elders in the research areas. During the conduct of the study, the respondents played their traditional games and sports and shared stories related to their identities and the challenges they face.

The result of the study shows that enhancing the indigenous cultural features of the existing sports and traditional games will positively influence Indigenous cultural connectedness. The elders expressed their sentiments and aspirations that someday their indigenous sports and games will be recognized in wider community specially in schools

Hence, it is recommended that identities on their traditional sports and games should be known to other communities, and be introduced in schools. In this way, traditional sports and games are not only helping tribal people to get physically fit but also inspiring older members of the community for their culture to be recognized in the wider community.

Key words: Traditional Sports and Games, Cultural Connectedness, Indigenous People

only helping tribal youth to get physically fit but also inspiring older members of the Indigenous community. This will also bring together indigenous and non-indigenous people and help reconnect the in the urban indigenous youth to their culture and enhance physical health.

This study highlights the links between sociological and cultural models and concepts on the one hand and Traditional Sports and Games of the Higaonon Tribe and their characteristics. Furthermore, it contributes to the general discourse about the role of sport for society. After short explanations of those main concepts, which are important regarding Traditional Sports and Games, examples that help to clarify the cultural importance of these sports and games will be offered. Those vital traditional sports and games have not much in common with other traditional games, plays or dances except that they are all quite old.

This also gives some hints, why some traditional sports and games are still very popular, whereas others are forgotten. Most of the sociological and cultural concepts have ties to what is called collective identity, which spans from local to national identity. Collective identity is not only a complex issue, but also an issue which is discussed controversially.

I. INTRODUCTION

Many Tribal people see their traditional indigenous sports and games as a strong indicator that their culture can survive. In this way traditional sports and games are not

II. SIGNIFICANCE OF THE STUDY

This paper highlights a small fraction of the rich stories about how physical activity impacted the participants

emotionally, mentally, and spiritually. Each individual, coming with their unique histories, seemed to work through different ‘voids’ and different healing processes.

The study investigated the effectiveness of Traditional Sports and Games of the Higaonon and how it interrelated to their culture. This will improved the physical activity and cultural connectedness among Higaonon and other tribal group in the research areas of Mindanao, Philippines. This is very significant considering that the Traditional Indigenous Sports and Games of the ethnic people shows culturally relevant intervention within the Higaonon Tribe.

The Traditional Sports and Games of the Higaonon is a demonstration program of the Department of Physical Education, College of Education, MSU-IIT, Philippines. Historically, the games were played by the tribal people during social gatherings.

III. METHODOLOGY

During the conduct of the study, the respondents played



their Sports and Games, demonstrated how the games were played and explained on each significance. The games were chosen based on the description of the elders in the area. After consultations with the tribal leaders indigenous games promoting physical activity and cultural connectedness were introduced and played by the tribal children.

Baseline and post implementation surveys were conducted in the research area and interview was conducted among the elders regarding their traditional sports and

games in relation to physical activity levels and cultural connectedness.



IV. FINDINGS OF THE STUDY

The result of the study shows that the traditional games were enjoyable and significant to their culture. They played with a focus on inclusivity and gaining an understanding of indigenous people.

The children expressed their feelings that playing the games and participating in all the sports introduced by the elders have positive experience. All the children described the nature of the games in traditional communities, not only as a means of teaching children life skills but as community social practice. Children’s participation resulted in enhanced cultural knowledge and cultural significance.

The study identified that traditional sports and games is a culturally relevant intervention within school children. The researchers perceived that the introduced traditional sports and games improved cultural pride among Indigenous children. Majority of them perceived that traditional sports and games raised awareness of Indigenous culture and improved physical activity. Historically, the games were played by the Higaonon during social gatherings.

The researchers were able to document nine traditional sports and games of the Higaonon which are relevant to their tradition, namely; Tibon-tibon, Bugkal-bugkal Lapinig, Tikwi Banog, Bihagay, Kundisi, Opong, Kaglagay, Patok, Bokbok:

1. Tibon-tibon – This game is played by 10 or more players either indoor or outdoor. All players gather and form in the circle placing their left point fingers on the ground. A leader is chosen to touch once each point finger in either clockwise or counterclockwise direction, while everybody are doing the chant “tibon-tibon es capitan tono... tibon!”

A player will be eliminated from the circle whose point finger was touched by the leader when the last word “tibon” was uttered. The game continues while doing the chant until one will remain as survivor and the other being loser who will received a consequence from the group.
2. Bugkal-bugkalLapinig–This game can be played by both male and female, 10 or more players is ideal. To start the game, an IT is appointed or the loser of Tibon-tibon game as a consequence. A big tree or any shall be determined as homebase by the players. All participants except the IT should touch the tree as to have a direct contact to the homebase and be considered as saved.

The moment the IT shouts “bugkal, bugkal lapinig!”, everybody should run away from the homebase within designated area trying to evade the IT chasing anyone. Once a runner is tag by the IT, automatically becomes the new IT, the only way being save is to have a direct contact on the homebase before being tag by the IT.
3. TikwiBanog – There are two teams compose of 6-10 players each for this game. Male team represent the “banog” (hawk) while female team for “tikwi” (chicken). The banog stay ten feet away from the tikwi whose chicks were embracing each other on the waistline part from the mother hen to the rest of the chicks. A facilitator will give the signal to start the game. The banog moves closer to tikwi whose aim is to take a chick at a time while saying “banog”...banog!”. In response, the mother hen says “tikwi”... “tikwi!”. While spreading her arms trying to protect the chicks. The game continues in 15-minute duration. The moment the banog captured more than fifty percent of the chicks number, he will be declared winner. NOTE: Banog will be replaced by another banog if failed to have a captive.
4. Bihagay– There are two teams with two homebased of their choice as available in the surroundings. Number of players depends on the agreement from both team. The goal is to tag a player coming from the other team. If tagged, he/she will be transferred to the other team as captive and must be rescued by his/her teammate. The game continues until a team is outnumbered by the other. The greater number of members in a team shall be declared winner.
5. Kundisi– Equipment needed: 5 inches and 20 inches rattan pole Playing area: Open field

This game is played by male players against female team or maybe combination but should be of equal number each. A small oblong-shaped hole is dig on the ground enough to put the short stick horizontally and this considered as the starting point. A representative from each team will toss the short stick towards the hole. The team that places it closer to the hole will start the game and considered then the offensive team. The short stick then will be placed in horizontal position along the hole on the ground and will be thrown away by a player using the long pole or stick. The defensive team who are facing in front of the offensive team in a distance will try to catch the short stick, if they did, change of position will happened. In the case that defensive team fails to catch, the offensive player will continue on the second level. On the second level, the short stick will be placed on the hole vertically and be hit by the long stick to allow it move upward and be followed by second hit. Once it lands on the ground, the long stick will be used to measure the distance made from the point where it landed to the starting point (the hole). The team that garnered the highest number of distance will be declared winner.

6. Opong – This game can be participated by any gender and in any number of players. A starting line or marker is drawn on the ground. All participants should stay behind the marker and start jumping forward one a

time from a stationary position. Once a player landed on the ground with both feet, a mark shall be placed. The player that did the farthest distance from the starting line shall be declared winner.

7. Kaglagay – This game can be participated by any gender and in any number of players. A line is drawn on the ground as a starting line taking extra care not to step on it before a jump will be done and a marker shall be placed on the ground where he/she landed. The same process shall be done by all players. The one that did the farthest distance from the starting line shall be declared winner. NOTE: Running is the initial movement done before a jump be done behind the drawn starting line. A score is not counted if a player had step on the starting line, but is allowed to perform the action for the second time after all other players did their turn.

8. Patok – Equipment needed: 3 pieces sharpened tip young bamboo poles, 10 pieces of “gabi” or corn

start line X
(player) stalks



Stalks are arranged two feet away from the start line while a player stays behind it holding one piece of sharpened tip young bamboo used to hit a stalk once. A point is given to a player that could hit a part of the stalk. A team that has the most number of hits is declared winner. In case of tie standing, replay shall be done.

9. Bokbok – This game is played by six to ten players of different gender. This is done by the following steps:

1. all players put both hands in close fists on the ground forming a tower.
2. the player on top serves as the leader doing the hammering move of the upper fist to all closed fist hands of co-players while everybody doing the chant “bokbok mangay mangay limpako, mangay sa karumbakan bangko bae bukalan ka sa sabwa!”. When “sabwa” term is heard, the player whose hand is at the bottom will have to open the palm.
3. Repeat second step as needed until all palms are open.
4. The leader then will point his finger going down passing all hands while chanting “tulisok, tulisok makaumaon?” means (does it reach?). Player whose palm is at the bottom will answer either “huda pa!” (not yet!) or “nakaumaon na!” (Yes, it reach already!).
5. all players then will raise their piled palms simultaneously going higher, then lower; this is done

three times while doing the chant “ibayaw so anglaw, ibaba sa bitoon!”.

6. the leader then shout “busaw sa kasapunan!” followed by catching any hands among players who tried to retract their hands from the pile. If none being caught, step number 5 and 6 should be done again until one is caught and be declared “busaw” or IT for the next game.

V. CONCLUSION

Traditional Sports and Games of the Higaonon are teaching children good teamwork and honesty in playing the game. These sports and games of the tribal people shows the culture of their tribe.

Contrary to the evidence, culturally relevant curriculum improves participation rates among Indigenous children. The Traditional Indigenous Sports and Games as a culturally relevant activities has significant role to achieve lifelong activities of the children. The study brought an increase in cultural connectedness and physical activities. Enhancing the Indigenous cultural features of the existing activities positively influenced Indigenous cultural connectedness.

Therefore we conclude that indigenous sports and games promotes physical activity and cultural connectedness. Hence, majority of them perceived that Traditional Indigenous Sports and Games raised awareness of indigenous culture and improved physical activity, majority of the respondents perceived that this activities improved cultural pride among Higaonon people.

This research provides the field of sport development with a unique conceptual framework - an indigenous research framework - to explore the social and personal impact of sports and games. This research begins with an

indigenous understanding of health and well-being and includes appropriate indigenous methods.

VI. RECOMMENDATION

The study is not enough to contain all the intricacies of the Higaonon culture. A more comprehensive study focusing on Higaonon culture and laws should be conducted so that the rich culture of this tribe can be documented and disseminated. Because of these individual differences, it is recommended that future research should determine the success of the program with outcomes that are of importance to the individual rather than selecting a common variable, such as self-esteem, some type of assessment that leaves room for the individual to define what is important to them should be utilized. The stories demonstrated the interconnection of physical, emotional, spiritual and mental well-being.

To achieve maximum dissemination of Higaonon culture as characterized in the nine newly researched sports and games, these activities should be treated equally with other physical activities, by including them in the repertoire of sports and games taught in schools, not only in places where these activities were discovered, but also in other schools in the Philippines.

The government should likewise, recognize minority groups and give them due importance by initiating and encouraging programs that will attract many if not all members of the tribe to come out in the open and be proud of their culture.

Finally, further research specifically in terms of intensity and duration of Traditional Sports and Games should be conducted to inform people specially children in schools that participating in these activities introduced in their schools will improve physical and mental health.

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Connecting Higaonon Culture through Traditional Indigenous Games

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Abstract- Indigenous people have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge as well as the manifestations of their indigenous traditional games. The objective of this study to know its connectedness to their culture and to explore the social and personal impact of these aspects to the wider community.

This research conceptualized and employed two methods, observation and interview among the Higaonon children and elders in the research area. Result of the study shows that respondents' participation in the games resulted in enhanced significance of their culture. The elders expressed their sentiments and aspirations that someday their indigenous games will be recognized in the urban areas specially in schools. The study will benefit the people in urban areas with the increase knowledge and understanding of the culture of the indigenous people and make visible the taken-for-granted assumptions about their traditional games.

It is therefore recommended that identities on their traditional games should be known to urban areas, and be introduced in schools during their physical education classes. In this way, traditional games inspires the elders that their culture is being recognized in the wider community.

Keywords: Higaonon Culture, Indigenous Games, Ethnic Community,

I. INTRODUCTION

Many Tribal people see their traditional indigenous games as a strong indicator that their culture can survive. In this way traditional games are not only helping tribal youth to get physically fit but also inspiring older members of the

Indigenous community. This will also bring together indigenous and non-indigenous people as well as help them reconnect in the urban youth to their culture and enhance physical health.

Traditional Games have been played by Tribal people in Mindanao, and other communities in the Philippines as a means of teaching children life skills as well as a general leisure pursuit. These games of the tribal people show the culture and tradition of their tribe.

This study highlights the links between sociological and cultural models and concepts on the Games of the Higaonon Tribe and their characteristics on the other hand. Furthermore, it contributes to the general discourse about the role of sports in the society. After short explanations of those main concepts, which are important regarding traditional games, this will help clarify the cultural importance of these games. Those vital traditional games have not much in common with other traditional games, plays or dances except that they are all quite old.

This study gives some hints, why some traditional games will have to be preserved and not to be forgotten. Most of the sociological and cultural concepts have ties to what is called collective identity, which spans from local to national identity.

The Traditional Sports and Games study is a demonstration program of the Department of Physical Education, College of Education, MSU-IIT, Philippines. Historically, the games were played by the tribal people during social gatherings. This study identified that Traditional

Indigenous Sports and Games is a culturally relevant research study within the Higaonons.

II. MATERIAL AND METHODS

Prior to the conduct of the study, ethics approval to conduct an investigation and observation of the indigenous games of the Higaonon. Participants were chosen by the elders and Datu of the tribe. After the identification of the respondents, focus group discussion and interview were conducted with the elders and the players. Focus group discussion and interview were conducted by the researchers with semi-structured and guided by pre-prepared questions that emanated from the research aims. Result of the focus group discussion was transcribed verbatim and recoded for analysis.

Historically, the games were played by the Higaonon during social gatherings. The games were chosen based on the description of the elders in the area. After consultations with the tribal leaders' indigenous games promoting physical activity and cultural connectedness were introduced and played by the tribal children. Data has been collected and interpreted by the Research Assistants and the Researchers.

I. RESULT AND DISCUSSION

The findings of the study emanated from the fact that the future social sustainability of the games relies on understandings of, not only the games themselves but also their cultural significance. It is important to remember that the games presented highlighted the skills needed to survive in the bush, rainforest and in their locality

The respondents expressed their feelings that playing the games and participating in all the sports introduced by the elders has a positive experience. All the respondents described the nature of the games in traditional communities, not only as a means of teaching children life skills but also as community social practice. Respondent's participation in the games resulted in enhanced cultural knowledge and cultural significance.

The study identified that traditional games is a culturally relevant intervention of the school children. The researchers perceived that the introduced traditional games improved cultural pride among Indigenous children. Majority of them perceived that traditional games raised awareness of indigenous culture and improved physical activity.

The researchers were able to document nine traditional games of the Higaonon which are relevant to their tradition, namely; Ibon-tibon,

Bugkal-bugkal Lapinig, Tikwi Banog, Bihagay, Kundisi, Opong, Kaglagay, Patok, Bokbok.

1. Tibon-tibon – This game is played by 10 or more players either indoor or outdoor. All layers gather and form in the circle placing their left point fingers on the ground. A leader is chosen to touch once each point finger in either clockwise or counterclockwise direction, while everybody are doing the chant “tibon-tibonescapitantonon tibon!” A player will be eliminated from the circle whose point finger was touched by the leader when the last word “tibon” was uttered. The game continues while doing the chant until one will remain as survivor and the other being loser who will received a consequence from the group.
2. Bugkal-bugkal Lapinig–this game can be played by both male and female, 10 or more players is ideal. To start the game, an IT is appointed or the loser of Tibon-tibon game as a consequence. A big tree or any shall be determined as homebase by the players. All participants except the IT should touch the tree as to have a direct contact to the homebase and be considered as saved. The moment the IT shouts “bugkal, bugkallapinig!”, everybody should run away from the homebase within designated area trying to evade the IT chasing anyone. Once a runner is tag by the IT, automatically becomes the only way being save is to have a direct contact on the homebase before being tag by the IT.
3. Tikwi Banog – these are two teams compose of 6-10 players each for this game. Male team represent the “banog” (hawk) while female team for “tikwi” (chicken). The banog stay ten feet away from the tikwi whose chicks were embracing each other on the waistline part from the mother hen to the rest of the chicks. A facilitator will give the signal to start the game. The banog moves closer to tikwi whose aim is to take a chick at a time while saying “banog”...banog!”. In response, the mother hen says “tikwi”... “tikwi!”. While spreading her arms trying to protect the chicks. The game continues in 15-minute duration. The moment the banog captured more than fifty percent of the chicks number, they will be declared winner. NOTE: Banog will be replaced by another banog if failed to have a captive.
4. Bihagay–there are two teams with two homebased of their choice as available in the surroundings. Number of players depends on the agreement from both team. The goal is to tag a player coming from the other team. If you are tagged, you will be transferred to the other team and must be rescued by your teammate. The game continues until a team is

outnumbered by the other. The greater number of members in a team shall be declared winner.

5. Kundisi– Equipment needed: 5 inches and 20 inches rattan pole; Playing area: Open field This game is played by male players against female team or maybe combination but should be of equal number each. A small oblong-shaped hole is dig on the ground enough to put the short stick horizontally and this considered as the starting point. A representative from each team will toss the short stick towards the hole. The team that places it closer to the hole will start the game and considered then the offensive team.

The short stick then will be placed in horizontal position along the hole on the ground and will be thrown away by a player using the long pole or stick. The defensive team who are facing in front of the offensive team in a distance will try to catch the short stick, if they did, change of position will happened. In the case that defensive team fails to catch, the offensive player will continue on the second level.

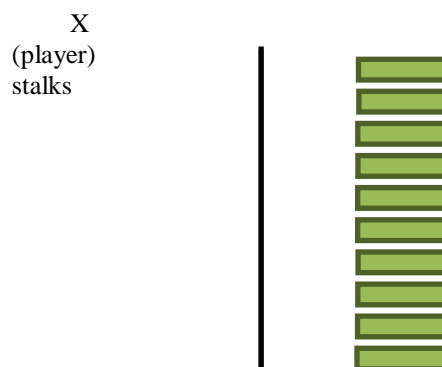
On the second level, the short stick will be placed on the hole vertically and be hit by the long stick to allow it move upward and be followed by second hit. Once it lands on the ground, the long stick will be used to measure the distance made from the point where it landed to the starting point (the hole). The team that garnered the highest number of distance will be declared winner.

6. Opong – This game can be participated by any gender and in any number of players. A starting line or marker is drawn on the ground. All participants should stay behind the marker and start jumping forward one a time from a stationary position. Once a player landed on the ground with both feet, a mark shall be placed. The player that did the farthest distance from the starting line shall be declared winner.
7. Kaglagay – This game can be participated by any gender and in any number of players. A line is drawn on the ground as a starting line taking extra care not to step on it before a jump will be done and a marker shall be placed on the ground where he/she landed.

The same process shall be done by all players. The one that did the farthest distance from the starting line shall be declared winner.

NOTE: A score is not counted if a player had step on the starting line, bit is allowed to perform the action for the second time after all other players did their turn.

8. Patok–
 Equipment needed: 3 pieces sharpened tip young bamboo poles
 10 pieces of “gabi” stalks
 or corn stalks
 start line



Stalks are arrange two feet away from the start line while a player stays behind it holding one piece of sharpened tip young bamboo use to hit a stack once. A point is given to a player that could hit a part of the stalk. A team that has the most number of hits be declared winner. In case of tie standing, replay shall be done.

9. Bokbok – This game is played by six to ten players of different gender. This is done by the following steps:
 - a. All players put both hands in close fists on the ground forming a tower
 - b. The player on top serves as the leader doing the hammering move of the upper fist to all closed fist hands of co-players while everybody doing the chant “bokbokmangaymangaylimpako, mangaysakarumbakanbangko bae bukalanakasabwa!”. When “sabwa” term is heard, the player whose hand is at the bottom will have to open the palm.
 - c. Repeat second step as needed until all palms are open
 - d. The leader then will point his finger going down passing while chanting “tulisok, tulisok makaumaon?” means (does it reach?). Player whose palm is at the bottom will answer either “huda pa!” (not yet!) or “nakaumaonna!” (Yes, it reach already!)
 - e. All players then will raise their filed palms simultaneously going higher, then lower then three times while doing the chant twice “ibayaw so anglaw, ibabasabitoon!”
 - f. The leader then shout “busawsakasapunan!” followed by catching any hands among players who tried to retract their hands from the file. If none being caught, step number 5 and 6 should

be done again until one is caught and be declared “busaw” or IT for the next game.

II. CONCLUSION AND SUGGESTION

Contrary to evidence that culturally relevant curriculum improves participation rates in schools among Indigenous students, the traditional indigenous games as a culturally relevant activities has significant role to achieve lifelong activities of the children. The study brought an increase in cultural connectedness and physical activities. Enhancing the Indigenous cultural features of the existing activities positively influenced Indigenous cultural connectedness.

Therefore, we conclude that indigenous sports and games promotes physical health and cultural connectedness. Hence, majority of them perceived that Traditional Indigenous Sports and Games raised awareness of indigenous culture and improved physical activity. Majority of the respondents perceived that this activities improved cultural pride among Higaonon people.

To achieve maximum dissemination of Higaonon culture as characterized in the nine newly researched sports and games, these activities should be treated equally with other physical activities, by including them in the repertoire of sports and games taught in schools, not only in places where these activities were discovered, but also in other schools in the Philippines.

The study is not enough to contain all the intricacies of the Higaonon culture. A more comprehensive study focusing on Higaonon culture and laws should be conducted so that the rich culture of this tribe can be documented and disseminated.

The government should likewise, recognize minority groups and give them due importance by initiating and encouraging programs that will attract many if not all members of the tribe to come out in the open and be proud of their culture.

Finally, further research specifically in terms of intensity and duration of Traditional Sports and Games should be conducted to inform people specially children in schools that participating in these activities introduced in their schools will improve physical and mental health.

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Brand Image as a Measuring Instrument for Decision to Purchase Local Sports Shoes Products

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Abstract— Increased public awareness about the benefits and importance of sports makes consumers looking for sports equipment to complete their needs. The purpose of this study was to determine the role of brand image on the decision to purchase local sports shoes products. The method in this study used descriptive qualitative with interview. Data obtained from local sport shoe outlet owners, local brand owners and college who own local sports shoes. The result found that the brand image of local shoe product to be the main support for consumers in determining purchasing decisions. The decision in making process in purchasing by consumers to taken into product quality and shoe design, it also directly related to brand image. The conclusions of the results of the research were product quality and shoe design positively affect brand image and would affect the decision making in purchasing shoe products by consumers. This shows the brand image has an important role in the decision to buy local brand sports shoes. These showed that the brand image has an important role in the decision to buy local brand sports shoes.

Keywords—brand image, purchasing decision, local sports shoes

I. INTRODUCTION

Brand image was a description of the perception of a brand that formed from the information and experience provided by a product for that brand. Brand image indicated a strong relationship to the consumer purchasing decisions. An achievement in optimal level of customer satisfaction encourages the creation of purchasing decisions for products to be purchased [12]. The explanation above describe brand image concluded as perception and consumers memory to build through a confidence towards product and life style. The indicators of and ideal brand image refer to the study by Kotler & Keller [17] which includes easy recognized, good reputations, and always remembered.

The value in product design can build a product appearance and has their own characteristics. The icon of the brand could be differentiated from any other products from the competitor and the attracts consumer purchasing decisions. Generally, the design must have a unique shape, good quality, and ease of maintenance in designing a product [3]. Quality product was an important part that always to be considered by every company if they want the product survive and compete

in the industrial market. Certainly, consumers want a quality product from the brand has equality to the budget they spent and the model could represent the era and the consumers wants [30].

Purchasing decisions was the most difficult thing in determining the product purchased and consumers must be certainty in deciding it. The buying decision process was the way of how consumers took place in determining decisions to buy a product. Davis [10] stated that the purchase decision making process consist of five stages; introduction of needs, information seeking, evaluating alternatives, purchasing decisions, and behavior after purchase. To measure consumer purchasing decisions on a product, producers must pay attention to the various factors including the quality, design and brand image of the product being marketed to consumers.

II. METHODS

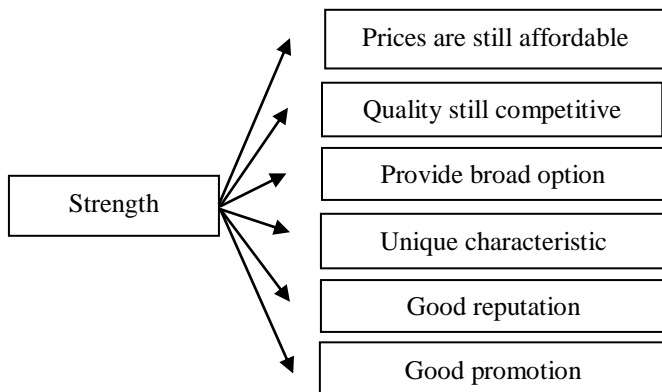
This study used qualitative method and the data collection from the interview and also came from the questionnaire as the reference from Irawan & Sandiyudha [15]. Data seconder from the photographs, personal document, and notes accordance with the references [19] related and supported to the study. This study located at Sport Science Faculty Universitas Negeri Semarang. The main target of this study was the college who used local brand sports shoes product. The respondents were sports shoe outlet owner, local brand shoes owner, local shoe collector, and 20 respondents from sport science department who has criteria using local brand shoes. Based on Afrizal [1] study stated that purposive sampling was used to determine respondents according to the criteria and characteristics in the study. According to Miles and Huberman in Afrizal and Irawan [1][15] if a researcher has conducted in-depth interviews with 20 informants and has done with 20 informants and has done with 20 in-depth interviews, it can be used as a basis for subsequent data collection. The data analysis technique used in this study was SWOT analysis with a qualitative approach. SWOT analysis aims to maximize Strengths and Opportunities, but can minimize Weaknesses and Threats [22]. Data analysis was carried out inductively starting from the field or empirical facts with direct field work and obtaining analysis with simple statistics (average and percentage) accompanied by descriptive narrative.

III. RESULT AND DISCUSSION

The results of the data from the brand image was divided into three indicators there were easily recognizable, good reputation, and always remembered. Based on the results of interviews with the 20 respondents from Sport Science college, the opinions about the brand image including the informant considers that the brand was the main thing that was the first seen when choosing a shoe product to be purchased. Additionally, to be a trust of consumers for a brand that is widely recognized usually has good product quality. But there were also some informants who make the brand not a priority when choosing shoes to buy or used for college in addition to be good quality and comfort when worn.

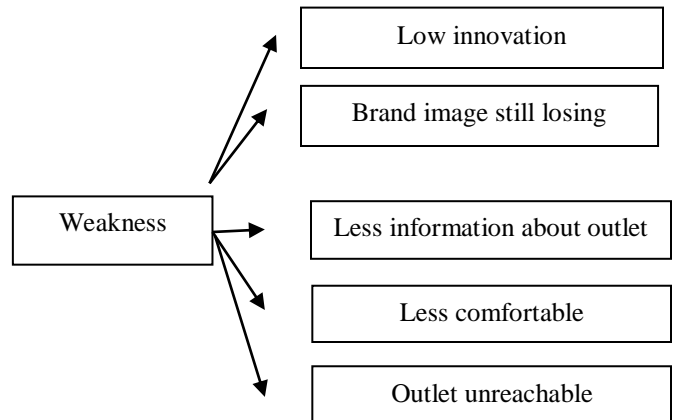
The indicators used include form, performance, durability, style, and design. Respondents stated that the quality of local brand sports shoes was in a fairly good category. Besides the price that was still affordable by college, the quality provided has received appreciation from the informants, but there were some informants who were still not satisfied with the quality provided by the producers because not durable and the model was old-fashioned. College choose local brand shoes not only to meet the needs of practical lectures but also the comfort when wearing in activities was the main reason for Sport Science College to use these products. The brand was not only a good design was the highest reason after comfort, unique design also the main choice of college in deciding what shoes they want to buy, besides following trends, unique designs can increase college confidence while on campus activities such as attending lectures and gathering together college friends.

TABLE 1. RESULTS OF SWOT ANALYSIS ON LOCAL SHOE PRODUCTS

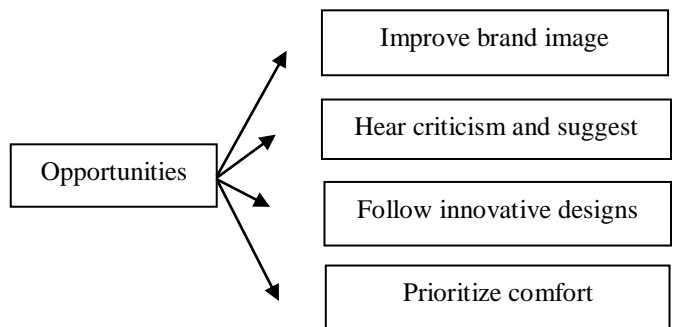


The strength of local sports shoes was the prices are still affordable for the average students, absolutely local brand sports shoes have lower prices than foreign brand shoes. The quality of shoes are still competitive toward foreign products. Still provide broad options for sports shoes, it because local sport shoes have many design that can be the option for the consumers. Has unique characteristics that can be remembered by the user. Shoe manufacturers have fairly good reputation among satisfied customers. Frequently endorsed by local

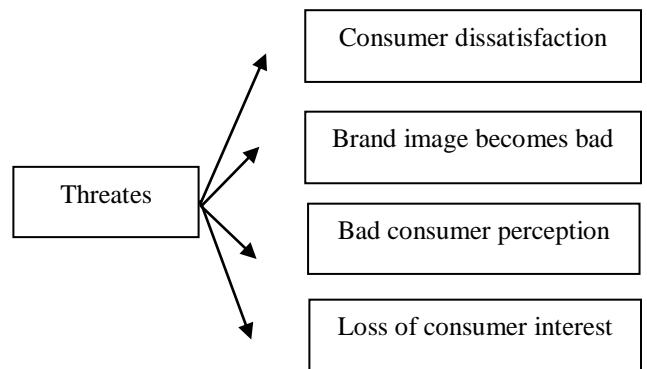
athletes and artists (influencers) make the local sport shoes have a good promotion for their products.



The weakness from the product was still low innovation in the design which lower the consumers attraction. Brand image which created are not as popular as foreign products. Less information and promotion about local shoes outlets. Still less comfortable to wear for range of various activities. Outlet locations are still unreachable, especially for small regions.



The opportunity was huge market expansion by improving the brand image of the products. Closer to customers, easier to get feedback and suggestions from consumers which can help to improve the quality and the brand image of the products. Following innovative trend and other up-to-date features for the products. Improving customer satisfaction related to more comfortable design.



Threats can arise because of consumer dissatisfaction then can directly affect the market. Poor brand image of local shoes brand can indirectly impact the image of other local products that are still developing. A sense of indifference from producers can lower the consumers' interest. Manufacturer's low level of awareness for developing the product further.

IV. CONCLUSION

The conclusion of this study found that the brand image of local brand sports shoes has a fairly good reputation and quality was reliable. Brand image also has a positive influence on purchasing decisions for local brand sports shoes. The design and quality of local brand sports shoes includes a variety of choices of shoes with innovative designs that have a characteristic of shoes when worn so the shoes were comfortable and durable when used. Hopefully for the future enthusiasm and the use of local shoes can improve the economy of the community and make users feel comfortable and satisfied in quality especially for use in activities outside the field.

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The Role of Libero in Volleyball Game

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Abstract—The importance of providing a quality game in order to win a volleyball match is inseparable from the function of a libero. This study aims to determine the importance of the role of a libero in volleyball. The research method used in this study is descriptive qualitative using an open questionnaire instrument that has been tested for validation by Indonesian volleyball experts. The population and sample in this study were 34 coaches of the men's youth volleyball team and 22 coaches of the women's youth volleyball team in East Java who participated in the East Java Youth Level Provincial Championship in 2019 in Banyuwangi. Based on the results of the open questionnaire that has been disseminated, it can be concluded that, the main role of a libero in volleyball is to receive the ball from the opponent's attack either from the service or smash to be presented to the setters. The basic technique that needs to be mastered by the libero is the bottom pass, the top pass, and the advanced technique as an effort to save the ball from the opponent's attack. In terms of anthropometry, a good libero has an ideal body weight and height that can be measured by BMI, which with the ideal body, hopes that it is easier to move to follow the direction of the ball and speed up saving the ball. The ability of a physical condition that must be possessed by a libero is speed, agility, reaction, accuracy, flexibility, coordination and endurance. The coach's way to select a libero is to use drilling receive, cover block, defensive and set to the smasher. Based on the results of an open questionnaire that has been disseminated in this study, it can be concluded that the role of libero in playing volleyball belongs to the very important category.

Keywords—*libero, volleyball.*

I. INTRODUCTION

One of the positions in volleyball games is libero. Libero is a player who only works in the back area of positions 1, 5 and 6 where his job is only to receive the ball both service and attack from the opponent [4]. Libero is not permitted to service or smash. Therefore the role of libero in the game is considered not too important because it is assumed that

physiologically the movement of libero is not too significant in the game.

there is a differentiation between more than two researches in different time, show that "... libero, their heart rate is always lower than that of the central players" [5]. It is said that based on the libero's pulse it is always below the middle player. Continuing with the next statement, "With regard to the blood lactate concentrations, we should emphasize the high levels recorded in all players and especially the central players" [5]. Therefore it is said that the performance of a libero is not very significant in the playing field. But in the other research stated that Based on statistical calculations, the attack indicator shows 53.20% while the receive effectiveness indicator shows 58.29% " [3]. Followed by the other research [6] "The results revealed that the team analyzed presented a very high level of acceptance quality (77.1% perfect), with Libero players being the most requested (34.6%)".

According to that statement, this study will be analyze how important the libero's role play in volleyball is. Therefore this study will be the basic information of how important the libero is. The guidelines for coaches to choose the libero players of their teams.

II. METHOD

This is a descriptive qualitative research with manual descriptive data analysis. Each coach will be shared open questionnaire and answer each of the question that asking about libero. The research samples of this study are 16 Volleyball Coaches. Those are the big 8 of girls and boys team In East Java Youth Level Provincial Championship in 2019. There are 16 questionnaire from the coaches as a sample of the study that analyze with manual descriptive data analysis.

III. RESULTS AND DISCUSSION

Overall, according to the coach answers known that the main role of a libero in volleyball is to receive the ball from the opponent's attack either from the service or smash to be presented to the setters.

The basic technique that needs to be mastered by the libero is the bottom pass, the top pass, and the advanced technique as an effort to save the ball from the opponent's attack.

This study was part of research funded by the Sultan Idris Education University.

In terms of anthropometry, a good libero has an ideal body weight and height. According to the graph of coaches recommendation, stated that the height of girl libero is around



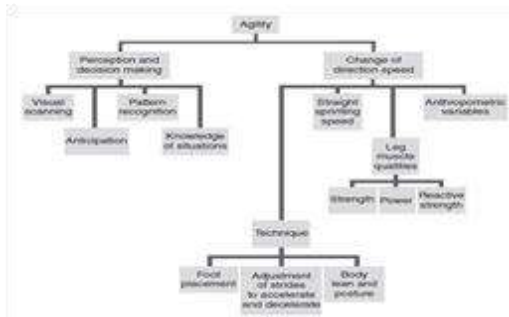
160 – 165 cm. For the boys there are two ranges of height that can be shown. That are 160 – 165 cm and also 165-170 cm shown as a similar recommendation from the coaches.

Fig. 1. Estimated Height of Libero Graph

In terms of anthropometry, a good libero has an ideal body weight and height. That can be measured by BMI, which with the ideal body, hopes that it is easier to move to follow the direction of the ball and speed up saving the ball.

The ability of a physical condition that must be possessed by a libero are:

1. Speed, some of the factors that influence the speed revealed [1] are heredity, reaction time, strength (ability to overcome ballast load), technique, muscle elasticity, concentration and willpower. A libero must have good speed, this is very necessary to work out where the ball is heading within the reach of the team. Sometimes the results of the dig ball or defense soared far from the game area. As a libero the task must always be alert and fast to catch the ball. Therefore, all trainers in the questionnaire stated that speed is one indicator of the physical condition possessed by libero.
2. Agility, "agility movements can be defined as rapid, whole body movements that require single or multiple changes in velocity, or direction in response to an external stimulus" [2]



ows that, agility is a combination of three aspects including: decision making, engineering, and physical capabilities.

Fig. 2. Scheme of Agility [2]

The compiler of agility is divided into two namely between the perception of decision making and the speed of changing direction. Judging from the two elements of agility if applied in the game of volleyball, agility is one of the dominant elements that cannot be abandoned. The perception of decision making can be seen when the ball comes toward the player, so how can the player be able to immediately take the decision to receive the ball with passing under, passing over, smashing, or block. Similarly, if there are fast attacks and long rallies, it cannot be denied that the speed of the ball without direction is limited. Automatically the players follow the direction of the ball as soon as possible so that changes in direction often occur and continue with the decision making movement.

3. Reaction, schemes of agility preparation have previously been known that one of the elements of agility is the speed of the reaction shown from the element of perceptual decision making. A libero is required to have a good reaction. By seeing the touch of the ball and predicting the ball's direction as fast as possible the libero must decide in which direction he will move.
4. Accuracy, in volleyball games especially a libero is also required to have accuracy in receiving the ball. In this case there are two things that need to be considered, namely the accuracy when receiving the ball receive and attack and the accuracy in directing the ball to the feeder so that it contributes well in the attack of the team to the opponent.
5. Flexibility, the flexibility needed in athletes is mainly the limbs, back and arms. Determination of the legs to maintain balance when making movements, while the flexibility on the back and arms really help the beauty of motion. In practice, a libero will drop a lot of movement to be able to receive the ball but ensure his body is safe from possible injury. This flexibility is necessary to make rolling, slading and dig movements so that the libero is safe from possible injury.
6. Coordination, coordination is a very complex ability. [1]Coordination is closely related to speed, strength, endurance, and flexibility and is very important to learn and perfect techniques and tactics. [1]Coordination included agility, balance, and kinesthetic sense. The

physical component of coordination should be part of the physical indicators that must be mastered by libero, the confluence of the entire physical component so that it is able to prepare libero to deal with movements that are so complex in the rescue of the ball.

7. Endurance, in volleyball games that are played with low to high intensity within 1 to 3 hours, then the volleyball game is included in the aerobic sport system, therefore endurance is very necessary needed.

The coach's way to select a libero is to use drilling receive, cover block, defensive and set to the smasher.

IV. CONCLUSION

In conclusion, based on the results of an open questionnaire that has been disseminated in this study, it can be concluded that the role of libero in playing volleyball belongs to the very important category.

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Factors Associated with Depression among TB-MDR Patients: A Literature Review

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Abstract - *It is estimated that every year there are 4000 cases of MDR-TB in the world. According to WHO 2013, of the 27 countries with the highest burden of MDR-TB in the world, Indonesia is ranked 8th with 6900 patients, of which 1.9% are new cases and 12% are re-treatment. This study aims to determine the factors associated with depression in MDR-TB patients, using the literature review journal study method. Most of the literature used in this article is from journal articles and the results of previous academic studies related to depression among TB patients. Sex, side effects of MDR-TB drugs, duration of treatment, comorbidity, stigma and discrimination, poverty are factors associated with depression among MDR-TB patients.*

Keywords— *MDR-TB, Depression*

I. INTRODUCTION

Tuberculosis is the third leading cause of death after cardiovascular disease and respiratory disease. Mycobacterium tuberculosis has infected about one third of the world's population. About 95% of TB cases and 98% of deaths from TB occur in developing countries. Worse, about 10% of TB patients in the world in Indonesia [1].

Tuberculosis Multi Drug Resistant (MDR-TB) is caused by the bacterium M. Tuberculosis is immune to 2 types of OAT (anti-tuberculosis drugs) namely INH and Rifampicin. This is a condition where OAT is unable to kill M. Tuberculosis [2]. The occurrence of such resistance is often found when in the period of TB treatment [3].

In 2012, around 450,000 people were likely to experience MDR-TB and 170,000 people had died from MDR-TB globally. Every year, there are around 4000 cases of MDR-TB. Indonesia is one of the countries that has the highest burden of MDR-TB in the world with 1.9% new case patients and 12% of re-treatment patients out of a total of 6900 patients [4]. In 2009 to 2014 the discovery of MDR-TB cases in Indonesia tended to increase. This is caused by several factors

such as the fact that TB treatment has not been distributed equally, the lack of adherence to taking medication and not all hospitals have DOTS (Directly Observed Treatment Short-course) [1].

Patients with Tuberculosis are often associated with depression events experienced by patients. In fact, depression is more common in Multi Drug Resistant (MDR) TB patients compared to other pulmonary TB patients. Based on previous studies, the prevalence of depression in TB patients in various countries varies in Nigeria (41.1%), Cameroon (61.1%) and Pakistan (56%) [5]. Globally, 4.4% of the world's population of 300 million people suffer from depression [6]. According to the 2008 global disease burden (GBD) the incidence of depression is fourth, it is estimated that in 2030 it may become a major disease burden globally [7].

Depression is a common mental disorder that is often characterized by sadness, feeling lost interest or loss of pleasure, feeling guilty, low self-esteem, lost appetite, disturbed sleep, feeling easily tired and very poor concentration [6]. Depression is identified as a comorbid condition in tuberculosis. Depression is also associated as a cause of resistance to antibiotic drugs, transmission to high communities and a cause of high morbidity and mortality in TB patients [8].

Depressive events in patients can cause suicide, which results in the loss of one life per year or 30,000 deaths / day globally [8]. TB patients who are depressed tend to seek immediate treatment. In initial treatment, it is very unlikely to take medication regularly and consistently. In such treatment deviations it is very possible to result in drug resistance, high morbidity and mortality [9]. Negative treatment results or irregularities in TB treatment will weaken psychosis well-being which causes depression. Of course this has a negative impact on the quality of life of TB patients [8]. One symptom of depression in TB patients is that patients reduce social contact, ignoring social responsibility that leads to feelings of

inferiority and despair. Usually, this occurs during the coughing stage. In addition, what happens to patients with TB who are depressed is to begin to decrease self-awareness awareness, fail to take medication as prescribed, and allow experiencing disability that leads to poverty [10].

In Pakistan 2016, the assessment and treatment of depression was incorporated into routine MDR-TB care. This offered enhanced psychosocial support for MDR-TB patients, including screening for depression by clinical psychologist [9]. It was so different in Ethiopia, although comorbid depressive symptoms in people with tuberculosis are often associated with poorer outcomes, even with successful treatment, generally healthcare providers in Ethiopia do not assess depression in these people or provide evidence based treatment. Consequently, unnoticed comorbid depressive symptoms may hamper efforts to end tuberculosis [8].

Various studies have identified factors related to the high incidence of depression in MDR-TB patients including drug side effects, social disgrace, malnutrition, inadequate social support, physiological burden from chronic diseases, and even marital status [11]. In addition, demographic factors such as gender, age, residence, length of illness, comorbidity, previous drug use status, and low socioeconomic status, are also associated with depressive events in patients with TB [12].

Tuberculosis with MDR is a major complication in the healing process because it requires special care and a very large effort on the part of patients, families, and health care providers. In addition, MDR-TB treatment also has a higher risk of treatment failure than usual TB treatment [13]. Depression is a psychiatric disorder that often occurs in MDR-TB patients and often reduces the quality of life of patients. However, not many studies conducted in Indonesia related to factors associated with depression. This study aims to determine the factors associated with depression among MDR-TB patients through a literature review study..

II. METHODS

The design of this paper is the selection literature study. Literature was obtained from journals and previous studies relating to factors associated with depression among TB patients, specifically MDR-TB. Literature search from WHO, Ministry of Health of the Republic of Indonesia, Journal of Tuberculosis, Journal of Mental Health, Global Health Report, and so on.

III. RESULTS AND DISCUSSION

Definition of MDR-TB

MDR-TB is Mycobacterium tuberculosis resistance to at least two types of first-line OAT drugs, rifampicin and

isoniazid, which are the most OAT (anti-tuberculosis) drugs with or without resistance to other OAT [14]. Rifampicin (R) and Isoniazid (H) are the backbone of the treatment regimen because the combination of these two drugs enhances strong properties as OAT (anti-tuberculosis drugs) namely early bactericidal activity, sterilization activities and the ability to support accompanying drugs (MDR-TB).

Drug / MDR resistance that occurs and becomes a clinical problem is a man-made phenomenon, caused by human activity, inadequate treatment (regimen, dosage, irregular treatment, monotherapy, etc.) resulting in resistant germs (natural mutations that occur slightly) become the dominant population, multiplying and impacting on clinical conditions [13].

TB diagnosis is based on sputum examination of the mycobacterium tuberculosis bacteria and drug testing. Confirm the diagnosis of TB by examining Lowenstein Jansen or BACTEC and drug approval tests. Diagnosis of MDR-TB with isolated Mycobacterium Tuberculosis bacteria increases resistance in vitro to increasingly isoniazid and rifampicin drugs [3].

MDR-TB Treatment

Management of MDR-TB with first and second line drugs is a difficult and expensive treatment. TB treatment itself takes 6 months while MDR-TB treatment lasts from 18 months to 24 months. This treatment requires a minimum of 4 drugs during treatment [3].

Standard regimens in the treatment of MDR-TB in each country vary. The standard MDR-TB treatment regimen is under the revised National Tuberculosis Control Program (RNTCP). The standard treatment regimen in India consists of intensive (6-9) and advanced (9-18) months. The standard treatment regimen in Peru uses kanamycin for only 3 months along with ciprofloxacin, etionamide, pyrazinamide, and ethambutol. Whereas in Indonesia the choice of MDR OAT alloy is currently an alloy

Standard (standardized treatment), which at the beginning of treatment will be given the same to all MDR TB patients as follows:

1. The MDR OAT standard guidelines provided are: KM - Eto - Lfx - Cs - Z - (E) / Eto-Lfx - Cs - Z - (E)
2. A standard MDR OAT guide is given to patients who have laboratory RR / MDR TB confirmed.
3. If there is a history of the use of OAT guidelines which are suspected to have resistance, for example, a patient has received fluoroquinolone in the previous TB treatment, then a high dose of levofloxacin is given.
4. Guidelines for standard MDR OAT will be adjusted according to guidelines or dosages

5. If from the beginning proved to be resistant to kanamycin, then the standard guidelines are as follows: Cm - Lfx - Eto - Cs - Z - (E) / Lfx - Eto - Cs - Z - (E)

6. If from the beginning proven fluids against fluoroquinolone, the standard guidelines are as follows: Km-Mfx-Eto-Cs-PAS-Z- (E) / Mfx -Eto-Cs-PAS-Z- (E)

7. If it has been proven to be resistant to kanamycin and fluoroquinolone (XDR-TB) then the standard alloy is as follows: Cm - Mfx - Eto - Cs - PAS-Z - (E) / Mfx - Eto-Cs-PAS - Z - (E).

8. The HIV status of MDR-TB patients does not affect the MDR TB treatment mix

Note: Km: Kanamycin, Lfx: levofloxacin, Eto: Etonamide, Cs: Cycloserin, Z: Pyrazinamide, E: Ethambutol, Mfx: Moxifloxacin, Cm: Capreomycin

Psychiatric disorders are often found in the use of cycloserine and isoniazid drugs. Other drugs such as ethambutol and fluoroquinolone have been reported to cause manifestations of psychiatric disorders. Cycloserin is reported to cause mental disorders such as hallucinations, anxiety disorders, depression, behavioral disorders, suicidal thoughts and euphoria. Cycloserin is neurotoxic and crosses the blood-brain barrier. Psychiatric symptoms appear within 3 months of the first treatment of cycloserine.

Some case reports indicate that ethambutol can cause depressive disorders, anxiety disorders, psychosis and suicidal behavior. The neurotoxic mechanism of ethambutol inhibits monamine oxidase (MAO) and induces pyridoxin deficiency resulting in reduced levels of norepinephrine, serotonin, dopamine, and *Gamma-Aminobutyric Acid* (GABA) [3].

The uniqueness of this psychiatric disorder is very affect the success of treatment, because patients are difficult to work within drug administration and other examinations which must be done. Therefore, deep MDR TB management requires collaboration closely between the team of clinical and mental health experts [13].

Depression in MDR-TB

The relationship of depression with Tuberculosis allows a two-way relationship. Depression can endanger immunity, which can lead to an increased risk of infection with tuberculosis. On the other hand, Tuberculosis patients who experience increased inflammation or in the process of treatment can trigger an increased risk of depression. The appearance of TB symptoms (for example, fatigue, chronic coughing, weight loss) or associated disability, can also be linked to psychological reactions from deprei. Besides chronic lung disease and hypoxia can also trigger depression in patients [15].

A study in Korea found that depression at the beginning was associated with a high risk of tuberculosis [16]. Neglected self-care or compromising immunity when depressed can cause increased susceptibility to tuberculosis [9]. Thus, depression

can become a TB driver and multidrug resistant (MDR-TB) [17].

The higher risk of depression in TB patients is also caused by the patient being considered as a source of transmission in the community leading to the emergence of discrimination, stigma, social isolation, and rejection [17].

The severity of mild forms of depression may not require medical treatment, but the most severe presentation may require a thorough assessment and proper management. A study in Ethiopia produced that almost half of TB patients had mild to moderate levels of depression, while 2.7% had severe depressive rates that needed appropriate care [5].

Many factors are associated with depression in MDR-TB patients, this study illustrates the majority of factors associated with depression that have a high risk of depression among MDR-TB patients consisting of sex, MDR-TB drug side effects, duration of treatment, comorbidity, stigma and discrimination, and poverty.

Factors associated with depression among MDR-TB patient :

1. Sex

Compared with men, women are twice as likely to experience depression during their lifetime [11]. A study in Pakistan also found similar results where women had higher levels of depression than men [18]. The relationship between depression and sex, it was found that 75% of women are more prone to depression [8]. The risk of depression is usually around 10-25% for women and 5-12% for men.

Not surprisingly, many studies have found that a large proportion of depressions in TB patients are women, because globally the prevalence of depression is higher in women (5.1%) than in men (3.6%). Evidence from the study found that women may feel less able to get full support from their husbands, so it is very possible to experience depression during the treatment period [11]. Women are also susceptible to depression which is associated with financial constraints, where women undergoing treatment may not have worked anymore so that they have difficulties in financing the treatment of TB. The support from the husband has a very big influence on the psychological condition of women [19].

2. Side Effect of TB-MDR drugs

Drugs in the treatment of MDR-TB are one of the factors related to the reaction that results from such treatment. Where, these drugs can increase the risk about 11 times compared to patients in first-line therapy [20]. A Peruvian study reported that as many as 95% of patients during treatment had a negative reaction to second-line drugs, 54% of which were toxic. Other studies have also found that more than 50% of drug reactions are detrimental to patients during MDR-TB treatment [21].

During the MDR-TB treatment, a lot of side effects are caused and adverse reactions felt by the patient. MDR-TB

treatment requires a combination regimen consisting of second and third-line anti-TB drugs that are more toxic than first-line drugs. In addition, the length of treatment for about 18-24 months causes discomfort in patients [22].

Anti-TB drugs associated with psychiatric side effects: cycloserin (CS), etionamide, isoniazid (INH), ethambutol, ciprofloxacin, rifampicin (RMP), and fluoroquinolones [23]. Previous studies have found anti-TB drugs that have side effects and complications on patients' mental health, such as Isoniazid (INH) or Iproniazid (IPH), which can cause psychosis. Isoniazid can cause memory loss, behavioral disorders, and changes in sleep rhythm. Seizures and coma can also occur if TB patients consume INH excessively [24].

Mental disorders such as hallucinations, anxiety disorders, depression, suicidal thoughts, behavioral disorders and euphoria are also reported to be caused by cycloserine (CS). Cycloserine works as a glutamate decarboxylase inhibitor, thereby reducing GABA production in the central nervous system. The appearance of psychiatric symptoms is usually at 3 months after the first treatment period [3]. If during the period of treatment the patient has a very severe psychiatric disorder, then treatment with cycloserine is stopped and evaluated first. If it has improved or conditions improve, cycloserine can be given back [20].

3. Duration of Treatment

Depressive disorders that arise during the MDR-TB treatment period range from 4-6 months and 7-12 months. According to research that has been done, patients who have undergone treatment for 3 months and between 4-6 months experience higher depression than patients who have taken 7-12 months of treatment even more than 1 year. The duration of treatment strongly influences the incidence of depression in MDR-TB patients, where depression is seen very clearly in the first year of treatment, and decreases gradually at the end of the second year [19].

4. Comorbidity

According to Vega, psychological comorbidity is closely related to MDR-TB patients [19]. The study found that comorbidity in MDR-TB patients increased the risk tenfold the incidence of depression in patients [8]. Research conducted in Indonesia has also produced similar results where complications and comorbidities are the main determinants of mental disorders such as mood, stress, anxiety, and depression [11]. Diabetes and depression are often comorbid and are important risk factors for tuberculosis.

Existing evidence states that depression is a very important co-morbid in tuberculosis. This is a two-way effect relationship, where each disturbance is a risk factor for the emergence of other disorders [19]. Finally, treatments for comorbid mental disorders in Tuberculosis have been developed by intervening according to the conditions experienced by MDR-TB patients themselves [25].

TB patients with medical disorders such as comorbid depression often feel less able to adapt to the symptoms of chronic disease they have, they have a high awareness of the physical symptoms they feel. It also has a negative impact on TB patients by triggering depression [26]. Co-morbidities and chronic diseases are very bad causes for the mental condition of patients, because the presence of chronic and comorbid diseases can increase suffering, cause premature death, trauma, complicate financial cost problems, and reduce quality of life.

One study found that in Texas and Mexico patients with type 2 diabetes were more susceptible to TB MDR. Type 2 DM patients constitute the largest population of active TB cases in Mexico and Mexican America. This population is contributing to an increase in MDR TB cases. Type 2 diabetes mellitus causes a decrease in the body's immune system, this is associated with poor blood sugar control [27].

Increased incidence of DM continues with the emergence of TB infection rates. Effects of DM treatment can weaken the effects of OAT I-line on TB, specifically Rifampicin and Isoniazid drugs. Inadequate TB treatment is 1.5 times more likely to increase changes in diagnosis, from TB to MDR-TB [28].

When individuals with depression were previously diagnosed with TB, their TB symptoms were worse than those who had not been depressed before. Lack of motivation or social support and cognitive impairment, which might influence decision making might limit access to health services among individuals who are depressed, which causes late diagnosis and initiation of treatment for TB. Previous research has shown that treating the psychological aspects of TB can lead to better clinical outcomes. For example, prospective controlled trials in India show that psychotherapy during TB treatment leads to higher levels of adherence, treatment, and cure. Furthermore, psychological support group interventions for patients with MDR-TB in Peru show that such interventions can improve adherence and treatment completion [17].

5. Stigma and Discrimination

Stigma often results from a misunderstanding of a personal belief that conflicts with norms or culture. In the case of patients with MDR-TB, many patients feel isolated from the community, friends and relatives away from the patient and stop communicating after the patient is diagnosed with MDR-TB. Even after completion of treatment and has been said to be cured, the community still considers patients as infectious, and avoids interactions with them. Most patients must experience rejection or neglect in the community because the community also has a poor understanding of MDR-TB. As a result, many patients experience mental disorders, especially depression when they are in the sphere of society [29].

Social stigma and other stigmas are very strong risk factors that contribute to the emergence of depression in Tuberculosis patients. Discrimination and isolation have consequences for patient behavior such as delay and non-compliance with treatment which can lead to poorer quality of

life for patients [23]. Stigma and discrimination arise in the community because of a lack of understanding and communication from both the health service, the community, and the patients themselves. A study revealed that social interactions and patient relationships in the community will soon improve once there is true communication and understanding of MDR-TB [30].

III. CONCLUSION

Factors associated with depression among TB-MDR patients were sex, side effect of TB-MDR drugs, duration of treatment, comorbidity, stigma and discrimination, and poverty.

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6. Poverty

Poverty is a risk factor for depression in TB which can be deadly. Disproportionately Tuberculosis has a great impact on people living in poverty and in socially and economically vulnerable communities, such as homelessness, patients co-infected with HIV, in prisons, and mentally ill. Where, poverty that occurs can be an obstacle in the treatment process thereby increasing morbidity and mortality rates [23].

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Warm-Up Models before Competition based on Games for Badminton Athlete

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ABSTRACT—This study aims to create a warm-up models before competition based on games for badminton athletes. Research time for 5 months, from March until July 2018. This research method uses research and development (R & D) method according to Borg and Gall model, where this research uses 10 stages: potential and problem, data collection, product design, design validation, design revision, product test, product revision, product revision, mass production. The results of this study produce a product that is a warm-up models before competition based on games for badminton athletes as many as 20 models that have been tested in small groups involving 20 badminton athletes and large group trials involving 50 badminton athletes. Before the warm-up model before competition was tested, the researcher tested the validation twice before the small group trial and before the large group research. The implementation of the warm-up model before competition based on games for badminton athletes was conducted for 9 meetings, 4 meetings during small group trials, and 5 meetings during large group research. Based on the results of the study showed that the warm-up models before competition based on games for badminton athletes is feasible to apply before the competition. The final result of the warm-up models before competition based on games for badminton athletes is a book about warm-up models before competition based on games for badminton athletes.

Keywords—*Warm-up, before competition, games, badminton*

I. INTRODUCTION

Sports are the one of influential elements in human life. In general, exercise is one of a person's physical and psychological activities that is useful for maintaining and improving the quality of one's health and endurance. Good exercise can help protect against various diseases, and can improve mood and reduce stress besides other benefits of exercise, which can also form muscles in the human body, besides the main benefits of exercise for the body is to maintain health body.

Sports its can be categorize by various ages, ranging from children to the elderly. Because exercise is actually a fun activity, besides that through sports we can have a wide opportunity to develop abilities, find new friends, especially if we pursue a sport so that it becomes an achievement sport, it will make us also able to add to the experience of traveling and competing which brings joy and satisfaction. The authorized capital to achieve high achievements in one sport is to have talent that is in accordance with the demands and specifications of each sport.

This country has developed in sports, high-performance exercises have been carried out as early as possible, and the exercises implemented are regular programs with targets that increase gradually and over the long term.

One of the sports that is increasingly develop in Indonesia is badminton. Badminton its a sports game that is included in small ball games, this sport can be done both indoors and outdoors, using a shuttlecock and racket, with a rectangular and restricted playing field. The net to separate the game area itself with the opponent's playing area.

This sport played by all people because it can provide pleasure and health and this is a special attraction, so that not a few of the people who have focused on achieving in sports. In Indonesia, many professional athletes have emerged. Judging from the championships held in schools, universities and badminton clubs in the surrounding communities, they have started practicing almost every day to be able to reach their respective targets.

Warming up was an initial activity before carrying out the main activities. Warming up is done before carrying out sports, training, or before competition, in addition to reducing the risk of injury, warming can make the body more ready during training or before the game takes place.

As we know about warm-up material, athletes and the surrounding community should not ignore this especially before the athlete competes, considering warming is very important to do because warming can increase body temperature, and make the body more ready to carry out heavy activities, besides warm-up can reduce the risk of injury. So, it is very important for athletes who will compete to pay attention and do not underestimate the warm-up before competition. The same material every day is always given to athletes, especially from the heating material, not a few athletes who feel bored or bored with the heating material, and that can be seen from the athlete's daily practice, and finally these things are carried away by the athlete before compete, or athletes who will play matches. Though heating or warm-up itself is very important to be done by every athlete who will compete, because if you do not do the match before competing it can cause things that harm the athlete when the match takes place.

This also happens in the badminton club Sevone Badminton Club, the lack of interest of athletes to warm up because the form or material of heating is tedious and tends to not vary and finally a habit that is not good and detrimental carried over until before the match, and made the athletes do not have the interest to warm up before competing. So that it can lead to a greater potential for injury when competing, making athletes not have the motivation to compete, and can affect the performance of athletes because it can cause a decrease in the quality of athletes during the match, and certainly can cause defeat for athletes in matches.

The game itself is an activity that aims to have fun, besides that the game is also a movement activity that is actually designed with the intention that children can improve certain abilities based on learning experience, by playing children can get a lot of positive things, besides being able to cause pleasure and cheerful, there are also many other benefits of the game, one of which is a game that can provide certain values such as increasing motivation to do something positive, and this is very much needed for athletes who experience problems with saturation or lack of interest in warming up with material that tends not to vary. So, in this case the athlete can feel pleasure and get other positive values from the game.

When associated with the description above researchers have an interest in matching and playing games with heating material because this can be a new innovation in the development of heating material, and can also be a way to help athletes overcome problems that can be seen from everyday athletes when while practicing, when given training material combined with

game modification the athlete can feel pleasure and become more enthusiastic when practicing, and that is not impossible if the pre-match heating material combined with game modification can also make the athlete's condition before playing more energetic and motivated, so that athletes can maximize all their abilities, and thus they can achieve their respective targets optimal.

II. METHODS

This research method uses the Research and Development (R & D) research method to validate the product in the form of pre-match heating models based on games for badminton athletes. Design in research and development comes from systematic practice data, development and evaluation processes aimed at forming an empirical basis for obtaining instructional and non-instructional products and obtaining improved tools and models. This is a way to test the theory and to validate the product. In addition, it is also to create new procedures and tools based on certain analysis. According to Borg & Gall, R & D in education is an industry-based development model where research findings are used to design new products and procedures, which are then systematically tested in the field, evaluated and refined to meet certain criteria. Product design and development as well as instructional programs are the heart and IDT (Instructional Design & Technology).

The stages of this research are the procedures adopted in the heating model. The final result of this study is to make a pre-match heating model based on games for badminton athletes.

III. RESULT AND DISCUSSION

A. Research result

The stages of this research are the procedures adopted in the warm-up model before competition. The final result of this study is to make a warm-up model before competition based on games for badminton athletes.

The results of a warm-up model before competition based on games for badminton athletes are written in the guidebook. The book presents various warm-up models that have been sorted from their groupings, and their functions from the first model to the last model.

The warm-up model before competition based on games for badminton athletes is done individually and in groups on each model. Each warm-up model is presented in different forms and steps in each model,

and is easy to implement in the implementation process, so that later it is expected to be able to achieve the appropriate goals.

B. Results of Need Analysis

Needs analysis on pre-match heating model research based on games for badminton athletes aims to analyze the need to develop pre-match heating models based on games for badminton athletes. The results of the needs analysis in this study used interview data with the head of badminton sports coaches at Sevone Badminton Club, Tyfo Badminton Club, and Hafana Badminton Club on March 5, 2018.

1. Making Initial Products

After completing the needs analysis phase, proceed with the making of the initial product. The results of the needs analysis encourage researchers to make a pre-match warming model based on games for badminton athletes with 20 pre-match warm-up models based on the game.

2. Evaluation of Experts

Before the training model that has been made can be declared valid and feasible to be tested on the subject of research, the researcher first validates or tests the pre-match heating model based on the game for badminton athletes to two experts, namely: 1 badminton sport expert, 1 game expert. The two experts assessed the model design that was made so that it would be feasible to be tested. Based on the expert test conducted, it can be concluded that there are 20 training models that are worthy of testing.

Pre-match warming models based on games for badminton athletes are feasible and can be used for pre-match heating material.

Expert tests conducted by researchers on 2 experts there are several constructive suggestions for improving the pre-match warming model based on games for badminton athletes including:

- Instructions for implementing pre-match heating models based on games must be made clearly so that it is easy to understand badminton athletes.
- Regulation of pre-match warming models based on games must be made clearly and easily understood by badminton athletes.

3. The purpose of each pre-match warm-up model based on the game must be explained in detail and easily understood by badminton athletes.

C. Product Revision

Based on data collected from each expert, there are several product designs that need to be revised before

becoming the final model and tested in small groups and large group research. Product revisions are intended so that product designs are made more perfect.

Based on the results of a small group trial conducted by researchers that 10 models of exercise carried out are feasible to use and can be tested to the next stage, namely large group trial.

D. Final Model

After being declared valid and revised, the pre-match warm-up model is based on the game for the final badminton athletes, there are 20 heating models that can be applied to badminton athletes, both in terms of tools, place, time, and benefits of each movement in the game. Large group research carried out at Duren Sawit Youth Center was conducted with the subject of badminton athletes from Sevone Badminton Club, Tyfo Badminton Club, and Hafana Badminton Club totaling 50 athletes.

Based on the results of a large group study conducted by researchers that 20 pre-match heating models based on games for badminton athletes are worthy of being used as a variation of the material warm-up for badminton athletes.

IV. CONCLUSION

In the study of warm-up model before competition based on games for badminton athletes packed in game modifications. Based on the data that has been collected from the results of the study consisting of expert validation, small group trials, and large group research, the researcher can draw conclusions that:

1. A pre-match warming model based on games can be developed in pre-match heating methods for badminton athletes.
2. Pre-match heating model based on effective games for badminton athletes.
3. The development of the model obtained as a whole from game experts states that the models made are included in the appropriate and appropriate categories of use.
4. Development of a model that is obtained as a whole from badminton sports experts that the model developed is included in the appropriate and appropriate category of use.

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Engineering Measuring Instrument and Training Reaction Time, Coordination Reaction Time, Maximal Power to Muay Thai Sports

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Abstract—Technology in sports is a technical tool used by coaches and athletes to improve their training and competitive environment, so as to improve their overall performance. in martial arts technology-based punch and kick gauges already exist that can measure speed, strength, and reaction time. The purpose of this study was to determine speed reaction time, coordination time, and maximum power with a technology-based tool so that it can produce data with high validity accurately. The method used in this study is a type of development research or known as Research and Development (R & D). The sample in the study is a technology-based measuring instrument in the form of a samsak. The results of this study indicate that the measuring instruments and reaction time exercises, coordination reaction time and maximal power are valid and reliable. Furthermore, this tool can be used to measure speed reaction time, coordination time, and maximum power in muay thai sports.

Keywords—), *Keywords: Measuring Instrument, Muay Thai, Reaction time, Coordination reaction time, maximum power.*

I. INTRODUCTION

Technology in sports is a technical tool used by coaches and athletes to improve their training and competitive environment, so as to improve their overall performance. in addition, technology can be used as an instrument used to achieve selected goals and know the development of athlete's condition [1]. the application and development of technology in training programs is needed to improve the quality of training and performance of athletes so that it will affect achievement [2]. technology development can be used as an instrument to monitor physical activity, training, and provide measurements of a broad and detailed data set so as to provide data for a more objective evaluation of training strategies and new approaches on how science is applied knowledge [3]. as stated by [4] "Technology has shown great potential to monitor performance in sports, and will be effective if coaches and athletes know the goals and performance and if they feel the need to make corrections to techniques and training".

In the sport of martial arts based punch and kick measuring devices already exist that can measure speed, strength, and reaction time. the measuring instrument is called the Development of Speed Measurement System for Pencak Silat Kick Based on Sensor Technology developed by [5]. The workings of this measurement tool can record reaction speed and kick speed data in milliseconds. there are two sensors that are installed to detect kick movements consisting of a Force sensor and Ultrasonic PING sensor. Force sensors are used to detect kicker responses after receiving instructions. while the Ultrasonic PING sensor is used to measure the speed of the kicking foot to the target.

In Muay Thai martial arts there are very complex demands consisting of a number of special characteristics to achieve high-level competitive performance, for elite athletes to be able to achieve success in competition it requires testing of fitness and skills components. Components related to skills include speed, agility, power, balance, coordination time and reaction. Most martial arts sports require a mixture of techniques (coordination), aerobic fitness, strength, speed, and reaction speed [6]. During this method of training in camp is to meet and interact directly with the trainer, but the number of trainers in each camp is very limited not comparable to athletes who practice so that the training method is felt to be less effective and the absence of technology-based measuring instruments in measuring athletes' development.

Therefore the need to compile a technology-based measuring instrument that can measure the ability level of kick technique, punch, which measures speed reaction time, coordination time, and maximal power so that it can produce data with high validity accurately.

From the exposure and measuring instruments above can measure speed, strength, and reaction time of punches and kicks. That kick and punch techniques are not only the speed, strength, reaction time and accuracy needed but power kicks, punches, and coordination reaction time are also needed. This

means that there are weaknesses in the measuring instrument above which cannot yet measure coordination reaction time. So far the tools for measuring muscle power used are the vertical jump test, force plate, and hand medicine ball put. That this gauge can only know muscle power without knowing exactly the specifications of power kicks and punches. With the weaknesses of the existing measuring instruments and there is no reaction action training tool in the Muay Thai sports branch, the researchers wanted to make an alternative tool with the latest design, namely a tool to measure reaction time, coordination reaction time, maximum power kick and tool kick reaction time training and coordination.

II. METHODS

A. Participants

In the product test, there were 5 Muay Thai practitioners. Each individual will perform motion tasks in the form of maximum power.

B. Research Design

Research conducted by researchers is a type of research development or known Research and Development (R & D). R & D research is carried out with systematic analysis, design, and evaluation with the dual aim of producing solutions to complex problems in educational practice, and advancing our knowledge of this complexity and the development process and developing it [7].

C. Data Analysis

The steps to testing :

- 1. Test validity
- 2. Test t
- 3. Test the test tool

D. Product Trial Protocol

In carrying out the task, the reaction will be turned on for three minutes and will issue a stimulus consisting of LED lights to be responded to by the athlete and will be directly accessed with maximum power, while to carry out motion tasks will be turned on for three minutes where the tool is called a stimulus produced by color lights from LEDs that have more than one lamp and athletes must do a series of motion tasks in units of time.

In the product test followed by Muay Thai practitioners, amounting to 5 people. Each individual will perform the task of motion in the form of kicking with maximum power. In this tool trial each athlete makes 30 kicks divided into 3 sessions. after the athlete kicks ten times the athlete is given time to rest first. Athletes in the maximal power test are given a 45-minute break to recover according to research [8].

E. Product Revisions

After getting expert advice and adjustments to the needs of the tool, it was revised to the following.



The results of the previous revision of the reaction tool were made into separate ones which were originally a unit of the samsak section due to the ease of installation of sensors, LEDs and cables. In addition, the position of the device can be adjusted in height according to the body posture of the athlete who is carrying out motion tasks.

The revised results on samsak are as follows.



The results of the sandsack revision were chosen using sandsack that was not hung because resonance when measuring maximal power was less tolerable so it used the sandsack which was attached to the floor surface and used per center to tolerate force and power from kicks or punches.

TABLE 1. LIST OF SENSOR USED

No	Device	Series
1	Accelerometer and Gyrometer	MPU6050
2	Plat piezoelektrik	Generik
3	Vibration sensor	SW-420

TABLE 2. LIST OF ELECTRONIC COMPONENTS USED

No	Device	Series
1	Mikrokontroler	NodeMCU V3
2	Comparator IC	LM339N
3	Voltage regulator IC	LM7805
4	Shift register IC (Parallel In Serial Out)	74HC165
5	Supporting electronic components (resistors, capacitors, etc.)	Generik

III. RESULT

The results of data collection in the T test on existing tools to measure maximum power. This initial data is taken as a comparison on testing construct validity with sandsack-based measuring instrument engineering. After taking data on force platform and sandsack the data is obtained as follows.

TABLE 3. FORCE PLATFORM

No	Name	Maximum Power (Watt/Kg)					Average
1	Edy	60	61,2	60,5	59,7	59,2	60,12
2	Hilmi	50,3	58,8	48,7	49	45,1	50,38
3	Delfan	64,3	64,4	59,8	62,1	59,7	62,06
4	Sindy	42,9	41,2	41,6	39,4	47,2	42,46
5	Chemi	40,4	39,8	42,1	38,4	39,6	40,06

TABLE 4. SANDSACK

No	Name	Maximum Power (Watt/m)					Average
1	Edy	102,4	121,5	126,7	136,7	155,7	128,6
2	Hilmi	135,5	86,9	76,3	100	107,6	101,26
3	Delfan	99,2	102,7	110,3	95,3	108,7	103,24
4	Sindy	65,9	85,5	71	86,5	78,3	77,44
5	Chemi	62,2	72,3	65,5	65,1	77,6	68,54

After the sample is tested on the force platform and sandsack tools, the average is taken and then the correlation test is obtained $0.048 < 0.05$ data which means there is a relationship between the force platform and the sandsack tool in measuring maximal power.

IV. DISCUSSION

Based on a series of activities carried out by the author related to this research and referring to the products produced, the measuring instruments and the reaction time training tools, coordination time, and maximal power have good qualifications to be used as training tools and measuring instruments. Sandsack engineering product design has advantages in addition to its affordable price this tool can measure reactions and maximum power at one time so that it is more accurate with the results performed by athletes in matches. In addition to measuring instruments this tool can also be used as a coordination training tool that allows athletes to be more maximal in performing motion tasks in sandsack.

V. CONCLUSION

Conclusions from the results of engineering measuring instruments and training reaction time, coordinate reaction time, and maximal power in muay thai sports can be used as a measuring tool and exercise to evaluate the results of the training process. In addition, this tool measures more effective or valid because its use resembles a condition that is playing.

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Abstract – Obesity is often the scourge most avoided by someone especially women. This study aims to find out how 4 minute exercise can resolve the overweight. This research used experimental method one group pre-test and post-test. The population in this research was 61 students of El-Hafidziyah Islamic Boarding School, Terusan, Muara Bulian, Jambi consist of 16 male samples and 45 female. The sample of this research was total sampling. The instrument that was used in this research was by measuring body height and weight. Height and weight are used to measure before and after treatment. The four minute exercise used here as a treatment in this research. Using T-Test, the result from this research is applied four minute exercise could resolve overweight, But many things must be done to help the body weight during the four minute exercise such as a good lifestyle, healthy life and food, and regular exercise. So from this study it can be concluded that 4 minute Exercise can help to resolve overweight.

Keywords: four minute exercise, overweight

I. INTRODUCTION

Sports have become a necessity for every human being, because people are increasingly aware that exercise is very beneficial to improve fitness, freshness, and health and to increase work productivity. In this period, government are actively launching sports as a part of daily activity through the motto “Mengolahragakan masyarakat dan memasyarakatkan olahraga”, then it should be sports are given to children to create people who aware about the importance of sports. An example as a football, it has big interesting in life and they give dominate for daily activity so much people. Sports can be means for professionals to get profit like good health and/or good material.

So many programs can be used to build the ideal body. Like how you can consistently go through the method or the program. For example, is to overcome obesity and building muscle. You must be in one opinion that the proportional body can be formed with strong hard work. But it cannot be denied, that time is a big obstacle factor that is often complained by fitness enthusiast.

Obesity is often the most frightening specter especially if asked and experienced by women. Obesity or overweight is a condition where someone has a body mass index higher than the standard set accordingly the body weight. More often obesity caused by lack of someone exercising Excessive

calorie consumption for body and not absorbed properly by the body resulting in a buildup of fatty acids that will cause obesity.

In the El-Hafidziyah Islamic Boarding School, where the students have almost same activity and intensity of work in one day. Although they have same activities in one day, they have some different too. They are some different from weight and height category, they are from different origin and different culture, their emotional has different too. The weight difference has been focused for this research. We called obesity problem. This problem sometimes takes our attention, because in other case, obesity can cause death. This is so amazing problem, right?

Deaths caused by obesity are usually most affected by social influences. Often a matter of conversation because being overweight sometimes becomes a burden on life for some people who are obese, and then leads to stress and the desire to end their own lives.

To solve the problem of obesity, we need the right way, practical, and can be done anywhere, anytime and not wasteful of time and place. In this research we will apply the exercise carried out only for 4 minute and with easy movements. We're usually called this TABATA exercise. Researchers hope this 4 minute exercise can resolve the overweight.

For muscle building, it use short duration of an exercise but it takes give a good effect for body. An exercise to help to build muscle is like a TABATA exercise. TABATA exercise is an exercise program that developed from **High-Intensity Interval Training (HIIT)**. Istiarina Putri^[4] in her article (2015) said, “High Intensity Interval Training is Sport design for increase metabolism system and fat burning.” This exercise can help to increase developing fast twitch fiber which is widely used by non-endurance athlete for advanced muscle memory, speed and power.

The training technique was released by Professor from Japan, called Izumi Tabata. TABATA has purpose to increase and advance cardiovascular system and muscle strength. But basically, if you using TABATA workout for your daily exercise, indirectly you will improve Aerobic system much better than cardio exercise in general, besides Anaerobic

system will certainly increase at the same time. Nowadays, TABATA workout indeed suitable to apply for you which have burn fat less program or for busy people with high work time, so hard to take time for do workout.

Under the Tabata method, you spend 20 seconds doing high-intensity exercise followed by a 10-second rest. Then, you exercise hard for another 20 seconds, then take a 10-second rest. The cycle repeats for four minutes, for a total of eight sets of exercise (Howard, 2012) [3].

In order to find out the impact of applying the TABATA exercise, it is necessary to have same activity and intensity from the people who using TABATA exercise. This is needed in order to ascertain the influence of TABATA training on some people well, because the sample is homogeneous. The exercise will be done for 4 minute every each time. This why, we will research, "4 minute to resolve overweight".

The problem in this research is "How four minute exercise could effective to resolve overweight?"

The purpose in this research is to know how four minute exercise could be effective to resolve overweight.

II. MATERIAL AND METHODS

High-intensity interval training (HIIT) programs have become increasingly popular in recent years. "TABATA training," a term that is often used synonymously with HIIT, was first described by the Japanese scientist Izumi Tabata in 1996. Tabata and his colleagues (1996) conducted a study that compared moderate-intensity continuous training at 70% of maximal oxygen consumption (VO₂max) for 60 minutes, with HIIT conducted at 170% of VO₂max. HIIT consisted of eight, 20-second all-out exercise bouts followed by 10 seconds of rest for a total of 4 minutes of exercise (Emberts, et.,al : 2013)^[2]

The exercise just need 4 minute to do, with 8 type exercise. The 8 type exercises are:

1. Push-up
2. Jumping Jack
3. Heel Touches
4. Uneven Planks
5. Half Squat
6. Mountain Climbing
7. Wall Squat
8. Crunches

All of the type in the exercise must do in 20 second and followed 10 seconds for rest so total the exercise is Four minute (Viana, Ricardo, et.al. : 2018)^[5]

The research strategy was intended to find out how the performance of the pumped heart to work with rapid intensity to produce effective and efficient aerobic activity. With the increased intensity of work the heart will cause increased metabolic work, fat burning will occur in the body, glucose will quickly be used for energy sources.

This activity will never have the desired effect if it is only done once. Four minute exercise only can help to resolve overweight, but could not be the one and only one way to resolve overweight. The participant must have good diet, a good lifestyle, and positive thinking that they will be get healthy living, and never forget to do the Four minute exercise every day.

This research is using experimental research with one group pretest posttest design. The treatment is application of Four Minute Exercise that the purpose is to resolve overweight. The treatment have been given by 14 times, 1 time for pre-test ad 1 last time for post-test, total treatment is 16 times. Population of the research is 61 students from El-Hafidziyah Islamic Boarding School, 45 female and 16 male. They are given same variation of 4 minute exercise, with 20 second every variation and followed 10 second for rest so total the exercise is 4 minute.

To know how the Four minute exercise will be impacted to resolve overweight, the result of pre-test and post-test will be compares and we will get the total result from there. Is the Four minute exercise can help to resolve overweight or not.

This exercise will be applied 14 times, do it once for one day. Participant will measure their height and their weight in pre-test and post-test. To compare the results of this research, and make a conclusion how the implementation of "Four minute exercise" works.

The following data were extracted: sex, age, height, and weight. Variation of the exercise will be given the same to all participants.

The participants in this study are 61 students in El-Hafidziyah Islamic Boarding School, 45 female and 16 are male students. Range of age is from 10 to 18 years old. Causing they live together, they are almost have same activities, like, wake up in the morning, shubuh prayer, take a bath, breakfast, going to school, after school they have a lunch, Dzuhur prayer, doing homework, cleaning up the mosque, cleaning up their living, have a enjoy time, help the boarding mother or father, and etc. after they take a nap

III. RESULTS AND DISCUSSIONS

The result from this study is data shows: (1) $t = t$ count value obtained 38.608: Must be compared with t table in DF 60 (t table = 1.671). So that t count > t table then there is a significant difference between the results of the Pre-Test and Post-Test. (2) The probability / p value of the T Paired test: Result = 0,000. Meaning: There is a difference between before and after treatment. Cause: P value is <0.05 (95% confidence).

So from this study it can be concluded that Four minute Exercise can help to resolve overweight. However, again, this exercise is not the only one that can resolve overweight. Must be balanced with a healthy lifestyle, a good diet, supportive activities and regular exercise should be done.

IV. CONCLUSION

From this research that has been carried out research some time past and based on the result obtained the conclusions is “four minute exercise” can help to resolve caloric intake and reduced physical activity are likely the major drivers of obesity in children. Researchers are also investigating whether exposures to certain environmental chemical exposures may play a contributing role in childhood obesity (American’s Children and Environment)^[1]

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overweight. But, it can’t be the only one way to do, don’t forget to get healthy lifestyle, good diet, and always have routine some sport activities. Obesity is due primarily to an imbalance between caloric intake and activity. Increased

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Higaonon Dances: Their Implications to Cultural Identity Peace and Development

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Abstract— *This study presents an ethnographic overview of the Higaonon culture as shown in their traditional dances, their beliefs, values and customs. It presents the Higaonon dances which explore the role of the tribe as agent of culture preservation that is gradually diminishing due to modern influences in society. Observations and interviews were the two primary methods used to gather important data for this study. Descriptive method was also utilized to describe the meaning, movements of the arms, and the step patterns which reflect their cultural identity. Entry protocols with the tribal leaders and local government officials were properly observed. Results of this study show that there are seven traditional dances of the Higaonon namely: Anahaw, Binanog, Kagmalaki, Kagsabona, Kapangamote, Saut, and Talapak. Furthermore, it reveals that the Higaonon dancers have common costumes, accessories, adornment and accompaniment used in different dances. Their costume used only three colors that will identify their tribe and culture. These are the Red color which means bravery of their tribal leaders to protect the members of the tribe, the White color for purity and sincerity to their beliefs and traditions, and the Black color which stands for loyalty to their customary laws. Moreover, the Higaonon used “gong” and “tambol” for their accompaniment in all their dance presentations. The dancers used almost the same step patterns, and variations of their arm and hand movements which connote different meanings as being emphasized in each dance.*

Keywords— *Higaonon Dances, Cultural Identity, Peace, Development, Indigenous People*

I. INTRODUCTION

Cultural heritage is central in protecting the identity of the nation. It will bring an irrefutable connection to the past – to certain social values, beliefs, customs and traditions, and deepen the sense of unity, belonging and national pride. However, with the advent of technology and social media, there is a threat for the rich cultures to be forgotten by the new generation. Thus, the Department of Physical Education of MSU-IIT, Iligan City, Philippines conducted a study about the traditional dances of this tribal people in Iligan City in order to preserve their culture as can be seen in their traditional dance [1].

The Higaonon’s vanishing ancestral traditions and customary laws used to define dances as their social relationships and values which promote efficiency for economic development; hence, it is important to preserve the almost forgotten culture of these minority groups. Preservation of Higaonon culture is very important in order to incorporate such an essential part of our history into our general national development process. Peace and development in the community would therefore depend on the understanding of the culture, the adaptation of its elements for political, educational and economic development as well as its strengths for social integration (Datu Soong)[1] [2].

This study presents an ethnographic overview of the Higaonon culture which emphasized a radical duality between the sacred and their world view, beliefs, values and customs that they define their own forms of governance, as well as their customary laws and norms. This will present a compilation of the Higaonon dances and explore their role as agent of preservation of cultural knowledge that is no longer practiced in its traditional contexts [2].

Likewise, this study explores the traditional dances of the Higaonon of Iligan City which show their own identity and distinction in terms of the arm and body movements and the color of their costume. This will add to the rich compilation of indigenous dances that are introduced in schools and performing groups in the country. Through the documented dances of the Higaonon, the identity of the said tribe will be more understood, respected and appreciated which will contribute to peace and development in the region [3][4].

The Higaonon and other cultures alike will be made to realize how important it is to have a culture of their own as characterized in their almost forgotten dances which are worthy of promotion and preservation. The results of this study will ignite the interest of teachers, researchers, choreographers and local government to enhance the the promotion and popularization of the Higaonon culture, as well as to bridge the cultural gap [4] [5] [6].

II. MATERIALS AND METHODS

Descriptive method was also utilized to describe the costumes and adornment, accessories and props, musical accompaniment, dance steps and patterns, as well as the characteristic and body movements that are inherent in the dance and how it relate to their culture. This method used, also describe the dance description, background or origin, dance steps, arm/hand movements, musical accompaniments, costumes, adornment, accessories and props that are inherent in the dance.

Before the conduct of this study, a consultative meeting was done with the NGO's in the city, the principal and teachers of Rogongon Agricultural High School and representatives from the local government. As practiced by the natives, a ritual was performed to ask permission from the environmental spirits prior to the conduct of this study. The researchers were asked to bring the necessary food/materials to be used in the ritual.

To gather authentic information regarding the culture of the Higaonon all over Mindanao, the researchers also went to Tourism Office in Malaybalay, Bukidnon City and interviewed the officers and employees: Information regarding the Higaonon tribe in Region 10 and their different indigenous dances, as well as its meaning adornment, costumes and accompaniment.

During this presentation, the researchers interviewed the native, men and women as young as 15 years old and as old as 86 years old. Interviews were done in a casual conversation so that the data will be gathered directly from the native to come up with an authentic cultural representation. Video camera was used to record the dances and to make sure that all movements, dance patterns and steps including the dancers' facial expressions, were documented for further analysis and interpretation. The dances were analyzed. Interpreted and documented based on Francisca Reyes Aquino's notations, dance patterns, and symbols. The documentation was based also on their fundamental characteristics such as their historical background, beliefs, traditions and customary laws.

III. RESULTS AND DISCUSSIONS

The costume of the male dancers is made of a polo shirt with a combination of striped black, white, and red colors. The color of the pants is red decorated with a white rick rack tailored at the edge of the bottom part. Male dancers also wear a headdress called "Tubao" which is made of cloth originally designed for them with the same combination of the designated colors for the Higanon tribe [7].

Female costume comprises of blouse at waist length or just below the breast with bell shape sleeves at elbow length with a combination of three prescribed Higaonon colors (red, white and black). There is one button at the back as opening. The

blouse is accented by the same design or cutting horizontally along the neckline, along the lower part of the sleeve and along the abdominal line. The lower part of the blouse is decorated with a rick-rack white or red color tailored on its edge sleeve and the blouse itself. The skirt is ankle-length and shirred skirt of the same color of the blouse, or red or white floweret's design accented by the same cutting, horizontally along the knee and the lower leg to the ankles. The lower part of the skirt at the edge is decorated by a rick rack of white or red color. Likewise, the dancers wear a headdress named "Balading" put around the head with the decorations like a ball just hanging around the head. This headdress is made up of thread with different colors that will match the colors prescribed for their tribe [8] [9].

The accessories worn by the dancers include the necklace, earrings, bracelets and anklets made of beads with the three prescribed Higaonon colors the same with that of their costume. The dancers used the same accessories with those of other Higaonon Tribe in the different places of Mindanao, but it varies with the color as prescribed by its origin. The color of the beads used for their accessories will harmonize with the color of their costume. The dancers wear also a headdress made of thread that matches the color of their costume. These are specifically describe below:

- Balading is the headdress worn by female dancers around the head and hang down. These are made of thread the same color of their costume. For other Higaonon tribe, these are dangling earrings made of beads [1].
- Baklaw is a bracelet made of similar beads and the same color of their costume. The dancers may wear several "baklaw" on their hands [3].
- Lumbong is a headdress made of carefully chosen threads and beads to match the color of the dress as designated by their tribe, put together in strands and in intricate designs and color combination with a ball at the end of every strand. For other Higaonon tribe, the headdress is called "Balading" [1].
- Salay is the necklace used by the dancers made of beads and the same color combination of the lumbong and their costume with different designs, sizes or styles [5].
- Singgil is an anklet used by female dancers made of similar beads and colors as used in the accessories of the other dances [10].
- Baklaw, this is a bracelet made from similar beads as the girls' accessories with the same combination of colors with their costume. The Baklaw for male dancers is bigger than that for female dancers [3].
- Pakot is a belt used by the female dancers made of beads of the same color of their costume [11].
- Salay is a necklace wider than the salay used by the female dancers but is made of similar beads, designs and color combination [5].

- Tangkulo or Tubao is a male headdress made of cloth white or red adorned with tassels on its edge or the use of a neckerchief [2].
- Tikos is an anklet made of beads used by male performers with the same combination of colors on their prescribed costume [2].

The musical accompaniment used in all the dances performed were “Agong or Gong” and Tambol. The Agong or Gong is made of brass which produces sounds when struck. The high cost “agong” prompt the use of indigenous materials such as can, bamboo, wood and the like during the dance practice. It is hanged and suspended tied by rope in four posts. Each gong is held by one player, usually in the left hand while he or she strikes it with a wooden stick. Oral traditions maintain that the best-sounding gongs in the past contained gold in the alloy mixture, which added to an instrument’s value [12].

Generally, the dances of the Higa-onon in Rogongan are pantomimic and ritualistic in nature. Their daily activities, planting, harvesting, gathering of cassava and honey as reflected in their dances are performed during festivals, weddings, social gatherings and other tribal celebrations. These are the following:

- Anahaw. This is a religious dance performed by male Higaonon. Dancers hold anahaw leaves or dried coconut leaves in each hand. Arms are bent in front at chest level. Dancers shake the leaves throughout the performance. Dancers may be in a line or a circle formation. They move counterclockwise with a side step or small jumps. This is performed every night of a full moon. The male performers are called Talawtawan or acolytes. An altar or Talapnay is prepared on which offerings of betel nut or Tilad and small pieces of red cloth are placed. The shaking of the anahaw leaves is to drive evil spirits. The circular formation signifies unity in the destruction of evil spirits. The dance lasts until the performers feel that their prayers have been heard. This may take an hour [12].
- Binanog. This is a courtship dance performed during weddings and other tribal celebrations. The dance imitates the movements of a male hawk courting a female hawk. According to the Higa-onon when the male dancer succeeds in touching the female dancer’s handkerchief with his hand or when the female dancer stops dancing, the datu of the Higa-unon will announce the marriage of the two dancers. Male dancers twist their mouth while dancing. The twisted mouth symbolizes the presence of an enchanted spirits or Kokok in the male dancers who may be able to hypnotize the female dancer into allowing the male dancer to touch her handkerchief or stopping the dance [7].
- Kagmalaaki. This is a dance about a love triangle. The two young men Higa-onon were in love with one Higa-onon lady. Both of them made a proposal and promises to marry her. Fortunately, one of them was accepted. However, the other suitors refuse to accept his flight, yet he fought for his right. He fought each other and stabbed him to death, so he won the fight but the lady refused his proposal to accept him. With his depression he stabbed her and stabbed himself too. According to the Higa-onons this story happened before in their community. This dance is performed for entertainment during festivals and other tribal celebrations [4].
- Pagpangamuran. The “Pagpangamuran” is a courtship dance of the Higaonon Tribe of Iligan City. It depicts the action of a man courting a woman. Throughout the dance, the man is shown displaying his affection to the girl; however, his pleadings are not accepted because of the conservative culture of the group [9].
- Saut. The dance depicts the movements of a combat or an imaginary duel. It is performed by two males Higa-onon. Dancers hold a spear or ambitan in one hand and a shield or kalasag in the other hand. Dancers face each other throughout the dance and move around pretending to hit one another. Dancers skip and execute chasing steps while moving around each other [6].
- Talapak. Talapak is an occupational dance that depicts planting rice. The dance is performed by a male and female Higa-onon. The Male dancer holds a long bamboo stick or buntong or kali in both hands. This is shaken and pointed to the ground all throughout the dance. The female dancer carries a basket or abunan with one arm. She stands behind the male dancer and follow him whenever he goes. Dance movements portray digging of the ground and planting of rice. This dance uses step close step with the left arm of the girl holds the basket tied at the hip and right hand as if getting seeds from the basket and put it on the ground as if planting. The boy is holding a small pointed bamboo or stick as if digging the ground while moving around using step close step. Talapak is performed during wedding feasts or any special gathering. The dance is a contest between a male and a female performer. If the female dancer can move faster than the men then the datu rewards the woman by giving her all the harvested rice. The male dancer therefore must move faster than the woman throughout the dance if he wants to keep the harvested rice [12] [13].
- Tinulalang. The dance depicts the movement of a tiny bird who stays in the riverside to watch and catch fishes especially the evening or midnight. This is performed during festivals, and other gatherings or celebrations. The dance is also classified as an entertainment dance of the tribe [13].

IV. CONCLUSIONS

Based on the findings of the study, the researchers were able to conclude that Higaonon dances are artistic manifestations of preserving the culture of the tribe with its well-coordinated rhythmic movements expressing the people's beliefs and way of life. Strengthening and preserving these dances, beliefs, and traditions is very important for these people to be recognized in the community and local government for their continued respect and support. To reiterate, dance cultural heritage will contribute to peace and development in the locality.

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Existential Humanistic Counseling Model to Increase Fencing Athletes' Self-Confidence in a Fencing Club, Tunas Pembangunan University

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Abstract—The purpose of this research is using existential humanistic counseling model in increasing fencing athletes' self-confidence in Tunas Pembangunan a fencing club (UFC), Tunas Pembangunan University 2018.

This research is a classroom action research. The purpose of this counseling is intended to address athlete who lack self-confidence through existential humanistic counseling model at fencing athlete in Fencing Club (UFC), Tunas Pembangunan University 2018. There are 32 UFC athletes. Ten (10) of them are lack self-confidence. Then, we give existential humanistic counseling model. The research is done in 2 cycles. The first cycle has increased, but there are only 6 athletes achieving the criteria above 70 %, while the 4 athlete s achieve under 70 %. The analitical result indicates that efforts to cape with athletes who are lack self-confidence (less confidence) with use of existential humanistic counseling model services at Fencing Athlete UFC.

This research show that fencing athletes are given existential humanistic counseling model increases self-confidence. This increased self-confidence in the results of impact performance.

Keyword—*self-confidence, fencing athlete, existential humanistic counseling*

I. INTRODUCTION

The high level achievement of an athlete can be conquered if he/she is self-confidence. Self-confidence has a significant relationship with the increase of athlete's performance. Previous research explained that that the best performance is a direct correlation between high self-confidence and sports performance. This argument is reasonable enough because there are many challenges and obstacles to get high level achievement in sports. Therefore, the most important trait that an athlete must have is self-confidence. Without self-confidence, athletes will face many problems.

The level of self-confidence is an indicator of success in every match. The athletes are able to perform well if they believe in their self - ability. The athletes' self-confidence will keep on within themselves consistently. It reflects from the consistency of their emotion. An athlete with self-

confidence will do self-evaluation to accomplish the success. They are responsible for what they do.

An athlete without self-confidence will doubt his abilities and they will get tense and frustrated easily when doing their duties.

The development of athlete's self-is strongly needed in fencing training and matches and also must be closely paid attention training the fencing athletes to develop their self-confidence maximally. However, this is not in accordance with the expectations. Based on the observation conducted by the researcher, especially a fencing club in UTP Surakarta, it can be concluded that the athletes' self-confidence declines. The decline of self-confidence is seen when having internal training and competition at the club. The athletes' techniques, tactic, and strategy mastery are good. However, the result of the competition is not good. Especially when they compete with the opposite team with the same and/or above reputation, they lose their self-confidence and end up in losing. According to those phenomena, it is needed to be conducted a research entitled " A Humanistic Existential Counselling Model to improve Athletes' Self-Confidence in a Fencing Club, UTP Surakarta.

Based on the background of the problems, this study aims to increase the self-confidence of fencing athletes in a fencing club, UTP Surakarta through existential humanistic counselling.

The results of this study are expected to provide substantive theoretical and practical benefits as follows: (a) Theoretical Benefits: The results of this study are expected to be able to provide and strengthen existing theories, especially in increasing the self-confidence of fencing athletes in a fencing club, UTP Surakarta. (b) Practical benefits: The results of this study are expected to be used as a guide for athletes, coaches and administrators in increase the self-confidence of fencing athletes in a fencing club, UTP Surakarta.

II. METHODS

This research is conducted in Fencing Club, UTP Surakarta, Central Java. The research method used in this study is action research, namely research on the actions taken by giving intervention to the research subjects, then assessing the implementation process and monitoring the results obtained. While the quantitative approach is to assess the level of achievement motivation of athletes, while the qualitative approach is to interpret the process of implementing actions with existential humanistic counseling.

The research subjects used were 32 fencing athletes from Fencing Club Surakarta, consisting of 15 male athletes and 17 female athletes. The data were collected by using questionnaires and observations. The data collection tools used were achievement motivation questionnaires and existential humanistic counseling guidelines.

The data obtained were tested for the validity of the items using correlation techniques for total product moment items with a significance level of 5%. While the reliability is by using the product moment correlation formula from K. Pearson. Quantitative data is used to determine the level of confidence of athletes with quantitative descriptive analysis with the categorization. While testing the hypothesis used quantitative data analysis with non-parametric statistical techniques, namely using a marked ranking test (Wilcoxon). Qualitative data were analyzed by qualitatively including data collection, data reduction, data presentation and drawing conclusions.

III. RESULTS AND DISCUSSION

A. *Reviews of Self-Confidence*

Self-confidence is one of personality traits as the basic aspect and built through the training and interaction process with the social environment. It is a feeling that boosts the strength, skills and abilities to do and achieve the goal with the beliefs of stress. It is an internal control of one's feelings that there is a strength within them, awareness of his abilities, and responsible for the decisions he sets [1]. It is a belief that the athletes themselves believe their ability to perform what they want successfully. Based on the opinions above, it can be concluded that self-confidence is a belief in one's own strength to do and achieve success, and responsible for what he/she has been set.

Trust is basically a belief that athletes can achieve the success in accordance with their goal. Confidence athletes means that they are able to do their duties well and also believe in their ability to build the skills they need both physically and mentally. Self-confidence is a feeling and a belief that "you can do it" and "you will perform well and successfully" [2]. Confidence athletes are confident and competent to do what to do. They think positively to do the best one and believe in themselves they can do so they keep

performing well. On the other hand, negative and lack-confident athletes to do the best will always hesitate and doubt to their own-self to do the best so that they are not good enough at their performance.

Self-confidence is always identified by high expectations for success. The most consistent findings in high performance literature are a direct correlation between high self-confidence and successful sports performance. Furthermore, explained that self-confidence is determined by high expectations for success. Self-confidence will help someone in the areas: 1) increase positive emotions, 2) facilitate concentration, 3) give a positive effect on goals, 4) increase hard work, 5) give effect to strategy, 6) give effect to psychological momentum.

Self-confidence is believed by many athletes when completing their task successfully. It can be built with hard working, practicing, and good planning. Strategies for building good self-perceptions are not enough only by providing guidance. The trainer should provide concrete programs and procedures, by providing a permissive-competitions in a training place of training or a more-relaxed place so that athletes will win the competition.

Those strategies must be implemented with a progressively well-planned so that the athletes will gradually discover their self-confidence trait. The best example of building confidence is Jimmy Conner. Conner said that an athlete can never build confidence without a coach help. Conner does sensations by motivating and encouraging the athletes and never allowing them to lose their self-confidence.

A trainer has a very important role in building athlete's self-confidence and at the same time as a controller so that the athletes still have high self-confidence. The trainer often tells the athletes to play with the same technique or method like what they do when practicing. The trainer believes that the athlete's confidence grows well, and trusts to their trainer. Furthermore, said that self-confidence can be improved by applying the following techniques: 1) completing performance, 2) performing confidently, 3) thinking confidently, 4) imagery, 5) physical exercise, 6) preparation, 7) improving self-discipline, and 8) reviewing the best performances.

B. *An Overview of Humanistic Existential Counselling*

The definition of counselling is a contact or reciprocal relationship between two people (counsellor and client) to deal with client problems, which are supported by expertise and in a barrelled atmosphere and integration in accordance to the norms that apply to goals that are useful for the client. Counseling is a process of interaction between an individual who is experiencing a problem (client) and someone who provides information (counselor) so that the clients have their own identity and self-confidence to be able to adjust himself more effectively with himself and the environment.

Existential Humanistic therapy focuses on the nature of the human condition including the ability to be self-aware, free to choose for self-determination, freedom and responsibility, anxiety as a basic element, searching for unique meanings in a meaningless world, alone and in relationships with others, infinite and death and actualizing themselves [3].

Existential Humanistic Therapy is an approach to counsel and therapy rather than a fixed theoretical model. Therapy for Existential Humanistic emphasizes on the humans' core conditions. The development of a normal personality is based on the uniqueness of each individual. Self-awareness develops since a baby. Self-determination and the tendency towards growth are central ideas. Psychopathology is a failure result of potential actualization. The differences are made between "extreme guilty" and "neurotic guilty" and between "extra anxiety" and "neurotic anxiety". Focusing on what is now and what someone is, it means an orientation to the future. The client emphasizes awareness before action. Based on these opinions, what is meant by Existential Humanistic in this research is that human beings have the ability to realize themselves and be responsible for all actions that have been taken.

There are several aspects focusing on the view of human nature according to previous research as follows [3]: (1) Self-awareness, is the key ability to understand other people and "what is happening and something takes the process to happen". Even self-awareness is the key to dig where our own strengths or weaknesses really are. With high self-awareness, we will steadily step on the reality of the life and act without any hesitation. Self-awareness is the ability of self-awareness, a unique and real ability. With awareness, one is able to be aware on the responsibility to choose. The higher the awareness is, the more intact a person becomes; (2) Freedom, Responsibility, and Anxiety, Awareness of freedom and responsibility can cause anxiety to be a basic human attribute. Existential anxiety can also be caused by awareness of its weaknesses and for the inevitable possibility of dying (non being). Awareness of death is meaningful for the individual life, because that awareness helps the individual to face the fact that he has limited time to actualize his potential. Freedom is the ability to put the capacity for development in their own hands and to choose between alternatives. Freedom has boundaries, and choices are limited by external factors [3]. No matter how big the strengths causing humans as victims, human beings have the ability to know that they are victims, and from there he can influence in a certain way, how he treats his own destiny [3]; (3) Meaning Creation, Meaning creation is creating something and make it meaningful. Meaning creation is caused by organizing text space that used to create new meanings, which are meaningless (nonsense) linguistically. Searching for meaning in life is a human trait. The desire for meaning is the main struggle of man. Life does not have its own meaning, and humans must create and find the meaning of life [3]. Based on the opinions above, it can be

concluded that the creation of meaning is to make something meaningful, life will not have its own meaning, therefore humans must create and find their own meaning in life; (4) The Purpose of Humanistic Counselling, Basically the therapeutic purpose of Existential Humanistic extends client awareness, and because it increases the ability of his choice to be free and responsible for the direction of his life. Existential Humanistic therapy seeks to get clients out of a rigid path and challenge their narrow and compulsive tendencies, which hinder their freedom. Many fears are focused on the weight of responsibility for his present condition and future circumstances. For example, he must choose whether to hold on to those who have been known or who are used to or take risks to open themselves to a life that is less certain and more challenging anxiety [4]. Existential Humanistic Therapy aims "so that clients experience their existence authentically by becoming aware of their existence and potentials and aware that they can open up and act according to their abilities" [3]. The therapeutic goals of Existential Humanistic are not to treat clients in the conventional sense, but help them to realize what they are doing and increase their ability to be free and responsible; (5) Existential Humanistic Counselling Techniques and Procedures, the approach of existential humanistic does not have strictly determined techniques. Therapeutic procedures can be taken from several other therapeutic approaches. From a number of principles and procedures psychoanalysis can be integrated into an existential humanistic approach. The core concept of psychoanalysis about resistance and transfer can be applied to the philosophy and practice of existential therapy.

This approach to existential humanistic is a technique considered as a tool to help clients become aware of those choices and accept responsibilities that accompany the use of personal freedom [4]. The main themes and arguments in the application of existential humanistic counseling include: 1) self-awareness, 2) freedom and responsibility, 3) cantering and other people's needs, 4) searching for meaning, 5) anxiety as a condition of life, 6) death and non-awareness, 7) the struggle for self-actualization [3].

The steps and techniques in this study using counseling in general include: 1) analysis, 2) synthesis, 3) diagnosis, 4) prognosis, 5) treatment, 6) follow-up [5].

C. Increasing Self-Confidence Through Existential Humanistic Counselling

Self-Confidence is one of the important elements for athletes to be able to achieve the highest achievements in a match / competition. Athletes with high achievement motivation will tend to have a high level of self-maturity, have responsibility, always try to achieve good results, be active in social interactions, choose friends who are just friends, and are resistant to psychological stress in undergoing training and facing competition.

Counseling as an integral part of individual life has an important role in increasing achievement motivation in athletes. One of the counseling models that can be used as an intervention medium to improve athletes' self-confidence is a humanistic existence counseling technique.

Existential humanistic counseling is a guidance that allows an athlete or group of athletes individually and in group through group dynamics obtaining various materials from a particular resource person discussing certain problems that are useful for supporting their daily understanding and life, both individually and as athletes, and to consider in making decisions that will be made. The opportunity to express expressions, responses and various reactions expressed through movements in training and pressures to face the competition. This reciprocal opportunity is a group dynamic that will bring benefits to athletes. Counseling using existential humanistic techniques will bring athletes to feel part of the group to be able to try to do the same thing with what is done by the model, even exactly because they can learn directly with the model. Existential humanistic counseling, a model that becomes a figure and also a resource person through focused discussion, lessons can provide athletes with knowledge, understanding and skills to achieve success requires an increase in self-confidence in achieving achievement optimally.

D. Research Results

From the results of the study, it can be known that the results of self-confidence before being given existential humanistic counseling are obtained as follows: highest value 28 and lowest value 19. Mean 15.063, and Standard Deviation 19.382.

TABLE I. Frequency Distribution of Confidence Data Before Implementing Existential Humanistic Counseling

Interval	X	X ²	f	f.X	f.X ²
24 – 28	26	676	22	272	14.82
19 - 23	21	441	10	210	4.410
	47	1.117	32	482	19.282

From the results of the study, it can be known that the results of self-confidence after being given existential

humanistic counseling obtained the following details: the highest value of 30 and the lowest value of 28. Mean 28.83, and Standard Deviation of 29.66.

TABLE II. Frequency Distribution of Confidence Data After Implementing Existential Humanistic Counseling

X	X ²	f	f.X	f.X ²
30	900	24	720	21.600
29	841	5	145	4.205
28	784	3	84	2.352
	2.525	32	949	28.157

After the collected data is then analyzed statistically t-test, and the results obtained that the value $t_o = 10,571$ is consulted with t-table with t_s 5% with N-1 (32-1) obtained by the price of table 2,042. Thus the observation t is greater than t-table ($10,571 > 2,042$), thus the hypothesis proposed "counseling for existential humanistic can increase the confidence of the fencing athletes in UTP Fencing Club to the truth.

IV. CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that humanistic existential counseling can increase the confidence of fencing athletes UTP Fencing Club.

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Development of Organization Management Web Based Federasi Olahraga Petanque Indonesia (FOPI) Jawa Tengah

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Abstract—The purpose of this study is to develop a web-based sports organization management system, in which the website will display information about the profiles of petanque organizations jawa tengah. The tournament schedule will be held in the province of central java. Arbitre profile data that has both regional, national, and international licenses. Profile data of trainers who have licenses at regional, national, and international levels. The period of validity of the decree owned by the management of the organization at the district and city level. Achievement of athletes owned by petanque organization jawa tengah. This type of research uses development research methods that use the method of developing research and development Borg and Gall. This research will be carried out in two cities, Semarang and Surakarta. The population of this research is all the organizers of the organization, athletes, arbitre, and coaches of petanque sports in jawa tengah. The sample of this study amounted to 21 people for the small scale test and 54 people for the large scale test.

Keywords—*Management Organization, Petanque Jawa Tengah, WEB.*

I. INTRODUCTION

Based on the interview results from the research team with the of petanque organizations in the regencies and cities, arbitre, coaches, and athletes in Jawa Tengah. The research team found several problem in the absence of information on petanque sports events held in central java. The unavailability of information about the data management of petanque sports athletes from regencies and cities in central java. The unavailability of information on referee data that is licensed regional and national. The unavailability of data on trainers licensed local, national and international. Organization data management is still conventional or lacks data open, so information about district and city administrators cannot be accessed by other parties.

Based on observations from the research team on digital footprint of sports management, the research team has not found any provincial-level sports organization in jawa tengah that has chosen the web as a medium fot managing all

organizational activities in its sports branch. There are still mani administrators of provincial level sport organizations managing and managing their organizations in a conventional manner.

According to previous research the information technology is a combination of computer technology consisting of hardware and software to process and store information with communication technology to channel information. Communication technology is used as a means of channeling information, while the information is processed and stored on a computer.

Based on other study Humans take an important role for management information systems. Information needed for management information systems. Information needed for management information systems. Information needed for management information systems to be used [1]. Human resources can be devided into two group, namely end users and management information system experts. All of that can support the achievement and existence of the organization, because successful and effective organization are organizations with individuals who have good support.

The era of globalization characterized by the rapid development of information and information exchange has given birth to a new phenomenon in the management of an organization. Information is an indispensable resource in an organization. Information is data that is processed into a form that is more useful and more meaningful for those who receive it, while data is a source of information that describes a real event [1]. The availability of this information requires a system that processes data into information that is useful for its users. The system is called a management information system. Management information system is a component that consists of human, technology, information, and work procedures that process, store, analyze, and disseminate information to achieve a goal. Web information system is an information generating system that supports a group of managers by utilizing web technology [2].

Based on the above problem, we need a media that can quickly to inform and manage anrganizations data that can be

accessed by both the management of the petanque organization and other parties. Then the research team will make a research entitled “Development of Management Petanque Sports Federation Organization of Jawa Tengah Based on WEB”

II. BASIC THEORI

A. *Management of Sports*

Management is science and art regulates the process of utilizing human resource and other resources effectively and efficiently to achieve a certain goal. Management is coordinating and supervising the activities of other so that their activities are completed efficient and effective. The term management contains have three meanings, The first, management as a process. The second, management is the collectivity of people who carry out management activities. The third, management as an art (art) and as a science. Understanding the first management and the fact that management is both science and art, management can be defined as the study of art in making a plan, organizing, compiling, directing, and supervising resources to achieve set goal.

B. *Pentaque Sport*

Petanque appeared in 1907 at La Ciatat, in Provence, South of France. Its name comes from Les Ped Tanco in the provencal dialect in Occitan, Which means “meeting feet”. At the beginning of the 6th century BC ancient Yunan had played coin throwing games, flat stones, and boola stones, called spheristics. The ancient Romans modified the games by adding targets that could be approached as close as possible. The roman variation was brought to Provence by Roman soldiers and sailors. A roman tomb in Florence shows people playing this game, bowing to measure points [3].

In Indonesia petanque sports are growing rapidly. Petanque is a new sport in Indonesia, but petanque is actually a sport that has a name. In the world, countries that are strong and consistent in developing petanque are countries that have been colonized by France, a country that has indeed given birth to the spoort. At the sports pillars of sports achievements this branch has been competed in various regional, national, and international event. In Sea Games 2011 and 2013 the Indonesian petanque sports team could not to be the winners. One of the contributing factors is the fact that the sport has not been socialized evenly in the provinces in Indonesia [3].

C. *Management Sports Organization with WEB-Based*

The web is an internet-based distributed information system. The internet is a global network that connects IP protocol networks. A computer network is a medium of high speed communication that connects computers or hosts. The network is a combination of computer and telecommunications hardware and software. Aimed at providing fast and reliable information exchange between hosts on the network. Web media is the most widely used

internet sevice among other media such as email, file transfer, streaming audio and video, and logging into remote hosts.

This study chose the web as a medium to help humans in the framework of managing an organization by promoting the principle of oponness. The web ha the function of providing information about everything needed to build an organization effective and efficient. Web media is also a place to store data needed by the organization’s management.

III. RESEARCH METHOD

This study uses the method of developing research and development [4]. The development method should contain: 1). Development Model, 2). Development Procedures and, 3). Research Variables and Operational Definitions.

Development research is carried out with the aim of bridging the gap that lies wide enough between research and educational practice. Degeng (2002:1) concludes the meaning of development research name “Scientific research that examines a theory, model, concept, or principle, and uses the results of a study to develop a product”.

In development research it is not always developing new product, it can be by perfecting existing product that can be accounter. Research and development always begins with the need, problems that require solving using a particular product.

Based on previous study of Borg and Gall Development model used by research [4]. The steps of the research and development model are : 1. Research and information collecting, 2. Planning, 3. Develop preliminary form of product, 4. Preliminary field testing, 5. Main product revision, 6. Main filed testing, 7. Operational product revision, 8. Operational field testing, 9. Final product revision, 10. Dissemination and implementation.

According to Arikunto states that “The instrument for collecting data is a tool that is selected and used by researchers in collecting activities so that the activity becomes systematic and facilitated by it”.

This study the instrument used were among: (a) Interview Guide, states that “The first method used was the interview method. “Interview is a dialog conducted by the interviewer to obtain information from the interviewer. The interview method using the free interview technique was used to obtain information on the needs analysis from the FOPI Jawa Tengah management and the FOPI Surakarta Management. (b) Mixed Questionnaire, “The next instrument used in this study is a questionnaire is a number of written questionnaire is a number of written questions that are used to obtain information from respondents about something to be studied”. The questionnaire method is used to obtain needs analysis information from athletes, arbitre, and coaches. Small and large group trials and to obtain information from experts [5].

IV. RESULTS



Fig.1. Coach menu



Fig.2. Login menu



Fig.3. Admin main menu



Fig.4. Main menu coach data



Fig.5. Information coach data



Fig.6. Main menu athlete data



Fig.7. Information athlete data



Fig.8. Main menu arbitre data



Fig.9. Information Menu Arbitre Data



Fig.13. Configuration Menu for Admin



Fig.10. Main Menu Organization Data



Fig.11. Information Menu Organization Data



Fig.12. Menu Setting Profile for Admin.

From the results of the analysis, the design and implementation and testing of this system can be concluded that :

Based on the results of questionnaires and interviews conducted by the research team with sports management experts, this web-based organizational management system will make it easier for athletes, arbitre, and administrators of district level organizations to record data in full, so that the provincial administrators of the Central Java petanque organization can calculate in full statistics the target of developing Human Resources (HR) in each year the management.

Based on the results of questionnaires and interviews conducted by the research team with web information technology experts. Organization management that has been designed is good and a good data security system, this is indicated by the existence of a user and password for the user. This system is useful so that not everyone can see detailed information on the personal data contained therein, so that user privacy can be maintained.

Based on the results of the questionnaire and interview the research team with the Petanque trainer in Central Java. Coaches can add insight by reading articles about basic training in petanque sports. Trainers can also find out information about increasing coaching licenses through the announcement menu on the WEB.

Based on the results of the questionnaire and interview the research team with petanque athletes in Central Java. This web-based organizational management system can provide athletes with information about; development of petanque sports in Central Java, Schedule of tournaments to be held in Central Java, personal data of petanque athletes in Central Java province.

Based on the results of a questionnaire and interview the research team with the arbitration of the province of Central Java. This web-based organization management system will greatly assist arbitrage in providing information about the schedule of petanque tournaments held in Central

Java. Information about the latest rules can also be downloaded through the WEB petanque Central Java.

Based on the results of the questionnaire and interview the research team with representatives of the official petanque organization at the district level in Central Java. The development of petanque organization management in Central Java based on WEB, is very helpful for the management of petanque organizations at the district and city level in order to receive information on the number and data of athletes owned by the district / city, receive information about the number of arbitrage and the data of arbitrage self in the district /city. WEB-based petanque organization management also provides a reminder email when the management period of the district / city level organization has been completed.

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Standardization Physical Fitness of Hajj and Umrah Pilgrims 2019

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Abstract—The learning process in the guidance of the Hajj rituals directed at independence, towards the perfection of the Hajj according to the guidance of the teachings of Islam, is a necessity. Not only that physical fitness in physical terms must also be excellent because it will carry out worship at least 10 days to 1 month. Standardization to see the physical fitness of pilgrims candidate and they do not exist at all, none of which can be used as a reference to see whether the pilgrims candidate are worthy or not to perform the Hajj or *Umrah*. The purpose of this study was to arrange the norms of the test to run for 15 minutes and throw balls. The method in this study is a survey with test techniques. Population and sample used total sampling technique with 75 people. The data obtained is processed and arranged in the form of classifications or categories. The results of the study described the norms of assessment of the test running 15 minutes and the test of ball throwing, obtained a category for men and women are valid for men and women.

Keywords—standardization, physical fitness, Hajj and Umrah

I. INTRODUCTION

Physical fitness can be interpreted as a person's ability to carry out daily activities easily without feeling tired and still have the remaining or spare energy to enjoy leisure time or necessities which can be used at any time, thus physical fitness is a manifestation of one's functional loyalty to do a certain job with good or satisfying results without significant fatigue [3].

The dream of every Muslim who increases the Hajj is to get the *Mabrur*. But to reach the *mabrur* is not as easy as desired because to achieve it, one of the prerequisites is an understanding of the complete Hajj rituals. To obtain this understanding, the learning process in the guidance of the Hajj rituals directed at independence, towards the perfection of the Hajj according to the guidance of the teachings of Islam, is a necessity.

Community demands for quality services in various sectors of life are increasingly high, including demands for services under the guidance of Hajj rituals. Along with that the development of science, communication and information technology continues to grow, demanding that everyone, including decision makers at any level, innovate to adjust and

follow these developments, if they do not want to be left behind or abandoned the changes themselves [4].

Changing the mindset and the culture set of policy makers and counselors from the present conditions that are felt to be ineffective towards the desired situation in the future, namely the independent congregation, is a must. Therefore an inevitability of continuous improvement and refinement of patterns of guidance is carried out, in accordance with developing conditions and situations [5]. In line with that guidance for pilgrims in the form of individuals, groups and mass should be directed in order to form independent pilgrims. However, the current guidance in the district, city, province and capital, is still traditionally through face to face with less effective results [6].

Temporary observations of the impact of the pilgrims' guidance that have been carried out so far have not shown optimal results. This can be observed and found in the implementation of the pilgrims in Saudi Arabia, there is still dependence on pilgrims to officers or other people which there is still a question of the congregation "after doing the previous (throwing *jumrah*) what else to do"? It is also often seen at the time of *tawaf* part, the leader of the group reads the prayer loudly followed by the pilgrims behind him, indicating the level of knowledge of the pilgrims about the process of hajj or *umrah* is very lacking and the picture of lack of independence in worship. Even though all pilgrims longed for one time after completing Hajj to get *mabrur*. *Mabrur* will not be achieved when it is not supported by the understanding of the pilgrims in doing rituals and other worship and can implement it according to the guidance of the teachings of Islam [9]. This is a prerequisite for the perfection of hajj or *umrah* to obtain *mabrur*.

The competence of the independent Hajj is the pilgrims who have the competence or ability to understand the rituals of Hajj and other worship, and can perform the Hajj properly according to the guidance of the teachings of Islam. When detailed these competencies into indicators are as follows:

1. Able to mention the pillars, obligatory conditions, *sunnah* and prohibition on the hajj;

2. Able to perform the Hajj rituals properly according to the guidance of the Islamic religion;
3. Able to mention the process of the hajj rituals;
4. Able to maintain their own health and safety;
5. Able to meet their own needs.

On the other hand, supervisory competence will greatly determine the success of guidance. The expected supervisor competency is the ability to understand the process of implementing the Hajj and the application of methods that are in accordance with the material in the guidance process. The indicators are:

1. Able to identify the types of guidance material that are in accordance with the forms of individual, group and mass guidance;
2. Able to determine the application of methods in accordance with the material with the learning approach of the adult;
3. Able to choose learning media in accordance with the form of guidance;
4. Able to conduct learning evaluation.

Based on the above problems, the researcher was interested in researching "Standardization Physical Fitness of Hajj and Umrah Pilgrims 2019".

A. Research Objectives

The purpose of this study was to make standardization or physical fitness norms in the form of a test norm running for 15 minutes and the norm of ball throwing. It is also aim to make a major contribution to the implementation and achievement of good worship for the Hajj and Umrah pilgrims. The objectives of this study were the Hajj and Umrah pilgrims.

B. Novelty and Technology Breakthrough

Measurements of the Physical Fitness of Hajj and Umrah pilgrims were carried out by the method of measurement using a 15-minute Balke Test which is commonly used to determine and measure lung and liver vital. Then use the Ball Throwing Test as far as possible, this test to determine the strength of the arm muscles. Then physical fitness standardization made based on the age group with the classification of each age as follows: (1) ages 20 years and under, (2) ages 21-30 years, (3) ages 31-40 years, (4) age 41-50 years, and (5) ages 51-60 years, (6) 61-70 years, (7) 71 years and above. This norm is made for male and female gender.

C. Physical Fitness

Physical fitness as the ability of a person to carry out his daily tasks easily, without feeling exhausted, and still has the remaining or spare energy to enjoy his free time and for sudden needs [1]. In a student physical fitness is defined as physical fitness where a person cannot achieve fitness thoroughly without having physical fitness. Physical fitness is an aspect of overall fitness that gives a person the ability to live a productive life according to proper physical loading [2].

This definition confirms that in order to be able to accept more physical burden in the form of exercise to improve performance, a high level of fitness is needed.

D. Component of Physical Fitness

Physical fitness classified in 4 main components including: 1) Cardiovascular endurance 2) Strength (strength) 3) Muscle endurance 4) Flexibility [1]. Based on description above, it can be summarized that the main components related to physical fitness, namely: 1) The ability and capacity of a person in carrying out tasks 2) Increasing work power especially the function of the heart, circulation of blood, lung and muscle 3) Without experiencing fatigue meaning, namely: the recovery of 4) Still has energy reserves 5) In general it helps to improve the quality of one's life. Thus it can be concluded that the level of physical fitness is aspects of physical abilities that support a person's success in carrying out various activities in his life. The higher the level of physical fitness of a person, the greater the possibility of completing a job and getting bigger to enjoy life.

E. Improving Physical Fitness

Improving and maintaining physical fitness is inseparable from physical exercise which fosters a balance of physical fitness. There is no other way to improve physical fitness than physical exercise. In endurance athletes, the capacity of the muscles to receive oxygen exceeds the capacity of the cardiovascular system to transport oxygen [3]. It increases the total volume of red blood cells and hemoglobin mass by increasing the oxygen delivery capacity, and thus increases VO₂ max and improves the performance of both at sea level and at altitude [6]. It means that the athlete's endurance is where there is the ability of muscles to receive and deliver oxygen. One of the exercises to increase endurance is to exercise in high altitude areas.

An exercise that is intended to improve physical fitness, must be carried out according to certain rules or methods. This is also related to the type of physical activity which is divided into several types, namely activities that are aerobic (exercises that require oxygen) and activities are anaerobic (exercises that do not need oxygen), and which depend on skills [10][12]. To improve and maintain physical fitness well, it must meet three different types of measures as follows [1]:

- a. Exercise intensity. The intensity of physical fitness training ranges from 72% - 87% of the maximum pulse, meaning for someone who is 45 years old, when doing exercises, the intensity of the exercise must be done until the pulse reaches at least 126 per minute (72% of pulse maximum pulse) and the highest is 152 beats per minute (85% of the maximum pulse)
- b. Exercise. The good and harmless training period must practice reaching the training zone

- c. Exercise Measures. If the intensity of the exercise is higher, the training time can be shorter. Conversely, if the training intensity is smaller, then the training time must be longer. Measuring the length of exercise for health exercise is between 20-30 minutes in the training zone, the longer the better.

Organizing is carried out through integrated systems and management so that the implementation of the Hajj can run safely, orderly, smoothly and comfortably according to the guidance of religion and pilgrims can carry out the Hajj independently so that the *mabrur* is obtained. In the book "Guidelines for the Development of Physical Fitness for Hajj Pilgrims" published by the Hajj Health Center, the components of physical fitness that are important for pilgrims are mentioned:

1. Endurance of the heart-lung (cardiorespiration).
2. Strength and endurance of muscles.
3. Flexibility.
4. Balance.
5. Muscle power

Before the pilgrims go to the holy land (Makkah), the pilgrims candidate should continue to do physical activity at home every day regularly according to health conditions. For the pilgrims who work still do physical activities in the workplace such as going up and down stairs, walking fast between rooms, and others. Good physical fitness can be achieved by adding physical activity to physical exercise before, during and after the Hajj in a good, correct, measured and orderly manner. High-risk pilgrims who are going to do physical exercise must be given adequate medical considerations with the principle of being safe and providing optimal benefits, so that they can improve the physical condition of the pilgrims.

II. METHODS

The type of research used is a survey where this type of research collects information about the characteristics, actions, opinions of a group of respondents who are considered as a representative population [13]. The information obtained in the study used test techniques. The test used is a Physical Fitness test in the form of a 15 minute walk test. A 15-minute walk test is a test to measure lung endurance or VO^2_{max} . The round ball throw test as far as possible to determine the strength of the arm muscles [11]. This test will produce a rating scale. The rating scale is a test used to measure a person's performance [7][8]. The known effectiveness is the results of the Physical Fitness test in the form of quantitative numbers. The numbers obtained are analyzed to describe the fitness level of participants of the Hajj and *Umrah* pilgrims.

A. Research Sites

This research will be conducted at the Mahabbatullah Hajj and *Umrah* Travel Agent Jambi.

B. Population and Samples

The population in this study were all 75 hajj and *umrah* pilgrims. The research population was 75 people. The sample used in this study is to use total sampling, namely the whole sample. This sample consists of male and female pilgrims candidate.

C. Benefits of Research

The benefits of this research are as follows:
 With the standardization of physical fitness test norms in the form of the norms of a 15-minute test run and the norm for the test of ball throwing, it can be a reference for pilgrims candidate to find out their physical fitness level.

III. RESULTS AND DISCUSSION

Based on the data collection, the raw score of the 15-minute road assessment was obtained and round ball throwing for women and men based on age group. The score data obtained will then be compiled into a 15-minute assessment norm and round ball throwing for men and women with the following steps:

1. Looking for a range by calculating the difference between the highest and lowest score
2. Determine the norms of evaluation in the form of classifications Very Good (BS), Good (B), Enough (C), less (K) and Very Less (KS).

Based on the steps above, it can be found the norm result of walking for 15 minutes and throwing a ball.

TABLE I. THE NORM RESULT

Age	Norm			
	Man Castle Ball Flag	Women Castle Ball Floor	15 Minutes of Men Walks	15 Minutes of Women Walks
Under 20	(BS): 30.1 m - above (B): 29.5 m - 30 m (C): 29 m - 29.4 m (K): 28.5 m - 28.9 m (KS): 28 m - 28.4 m	(BS): 24 m - 24.4 m (B): 23.5 m - 23.9m (C): 23 m - 23.4 m (K): 22.5 m - 22.9m (KS): 22 m - 22.4 m	(BS): 1161 m - 1170 m (B): 1151 m - 1160 m (C): 1141 m - 1150m (K): 1131 m - 1140 m (KS): 1121 m - 1130 m	(BS): 861 m - 870 m (B): 851 m - 860 m (C): 841 m - 850 m (K): 831 m - 840 m (KS): 821 m - 830 m
21-30	(BS): 28 m - 28.4 m (B): 27.5 m - 27.9 m (C): 27 m - 27.4 m (K): 26.5 m -	(BS): 22 m - 22.4 m (B): 21.5 m - 21.9m (C): 21 m - 21.4 m (K): 20.5	(BS): 1121 m - 1130 m (B): 1111 m - 1120 m (C): 1101 m - 1110m (K): 1091 m -	(BS): 821 m - 830 m (B): 811 m - 820 m (C): 801 m - 810 m (K): 791 m -

	26.9 m (KS): 26 m - 26.4 m	m - 20.9m (KS): 20 m - 20.4m	1100 m (KS): 1081 m - 1090 m	800 m (KS): 781 m - 790 m
31-40	(BS): 26 m - 26, 4 m (B): 25.5 m - 25, 9 m (C): 25 m - 25.4 m (K): 24.5 m - 24.9 m (KS): 24 m - 24.4 m	(BS): 20 m- 20.4 m (B): 19.5m - 19.9m (C): 19 m - 19.4 m (K): 18.5 m- 18.9m (KS): 18 m- 18.4 m	(BS): 1081m - 1090 m (B): 1071 m - 1080 m (C): 1061 m - 1070m (K): 1051 m - 1060 m (KS): 1041 m - 1050 m	(BS): 781 m - 790 m (B): 771 m - 780 m (C): 761 m - 770 m (K): 751 m - 760 m (KS): 741 m - 750 m
41-50	(BS): 24 m - 24.4 m (B): 23.5 m - 23.9 m (C): 23 m - 23.4 m (K): 22.5 m - 22.9 m (KS): 22 m - 22.4 m	(BS): 18 m- 18.4 m (B): 17.5 m- 17.9 m (C): 17 m - 17.4 m (K): 16.5 m- 16.9 m (KS): 16 m- 16.4 m	(BS): 1041 m- 1050 m (B): 1031 m - 1040 m (C): 1021 m - 1030m (K): 1011 m - 1020 m (KS): 1001 m - 1010 m	(BS): 741 m - 750 m (B): 731 m - 740 m (C): 721 m - 730 m (K): 711 m - 720 m (KS): 701 m - 710 m
51-60	(BS): 22 m - 22.4 m (B): 21.5 m - 21.9 m (C): 21 m - 21.4 m (K): 20.5 m - 20.9 m (KS): 20 m - 20.4 m	(BS): 16 m - 16.4 m (B): 15.5 m- 15.9 m (C): 15 m - 15.4 m (K): 14.5 m- 14.9 m (KS): 14 m- 14.4 m	(BS): 1001 m - 1010 m (B): 991 m - 1000 m (C): 981 m - 990 m (K): 971 m - 980 m (KS): 961 m - 970 m	(BS): 701 m - 710 m (B): 691 m - 700 m (C): 681 m - 690 m (K): 671 m - 680 m (KS): 661 m - 670 m
61-70	(BS): 20 m - 20.4 m (B): 19.5 m - 19.9 m (C): 19 m - 19.4 m (K): 18.5 m - 18.9 m (KS): 18 m - 18.4 m	(BS): 14 m- 14.4 m (B): 13.5 m- 13.9 m (C): 13 m - 13.4 m (K): 12.5 m- 12.9 m (KS): 12 m- 12.4 m	(BS): 961 m - 970 m (B): 951 m - 960 m (C): 941 m - 950 m (K): 931 m - 940 m (KS): 921 m - 930 m	(BS): 661 m - 670 m (B): 651 m - 660 m (C): 641 m - 650 m (K): 631 m- 640 m (KS): 621 m - 630 m
71 above	(BS): 18 m - 18.4 m (B): 17.5 m - 17.9 m (C): 17 m - 17.4 m (K): 16.5 m - 16.9 m (KS): 16 m - 16.4 m	(BS): 12 m- 12.4 m (B): 11.5 m- 11.9 m (C): 11 m - 11.4 m (K): 10.5 m- 10.9 m (KS): 10 m - 10.4m	(BS): 921 m - 930 m (B): 911 m - 920 m (C): 901 m - 910 m (K): 891 m - 900 m (KS): 881 m - 890 m	(BS): 621 m - 630 m (B): 611 m - 620 m (C): 601 m - 610 m (K): 591 m - 600 m (KS): 581 m - 590 m

From the results of the evaluation of the norms, it means that when there are pilgrims candidate who have long distances when walking for 15 minutes and have far-flung throws when throwing round balls according to age and sex, they can be categorized as pilgrims candidate and pilgrimage have norms and values that are VERY GOOD (BS). An assessment score or norm is made based on a person's age and gender. Whereas if there are prospective Hajj and *Umrah* pilgrims who have a close distance when walking for 15 minutes and have a close throw also when throwing round balls according to their age

and sex, they can be categorized as prospective Hajj and *Umrah* pilgrims (KS).

IV. CONCLUSION AND RECOMMENDATIONS

Based on the results of research and discussion and conclusions. In this study the norms of physical hajj and *umrah* have been found which can be used as a standard or reference in looking at the fitness of pilgrims candidate. So based on this standardization it can be seen the feasibility of pilgrims candidate of Hajj and *Umrah*. If it does not meet these reference criteria pilgrims candidate and *Umrah* can do exercises to improve physical fitness. There are a number of suggestions that can be followed up after this research, as for those suggestions including the need to make norms of evaluation with more detailed categories/classifications to meet broader needs. In addition to the assessment norms that have been arranged, it is necessary to make a T-Score table so that it is more meaningful in providing assessment data scores.

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Aeropel Exercise Program: Its Effect towards Dysmonerrhea Pain Level

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Abstract - Aeropel Exercise is designed for dysmenorrhea patients. It is a combination of Cardio and floor exercises. “Aero” means air and it is believed that cardio respiratory exercises are the most effective form of exercise that alleviates the pain cause by dysmenorrhea, “pel” stands for pelvis, exercise that stretches and affects the abdomen, hips, lower back and thighs; it is accompanied with music to make it lively and spontaneous. A Quasi – Experimental type of research was used which aims to find out the effectiveness of Aeropel Exercise program to alleviate dysmenorrehea pain level. The pre – menstrualpain level among the respondents for the first month with a mean descriptive level of pain was “Mild”, after a month of Aeropel exercise still the descriptive level of pain was “Mild”, but for the third month where the Aeropel exercise was given and performed for 3 consecutive months the descriptive pain level of the respondents was already in “No Pain” this means that the exercise protocol of “Aeropel” was effective in alleviating the pain felt during menstruation. Moreover the difference between pre – menstrual pain level and post - menstrual pain level is significantly strong altogether particularly during the first month. This is indicated by the Pearson r value of 0.808 and a p-value of 0.000 which far lesser than the expected significance level of 0.05.

Keywords— Aeropel Exercise, Dysmenorrhea, Dysmenorrhea Pain Level

I. INTRODUCTION

One in every two women who have their period with an estimation of 60% - 93% of adolescents suffers from dysmenorrhea. It is one of the most common gynecologic disorders and believed to be the greatest single cause of lost work and school days among young women [1]. It is said that a women who suffers dysmenorrhea misses and performs low in class. Therefore, preventing the pain is the best solution. This study will help young women with dysmenorrhea cases to alleviate the pain intensity felt during ones period – dysmenorrhea, to make them feel better, comfortable and can function normally during their menstrual period every month through constant participation in the aeropel exercise program.

This study seeks to know the effectiveness of Aeropel Exercise intervention program and its effect to the

dysmenorrhea pain level among the respondents. Several evidence - based treatments are available for dysmenorrhea. Exercise is one of the best remedial measures to overcome this pain. It helps by stretching the lower back muscles and maintaining good abdominal muscle tone. Women with dysmenorrhea have contracted ligament bands in the abdomen and series of exercise could have a high rate of symptom relief for about 41 % [2]

This study provides a wide array of determining the effectiveness of the aeropel exercise intervention program as basis of encouraging women who suffer dysmenorrhea to take the intervention program. Through this research, it will provide information and better understanding on the effectiveness of aeropel exercise program to women in relieving the pain during their menstruation. Furthermore, this study contributed knowledge and additional information for PE teachers, women who suffer dysmeonrrhea, and fitness instructor to promote exercise and fitness literacy as the best medicine in many types of diseases particularly dysmenorrhea.

II. MATERIAL AND METHODS

Study design, prior to the conduct of the study, ethics approval to conduct the intervention program for the students was applied. The research design used in this study is a quasi – experimental type which aims to find out the effectiveness of aeropel exercise program in relation to dysmenorrehea pain level.

Sampling Procedures, all female PE 2 and PE 4 students from the different departments of Capitol University, Philippines with a total population of 476 were given a pre – assessment questionnaire for them to fill in. The researcher then collected the questionnaire to identify the students with dysmonorrhea cases, upon the result of the pre - assessment there were only 137 students who have dysmenorrhea cases with a 28.9% from the total population.

Instruments, two sets of questionnaire and a personally designed exercise program – Aeropel exercise were utilized. (1) A self - made Pre- assessment questionnaire which undergoes a pilot testing to identify the the students with

dysmenorrhea cases, (2) A Dysmenorrhea a Period Pain Tracker from the Boston Children’s Hospital retrieved from http://www.youngwomenshealth.org/painful_periods.html to measure the pain intensity level among the respondents. Finally, the Aeropel Exercise Program that was personally made by the respondents which was applied during the conduct of the study.

Data Analysis, the data was gathered, tabulated, tallied and treated using the following statistical tools. Pearson correlation coefficient was utilized in revealing the relationship between the pre – menstrual level of pain and post – menstrual level of pain of the respondents.

On the other hand, a Paired Sample t-test was employed to test the difference between the pre – menstrual level of pain and post – menstrual level of pain among the respondents. Finally, Covariance Analysis was used to assess the effectiveness of aeropel exercise on the menstrual pain level in terms of age, BMI, pelvic size, physical activity participation, attendance to the exercise protocol, and the length and regularity of cycle of the respondents.

III. RESULT AND DISCUSSION

The data obtained were statistically treated and correspondingly interpreted to give meaning to the findings disclosed in this study.

TABLE I. MEAN VALUES AND DESCRIPTION OF PRE-MENSTRUAL LEVEL OF OAIN FOR THE MONTH OF JANUARY

Pre data on January	Mean	Description
JP1	5.8321	Moderate
JP2	4.5036	Moderate
JP3	2.5109	Mild
JP4	.1387	No pain
JP5	.0292	No pain
Mean	2.6029	Mild

Table 1 shows that two (2) groups of the respondents of JP1 (January Premenstrual pain– 1) and JP2 (January Premenstrual pain – 2) have a moderate level of pain, but the two (2) groups of JP4 (January Premenstrual pain – 4) and (January Premenstrual pain – 5) has no pain felt during their menstrual cycle for the month of January, and only the JP3 (January Premenstrual pain– 3) group has a mild level of pain. Therefore, for the month of January where the exercise protocol of “Aeropel Exercise” was not yet implemented to the respondents, the level of pain of the respondents with the Mean of Means of 2.6029 with a description of “mild level of pain”.

Table 1 shows that two (2) groups of the respondents of JP1 (January Premenstrual pain– 1) and JP2 (January Premenstrual pain – 2) have a moderate level of pain, but the two (2) groups of JP4 (January Premenstrual pain – 4) and (January Premenstrual pain – 5) has no pain felt during their menstrual cycle for the month of January, and only the JP3 (January Premenstrual pain– 3) group has a mild level of pain. Therefore, for the month of January where the exercise protocol of “Aeropel Exercise” was not yet implemented to the respondents, the level of pain of the respondents with the Mean of Means of 2.6029 with a description of “mild level of pain.

TABLE II. MEAN VALUES AND DESCRIPTION OF PRE-MENSTRUAL LEVEL OF OAIN FOR THE MONTH OF MARCH

Post data on March	Mean	Description
MP1	3.6642	Mild
MP2	2.2336	Mild
MP3	0.4599	No pain
MP4	0.1898	No pain
MP5	0.0370	No pain
Mean	1.3168	No pain

Table 2 shows the descriptive data on the level of pain felt during their menstruation among the respondents after 3 months implementation of Aeropel Exercise. Groups MP1 and MP2 (March Post – 1 & 2) have a mild level of pain, and groups MP3, MP4, and MP5 (March Post – 3, 4, & 5) have no pain felt. With the Mean of Means of 1.3168 with a description of “no pain” was felt for the month of March.

The results show that even in 3 months time with the implementation of the exercise protocol “Aeropel exercise” was effective among the respondents and was proven helpful according to the result of the data in alleviating the pain felt during menstruation. This shows that it has proven the study of that exercise increases the endorphins and serotonin (natural painkillers), and that exercise during menstruation can get rid of menstrual pain, is factual and applicable in this study [3]

TABLE III. PEARSON CORRELATION COEFFICIENTS AND SIGNIFICANCE OF CORRELATION BETWEEN PRE-MENSTRUAL DATA AND POST-MENSTRUAL DATA

	R	P value	Interpretation	Decision on Ho
PRE-JAN	0.866	0.000	Significant	Reject
POST-MAR	0.604	0.000	Significant	Reject

Mean	0.808	0.000	Significant	Reject
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Data reveals in table 3 that correlation between pre menstrual pain level and post menstrual pain level is significantly strong altogether particularly during the month of January. This is indicated by the Pearson r value of 0.808 and a p- value of 0.000 which far lesser than the expected significance level of 0.05.

Pilates as physical activity practice, has provided improvement in symptoms associated to primary dysmenorrhea, positively interfering with decreasing pain and representing a promising non-pharmalogical alternative. Another form of exercise that proves to decrease the pain felt during menstruation even without taking any medicines [4]

TABLE IV. COVARIENCE ANALYSIS ON THE EFFECT OF AEROPEL EXERCISE ON MENSTRUAL PAIN LEVEL

	F	P value	interpretation	Decision on Ho
Age	5	0.87	Not significant	Not rejected
BMI	5	1.02	Not significant	Not rejected
Pelvic size	1	1.76	Significant	Reject
Physical activity	9	0.47	Not significant	Not rejected
Attendance	2	2.68	Significant	Reject
Length of cycle	3	0.94	Not significant	Not rejected
Regularity of cycle	6	0.34	Not significant	Not rejected

Data reveals that the effect of Aeropel Exercise on the menstrual pain level among the respondents when covaried with the moderating variables and the pre – menstrual pain level was covaried out, the main effect of the treatment on the post – menstrual level of pain has no significant with respect to age, BMI, physical activity participation, and length and regularity of cycle. The significant difference is mainly due to the relationship of the pre – menstrual level of pain and post – menstrual level of pain. This is not similar with respect to pelvic size and attendance to the exercise protocol – Aeropel Exercise as the data shows significant effect when the pre – menstrual level of pain was covaried out.

We all know that an exercise becomes beneficial when we do it regularly, properly and more frequently. That is why

attendance to the exercise protocol has a significant effect to the implementation of Aeropel exercise. “The important thing is that you do it at least three times a week, for 30 minutes at a time” [5]

On the other hand, pelvic size also affects the post – menstrual level of pain for it is believed that the severity of dysmenorrhea matters on the waist and hip circumference or the pelvic size, which are more prone to dysmenorrhea [6]

IV. CONCLUSION AND SUGGESTION

The findings of the study, reveals that the Aeropel Exercise is an effective way to lessen the intensity pain level felt during menstruation. The beneficial effect of exercise played a big role in decreasing the pain level among the respondents thus; participation to the exercise protocol also played a part.

The statistical result of testing the effect of Aeropel Exercise between the pre – menstrual and post – menstrual pain level shows a significant difference. Therefore Null Hypothesis 1 is not accepted. Moreover, in terms of the moderating variable which was believed to affect the result of the pain level among the respondents showed that there was no significant effect except for Attendance to the exercise protocol and pelvic size. Therefore, Null Hypothesis 2 is also not accepted.

However, with the result of the study generally reflects a positive note in alleviating the pain felt during menstruation with dysmenorrhea cases. The result also leaves too much to be desired and done. With a very short time frame in implementing the Aeropel Exercise in 3 months the result is more likely to be little, if it should be done for more than 6 months or a year, it will have a probability that the pain will surely be treated. Though majority of the respondents attended the Aeropel Exercise program still many of them did not attended religiously resulting to a minimal change with regards to the pain level.

The researcher makes the following recommendations and suggestions with the hope that all women who suffers dysmenorrhea be knowledgeable that the best medicine in many types of diseases particularly dysmmenorrhea is exercise. That there should be an awareness program to schools especially the PE teachers to spread and implement the Aeropel Exercise to women who suffers dysmenorrhea. That the community must promote any type of Exercise activities for a healthier and happier life.

That an Advocacy Program be implemented for at least 3 times a week of engaging in Aeropel Exercise among women with dysmenorrhea. All the programs listed above must be included both private and public sectors as well the community for the improvement of Health so that it will be helpfull to those patient/individual with dysmenorrhea. The researcher further recommends that the PE teachers will include the Aeropel Exercise as part of their class so that their students with or without dysmenorrhea be engaged in exercise.

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Dejection and Excitement Mediates the Relationship between Behavior Regulation and Mental Toughness in Sports

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Abstract— Behavior regulation which originates from athletes' motivation has been one of the most important and recent discussions in the field of athletes' performance. However, only few studies have shown how behavior regulation affects athletes' ability to cope with sport pressures (i.e., mental toughness). According to some researchers, none have explored the mediating role of emotions among athletes. The current study examines whether sports emotion mediated the relationship between behavior regulation and mental toughness in a sample of Junior and Senior high school athletes of Region IX and X with the total of 1,138 respondents. The result showed dejection and excitement mediated the relationship between behavior regulation and mental toughness. Further, the study indicated that higher behavior regulation is likely to increase mental toughness due to heightened excitement and decreased feeling of dejection. Therefore, we conclude that mental toughness can be established if athletes have a high level of behaviour regulation through a combination of intrinsic and extrinsic motivation and this relationship is strongly established as mediated by lower level of dejection and higher excitement. As a result, trainers and coaches should enhance their training matrix and incorporate activities that would increase athletes' motivation on continued participation in achieving their goals. We further recommend that incorporating activities that will most likely increase athletes' excitement and reduce feelings of dejection in their trainings to enhance mental toughness.

Keywords—*Behavior regulation, Sports emotions, Mental toughness*

I. INTRODUCTION

Athletes are physically seen to be strong and tough, and those who consistently strive to attain their peak or optimal athletic performance levels, irrespective of conditions (i.e., positive and negative situations) and context (i.e., training and competition), are often described as mentally tough [1].

This concept of mental toughness has attracted significant attention from sports psychology researchers attempting to understand how psychological factors can underpin success in sports [2, 3], but one important attribute of mentally tough athletes, according to [4, 5] is the avoidance of performance decrement due to damaging negative emotions and subsequent loss of focus through the maintenance of psychological control in adverse circumstances or pressure situations.

One of the most important and recent discussions in the field of athletes' performance which has attracted researchers' attention concerns behavioral regulation which originates from athletes' motivation. Motivation is considered fundamental of human's behavior and it can be assumed as a force that stimulates human to do several activities. In fact, motivation is one of the most important and effective mental factor having significant importance in sports' environments.

Achievement in competition situations is dependent to some extent on the ability to generate effective strategies. Such ability may account for the success of some athletes and the lack of success for others, even though all may be highly-skilled and well-conditioned. Regulating one's goal-directed behavior without immediate external constraints involves complex interactions between cognitions (e.g., goal setting, evaluating), affect (emotional states), physiology (e.g., strength, physical condition), and environmental constraints in addition to forming expectancies of success. Individuals may or may not react emotionally to task performances, hence they could either feel happy and proud or unhappy and dejected.

Such sources of feelings and the role they play in guiding behavior has been subjects of debates. One possibility is that the perceived distance from a goal is the critical determinant of emotion. Positive emotion arises when goals are judged to be within reach while negative emotion arises when goals are judged to be out of reach. In athletic competitions, athletes typically experience excessive levels of stress due to uncertainty and anxiety about their opponents, the sports setting, and the possible outcomes. Some events are psychologically overwhelming that many athletes perform less than expected.

Contrastingly, it is interesting to speculate why and how the best athletes consistently demonstrate the capability to execute movements skillfully under the great pressure to win. It has been observed that the characteristics of cognitive psychology could be the motivating factors, according to [6] as self-confidence or the ability to face pressures and identify signs related to anxiety and its interpretation are facilitating factors in conditions where pressures have been accepted as most important elements in achieving success in any sports events.

But, if behavior regulation has been known to affect important areas in athletes' lives, the mediating role of sports emotions in relation to behavior regulation and mental toughness among athletes have to be studied. This is relevant as emotions have been found to have powerful effects on thoughts and behaviors [7, 8, 9, 10,].

Results of this study will have important implications in strengthening behavior regulation and mental toughness through enhancing athletes' ability to control their emotions in relation to an upcoming competition.

II. MATERIALS AND METHOD

A. Research Design

In this study, the researcher used a quantitative-correlation method of research in gathering and analyzing the data. Specifically, this study used independent, dependent, and moderating variables and examined the relationship between them.

B. Research Respondents

The target samples of the study were athletes actively involved in sports competition from the different high schools and institutions in Region 9 and 10 of Mindanao. Athletes whose age range between 13 to 18 years old. The age of the respondents were controlled. The respondents were determined through the aid of the principal or the appointed person of the institutions.

C. Sampling Procedure

Before conducting the study, the researcher has initially sent a letter of request to the Department of Education Region IX and X select schools and acquired approval from the School Principals. Selection of respondents was then facilitated by the School Sports Coordinator as to who are their athletes involved in athletic competitions upon the approval of the Principal.

D. Research Instruments

Demographic data form. This was used in order to gather relevant personal data such as participant's age, gender and sports engaged in.

Behavior Regulation. To measure the behavior regulation of athletes in sports, the Behavioral Regulation in Sports Questionnaire was used. It contains 24 items which are under 6 different categories: Intrinsic motivation (e.g., I participate in my sport because I enjoy it), Integrated regulation (e.g., I participate in my sport because it's a part of who I am), Identified regulation (e.g., I participate in my sport because I value the benefits of sport), Introjected regulation (e.g., I participate in my sport because I would feel guilty if I quit), External regulation (e.g., I participate in my sport because if I didn't other people will not be pleased with me), and Amotivation (e.g., I participate in my sport but I question why I continue). Participants will answer the questionnaire on a 7-point Likert scale, ranging from 1 (not at all true) to 7 (very true).

Sports Mental Toughness. To measure participants' mental toughness, Sports Mental Toughness Questionnaire (SMTQ) by was used. The items in the said questionnaire are made on a four-point Likert scale anchored by not at all true and very true. Three factors of the SMTQ were labeled Confidence, Constancy, and Control.

Sports Emotion. To assess the participants' Sports emotions, the Sports Emotion Questionnaire was used. Participants will rate each item on a 5-point response scale identical to that of the POMS (McNair et al., 1971), where 0= not at all, 1 = a little, 2 = moderately, 3 = quite a bit, and 4 = extremely.

E. Data Gathering Procedure

Prior to the conduct of the study, the questionnaire was translated using forward process and was translated to Cebuano-Bisaya to help respondents understand the questionnaire better. During the conduct of the study, the respondents were provided with informed consent. The respondents were informed about the purpose of the study, expected duration and procedures, their right to decline to participation and to withdraw from the study once participation has begun; potential risks or discomfort; prospective research benefits; and the assurance of anonymity and strict confidentiality. The instructions were given to the participants upon answering the questionnaire. In the process of answering, the respondents were encouraged to ask questions or clarifications to any items to ensure valid responses. The researcher assured that all appropriate ethical guidelines were followed throughout the duration of the study. The respondents were given sufficient time to answer the packet of questionnaires while taking into consideration their convenience, time preference, and well-being.

F. Data Analysis

All statistical procedures for the data gathered were performed using the Statistical Package for the Social Sciences (SPSS) Version 20. Once the data has been collected, estimation-maximization technique of imputation was utilized to replace values that were missing at random. Multiple mediation analyses were conducted to test if behaviour regulation greatly affects mental toughness through sports emotion. PROCESS Macro for SPSS created by Hayes (2012) was used to perform the analyses.

III. RESULT AND DISCUSSION

This section presents the results and discussion of the study. The present study examined the relationship between behavior regulation and mental toughness among athletes as mediated by sports emotions. A sample of 1138 athlete respondents was gathered by the researcher from the select Secondary schools in Region IX and X. The average age of the respondents ranges from 13 to 17 years old ($m = 15.29$, $SD = 1.653$).

A. Intercorrelation Among Behavior Regulation, Sports Emotions (Anxiety, Dejection, Excitement, Anger and Happiness) and Mental Toughness

TABLE I. Means, standard Deviations and Intercorrelation of Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. BRSQ_IMG	23.348	4.898														
2. BRSQ_IMG	23.044	4.808	.775**													
3. BRSQ_IMS	22.475	4.685	.761**	.776**												
4. BRSQ_IWA	22.670	4.788	.789**	.785**	.821**											
5. BRSQ_ENR	22.416	4.899	.718**	.752**	.763**	.791**										
6. BRSQ_IDR	22.606	4.644	.666**	.693**	.685**	.715**	.761**									
7. BRSQ_IIR	19.603	5.977	.263**	.278**	.336**	.313**	.388**	.374**	1							
8. BRSQ_EXR	18.541	6.423	.129**	.152**	.205**	.162**	.250**	.196**	.691**							
9. BRSQ_AMO	18.414	6.784	.081**	.096**	.120**	.106**	.206**	.167**	.591**	.780**						
10. SEQ_ANX	1.893	0.749	.056	.037	.070**	.074**	.035	.047	.038	.050	.027					
11. SEQ_DEJ	1.225	0.826	-.125**	-.128**	-.112**	-.112**	-.130**	-.128**	.031	.137**	.141**	.565**				
12. SEQ_EXC	2.656	0.734	.285**	.287**	.287**	.303**	.279**	.289**	.140**	.084**	.065**	.285**	.067**			
13. SEQ_ANG	1.198	0.919	-.112**	-.125**	-.101**	-.091**	-.107**	-.108**	.082**	.171**	.163**	.464**	.778**	.109**		
14. SEQ_HAP	3.111	0.757	.320**	.302**	.286**	.302**	.302**	.324**	.158**	.109**	.087**	.160**	-.094**	.653**	-.031	
15. SMTQ_TOT	41.723	5.607	.183**	.211**	.193**	.204**	.233**	.195**	.183**	.187**	.162**	.143**	.150**	.222**	.131**	.175**

Note: **p<0.01; *p<0.05; N=1138

Table I shows the means, standard deviations, and intercorrelations of the variables. The data displays that behavior regulation (except Introjected Regulation) is significantly correlated with dejection and excitement. Behavior regulation is significantly positively correlated with excitement while it is negatively correlated with dejection. Results also show that behavior regulation is significantly positively correlated with mental toughness. Moreover, sports emotions (dejection and excitement) are significantly positively correlated with mental toughness.

B. Controlling for Age and Gender, Behavior Regulation is a Predictor of Sports Emotions (Anger, Dejection, Happiness and Excitement)

TABLE II. Behavior Regulation Predicting Sports Emotion

Predictor	Criterion	Effect	SE	p
I'm General	ANX	.0094	.0047	.0432
	DEJ	-.0203	.0051	.0001
	EXC	.0399	.0044	.0000
	ANG	-.0210	.0057	.0002
I'm Knowledge	HAPP	.0473	.0044	.0000
	ANX	.0069	.0048	.1459
	DEJ	-.0214	.0052	.0000
	EXC	.0419	.0045	.0000
I'm Stimulation	ANG	-.0234	.0058	.0001
	HAPP	.0461	.0046	.0000
	ANX	.0119	.0049	.0148
	DEJ	-.0192	.0053	.0004
I'm Accomplish	EXC	.0423	.0046	.0000
	ANG	-.0200	.0060	.0008
	HAPP	.0448	.0047	.0000
	ANX	.0126	.0048	.0083
Integrated Regulation	DEJ	-.0181	.0052	.0006
	EXC	.0433	.0045	.0000
	ANG	-.0173	.0058	.0032
	HAPP	.0458	.0046	.0000
Identified Regulation	ANX	.0067	.0046	.1480
	DEJ	-.0210	.0050	.0000
	EXC	.0397	.0044	.0000
	ANG	-.0196	.0056	.0005
Introjected Regulation	HAPP	.0459	.0044	.0000
	ANX	.0087	.0049	.0072
	DEJ	-.0216	.0054	.0001
	EXC	.0431	.0046	.0000
External Regulation	ANG	-.0213	.0060	.0004
	HAPP	.0516	.0047	.0000
	ANX	.0030	.0038	.4260
	DEJ	.0030	.0042	.4754
Amotivation	EXC	.0160	.0037	.0000
	ANG	.0113	.0046	.0155
	HAPP	.0197	.0038	.0000
	ANX	.0041	.0035	.2453
Amotivation	DEJ	.0157	.0039	.0001
	EXC	.0088	.0034	.0107
	ANG	.0225	.0043	.0000
	HAPP	.0129	.0035	.0003
Amotivation	ANX	.0014	.0033	.6677
	DEJ	.0153	.0036	.0000
	EXC	.0071	.0033	.0287
	ANG	.0209	.0040	.0015
HAPP	.0106	.0033	.0001	

Note: N=1138

Controlling for age and gender, table II shows that behavior regulation is a predictor of specific sports emotions such as anger, dejection, happiness and excitement. Specifically, behaviour regulation positively predicts positive emotions such as happiness and excitement. Behavior regulation subscales such as I'm General, I'm Knowledge, I'm Stimulation, I'm Accomplish, and Integrated Regulation negatively predict anger and dejection. Identified Regulation on the other hand positively predicts dejection while negatively predicts anger. External Regulation and Amotivation subscales positively predict anger, dejection, happiness and excitement. Introjected Regulation on the other hand positively predicts anger, happiness and excitement.

C. Controlling for Age and Gender, Sports Emotions (Dejection and Excitement) are Predictors of Mental Toughness

TABLE III. Sports Emotion (Dejection and Excitement) Predicting Mental Toughness

Predictor	Criterion	Effect	SE	p
Anxiety		.0722	.2798	.7964
Dejection		.9444	.3477	.0067
Excitement	Mental Toughness	1.1277	.3038	.0002
Anger		-.0705	.2866	.8057
Happiness		.5547	.2939	.0594

Note: N=1138

Controlling for age and gender, table III shows that sports emotions are predictors of mental toughness in sports. Specifically, dejection and excitement positively predicts mental toughness. When there is less feeling of dejection, athletes are most likely to achieve higher level of mental toughness.

Based on the given table, data shows that dejection and excitement are emotions that can predict and most certainly affect the level of mental toughness among athletes.

D. Controlling for Age and Gender, Behavior Regulation is a Predictor of Mental Toughness

TABLE IV. Behavior Regulation Predicting Mental Toughness

Predictor	Criterion	Total Effect	SE	p
Behavior Regulation	Mental Toughness	.1275	.0248	.0000

Note: N=1138

Controlling for age and gender, table IV shows that behavior regulation is a predictor of mental toughness in

sports. Specifically, behavior regulation positively predicts mental toughness.

Based on the table shown, we can conclude that there is a significant relationship between behavior regulation and mental toughness and therefore, athletes must develop both of these hand in hand

E. Controlling for Age and Gender, Dejection and Excitement are Significant Mediators between Behavior Regulation and Mental Toughness

TABLE V. Sports Emotion (Dejection and Excitement) as Mediator Between Behavior Regulation and Mental Toughness in Sports

IV	MV	DV	Direct Effect	Total Indirect Effect	Sp mede Indirect Effect	SE	BC 95% CI	
							LL	UL
Em General	ANX			-0.012	0.030	-0.089	0.037	
	DEJ			-0.026	0.004	-0.048	-0.002	
	EXC			0.093	0.041	0.135	0.048	
HAPP	ANX			-0.002	0.059	-0.469	0.088	
	DEJ			0.025	0.174	-0.061	0.183	
	EXC			-0.008	0.024	-0.077	0.027	
Em Knowledge	ANX			-0.037	0.000	-0.077	-0.003	
	DEJ			0.078	0.146	0.114	0.087	
	EXC			-0.004	0.065	-0.138	0.086	
HAPP	ANX			0.014	0.067	-0.005	0.042	
	DEJ			-0.018	0.006	-0.051	0.042	
	EXC			-0.016	0.000	-0.045	-0.009	
Em Stimulation	ANX			0.092	0.149	0.120	0.096	
	DEJ			-0.023	0.057	-0.469	0.082	
	EXC			0.029	0.064	-0.078	0.049	
HAPP	ANX			-0.020	0.037	-0.109	0.046	
	DEJ			-0.007	0.093	-0.438	-0.006	
	EXC			0.093	0.130	0.122	0.096	
HAPP	ANX			-0.017	0.049	-0.123	0.077	
	DEJ			0.027	0.108	-0.006	0.171	
	EXC			-0.009	0.023	-0.078	0.023	
Integrated Regulation	ANX	Mental Toughness	1.005**	0.070*				
	DEJ			-0.045	0.006	-0.042	-0.007	
	EXC			0.058	0.035	0.113	0.047	
HAPP	ANX			-0.021	0.054	-0.137	0.081	
	DEJ			0.184	0.165	-0.127	0.253	
	EXC			-0.010	0.028	-0.007	0.032	
Identified Regulation	ANX			-0.043	0.009	-0.045	-0.007	
	DEJ			0.045	0.151	0.046	0.118	
	EXC			-0.022	0.059	-0.149	0.061	
HAPP	ANX			0.023	0.189	-0.460	0.057	
	DEJ			0.000	0.014	-0.028	0.033	
	EXC			0.032	0.048	-0.052	0.143	
Introjected Regulation	ANX			0.171	0.070	0.059	0.138	
	DEJ			-0.009	0.033	-0.002	0.053	
	EXC			0.105	0.075	-0.024	0.273	
HAPP	ANX			0.002	0.016	-0.022	0.049	
	DEJ			0.150	0.064	0.049	0.087	
	EXC			0.100	0.054	0.019	0.213	
ANG	ANX			-0.023	0.063	-0.149	0.100	
	DEJ			0.067	0.032	-0.013	0.196	
	EXC			0.001	0.011	-0.015	0.036	
Amotivation	ANX			0.144	0.061	0.046	0.238	
	DEJ			0.081	0.048	0.009	0.198	
	EXC			-0.015	0.018	-0.129	0.101	
HAPP	ANX			0.019	0.045	-0.007	0.173	

Note *p<.05. **p<.01. Note. N=1133

As shown in table V controlling for age and gender, dejection and excitement mediates the relationship between behavior regulation and mental toughness in sports. The results suggest that higher behavior regulation, except for introjected regulation, increases mental toughness due to lower dejection and higher excitement.

IV. CONCLUSIONS AND SUGGESTIONS

A. Conclusions

From this current research, a general conclusion was drawn in which mental toughness can be established if athletes have a high level of behavior regulation through a combination of intrinsic and extrinsic motivation and this relationship is strongly established as mediated by lower level of dejection and higher excitement. Consequently, the

relationship between mental toughness and behavior regulation as mediated by dejection and excitement has important implications in strengthening behavior regulation and mental toughness.

B. Suggestions

The results of this study will help provide significant implications to trainers and coaches in establishing intrinsic motivation among athletes as a good foundation enabling athletes to increase their effort in enhancing their sport performance for their personal satisfaction and sense of fulfillment. Additionally, extrinsic motivation should also be established to increase their level of commitment towards achieving their personal goals. Consequently, by increasing their sense of excitement throughout training sessions and decreasing, if cannot be avoided, situations that can make them feel dejected, athletes will develop and maintain mental toughness at the start of the first cycle of their training sessions in preparation for upcoming competitions.

Future studies will also be beneficial to trainers, coaches and athletes on what activities best develop and enhance dejection and excitement among athletes.

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Changes in Heart Rate Variability and Post Exercise Blood Pressure from Manipulating Rest Intervals between Sets and Load Intensities of Resistance-Training

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Abstract— The purpose of this study was to compare blood pressure and heart rate variability (HRV) responses in physical active men after resistance training (RT) sessions with loads of 5 repetition maximum (5RM), 10RM, and 15RM. Twenty seven men (21.6 ± 1.1 years; body mass: 74.1 ± 8.1 kg; height: 175.3 ± 7.1 ; cm) with performing moderate to vigorous activity a minimum of 30 minutes a day on most days of the week participated in this study. After determination of 5 repetition maximum (5RM) loads for bent-over row (BR), bench press (BP), Dead-lift (DL) and squats (SQ), participants performed RT session. Participants were divided into three groups to perform. Each group received different loads of 5RM, 10RM or 15RM. During each experimental session, participants performed 3 sets, with 3-minute rest intervals between sets and exercises. All experimental sessions were performed in the following exercise order: BP, DL, BR and SQ. Before and for two hours after each session, blood pressure and HRV were measured. The results demonstrated a greater duration of blood pressure reduction after the 10RM session vs. 5RM and 15RM session. These results indicate that the load/volume related with performing of 10RM load with 2 min rest between sets may provide the best stimulus for the blood pressure reduction response after RT session when compared with training with 5RM and 10RM loads. In conclusion, strength and conditioning professionals may prescribe exercises with 5RM, 10RM and 15RM loads if the aim is to obtain an acute reduction in blood pressure after an RT session; however, 10RM load provides a longer post-exercise blood pressure reduction.

Keywords— *Blood Pressure, Physical Activity, Reduction*

I. INTRODUCTION

Resistance training (RT) has been recommended as a part of training programs to reduce cardiovascular risks [1]. In healthy participants, RT has induced improvement in vagal control of the heart and bradycardia [2] in addition to relative blood pressure (BP) cutback with a dramatic decrease in both systolic and diastolic blood pressure [3]. It has been reported that small reduction in blood pressure can reduce the

probability of having cardiovascular complications such as stroke in healthy and morbid subjects. The possible mechanism responsible for BP changes after exercise is the activation of the sympathetic and parasympathetic nervous system. Sympathetic and parasympathetic nervous system is the part of a superior system called autonomic nervous system which controls all the body's involuntary internal function. The autonomic nervous system reactions are measured via autonomic control of blood circulation and heart rate variability (HRV) [4]. HRV has been suggested to be an important indicator of mortality [6]. Studies on HRV revealed that coronary heart disease and mortality could be predicted by the amount of variation of HR intervals with lower HRV indicating more risk [7]. Moreover, a significant result of energy system training on resting parasympathetic outflow as measured through high-frequency (HF) power of the HRV analysis and post-exercise BP reduction was found in a meta-analysis with the greatest effect reported with longer interventions and younger participants [8]. Researchers have found that the HF component of HRV and BP remained more depressed while LF component rises after RT by comparing the autonomic activity after exercise [11].

Studied the effect of three different load intensities (80%, 70% and 60% of 1RM with 8 - 10 repetitions per set) on BP responses in prehypertensive trained men, and the results revealed significant differences in the duration of the BP reduction when the 70% of 1RM loads were used in a RT session, independent of the total volume [11]. These results demonstrated that moderate to high intensities could result in a longer BP response in trained men.

The study by Figueiredo [13] recruited prehypertensive men with 6-month RT experience to perform RT with 1-min or 2-min RI between sets of exercise and he reported that DBP reduced after performing RT but there were no SBP changes. Although there was significant change in HF

at 10 min post exercise for the 1-min rest interval group, [13] did not find any significant difference in LF changes after performing three sets of RT with 70% of 1RM. There were no differences in HRV between the two exercise protocols.

[14] have studied heart rate complexity and heart rate recovery to measure the influence of detraining and resistance training on cardiac autonomic modulation in healthy young men. They reported that RT have boosted heart rate complexities and heart rate recovery but had no effects on spectral measures of HRV furthermore they noticed that autonomic changes depressed shortly after cessation of training. A study showed that a decrease in HF power after 25 min of RT by using the 10 repetition maximum (10RM) for eight (8) different RT (3 sets with 90s rest between exercise and sets) compared to energy system training [14].

However, since different researchers utilised different intensity (load), it is not possible to establish clearly the isolated effect of RT on cardiac autonomic modulation and BP [15]. In RT the rest length between each set has a major impact on the metabolic and mechanical responses of the vasculature. This variable also influence the response mechanisms of cardiovascular control that in turn, can affect baroreceptors [18]. This study attempted to compare BP and HRV responses in trained man with combination of different load intensities (LI). It was hypothesized that as LI increases a progressive longer BP reduction would ensure in conjunction with reduction in HRV.

II. METHODE

A. Experimental Approach to the Problem

The participants underwent a total of 6 laboratory visit, the first visit was a week after participants were finalised and they attend familiarisation sessions for performing RT. Four RT exercises were carried out during testing and training namely the squat (SQ), bench press (BEP), barbell bent-over row (BR) and deadlift (DL) exercises. On the next 4 visit (conducted 72 hours apart) participants were assessed for 5RM load. On the final visits after loads of 5-RM, 10RM and 15RM determined for all participants, they were assigned to three different exercise experiment group. During experimental session, BP and HRV were measured after a 10 minutes passive rest upon arrival at the laboratory and for 120 minutes after experimental session with 15 minutes intervals.

B. Subjects

The participants for this study were from an abstract population consisting of young males (aged \pm SD 21.2 \pm 1.1 years, height 175.3 \pm 7.1 cm and body mass 76.5 \pm 5.8 kg) who were classified physically active as they performed moderate to vigorous aerobic or RT according to the recommendation by ACSM (2013). Other inclusion criteria were that they were classified free from cardiovascular diseases, did not have any physical injuries or acute illnesses and did not take any medication nor smoked six months prior to the study. A total

number of 81 participants who cleared all the requirements were accepted as participants, and all gave informed consent. No participants dropped out of study. Furthermore, the ethical committee for research involving human subject of Universiti Putra Malaysia found no objectionable issue involved in this research.

C. Procedures

Five Repetition Maximum Testing: Two days after the last familiarisation session, the participants performed 5-RM test [5]. Initially participants did the warm-up (10 repetitions), with approximately 50% of the predicted load for the first attempt, based on the preceding experience of participants. The warm-up was used to familiarise the participants with the lifting techniques and the testing equipment again. The testing process begun two minutes after the warm-up. Participants were asked to try to accomplish 5 repetitions with the imposed load in three attempts until the 5-RM load was identified. After each attempt and each exercise there was 2-5 min rest period. The participant's 5RM was recorded as the last resistance lifted five times before failure.

Exercise Session: Two days after the 5RM testing session, participants had to perform BP, SQ, BR and DL for 5 sets. The experimental protocols involved the 4 exercises with 3-loads condition (5-RM, 10RM and 15RM) and 2 minutes rest intervals between sets. The BP, SQ, BR and DL performed using free weight and the mass of all weights and bars used was determined using a precision scale.

Workout session was preceded by a 10-min warm-up, beginning with a slow jog to raise body temperature, inducing a light perspiration, and then engaging in specific warm-up and performing each exercise with no weights for 15-20 repetitions. The warm up activities chosen were similar to the main activity but at a lower intensity. During exercise sessions participants performed maximum repetition to concentric failure. No pause was permitted between concentric and eccentric phases of each repetitions and velocity of repetitions was volitionally controlled.

Heart Rate Variability Measurement: the heart rate variability was measured for twenty minutes constantly, using a frequency meter belt (Polar, Team, USA with storage capacity of the Polar S810i: 30000 R-R intervals and an accuracy of one millisecond against ECG system). The HRV parameters were evaluated based on the two components of high frequency in normalised units (HF-nu) which represents parasympathetic outflow and low frequency in normalised units (LF-nu) which represents sympathetic outflow, after Fourier transformation and noise filtering through the program Kubios HRV Analysis Software version 2.0 (Kuopio, Finland)

Blood Pressure Measurements: blood pressures were measured using a SunTech Medical Oscar 2 device (SunTech Medical, Morrisville, NC, US with the accuracy of more than 2 mm Hg) and the resting BP values was averaged over two consecutive measurements with 5 min between measurements. Measurement devices were very user friendly and they can

provide all the information required for the research, and intra subject reliability was tested to insure that all the devices are accurate for each polar belt and BP monitors.

D. Statistical Analysis

The independent ANOVA used to show groups different for following parameters strength (5RM), BP and HRV at the start of the experiment. Subsequently a two-way ANOVA, which means that the interaction was examined for the IVs (load intensity) and (load intensity and post exercise recovery time points), and how this interaction of load intensity varied across 8 post exercise recovery time points.

III. RESULT AND DISCUSSION

There were no significant difference among all groups for characteristics such as age, height and weight as well as strength, BP and HRV at the start of the experiment ($P = 0.05$). Blood Pressure Results For systolic blood pressure (SBP) there were statistically significant two-way interaction between post exercise recovery time points (PERT) and load, $F(12.75, 459.25) = 2.81, p = 0.001$. For and diastolic blood pressure (DBP), the statistically significant two-way interaction was observed between load and PERT $F(12.57, 452.50) = 39.41, p = 0.0001$.

The SBP was reduced significantly for 120 minutes after RT exercise with loads of 5RM, 10RM and 5RM ($p=0.005$) (Figure 1).

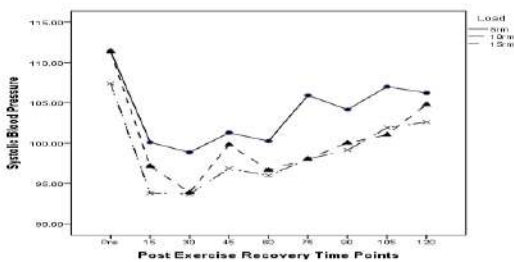


Figure 1. Systolic blood pressure responses to different load intensities.

There were no significant three way interaction observed between LI, and PERT on SBP. The 5RM and 15RM loads reduced the DBP significantly for 105 minutes after exercise. Whereas, the 10 RM load reduced the DBP for the longer duration of 120 minutes after exercise (Figure 2).

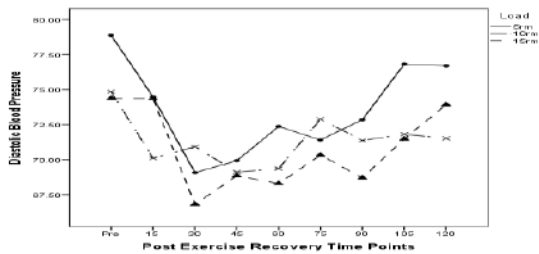


Figure 2. Diastolic blood pressure responses to different load intensities.

Heart Rate Variability Results

For Low Frequency LF there was a statistically significant two-way interaction between recovery time points and load, $F(12.45, 448.47) = 3.14, p = 0.0001$. For High Frequency HF There was a statistically significant two-way interaction between recovery time points and load, $F(12.53, 451.17) = 3.64, p = 0.0001$.

The LF value was increased significantly for 75 minutes after RT exercise with loads of 5RM while exercising with 10RM load increased LF value for 90 minutes post exercise. Performing RT with 15RM load increased the LF value after exercise for 60 minutes ($p=0.005$) (Figure 3).

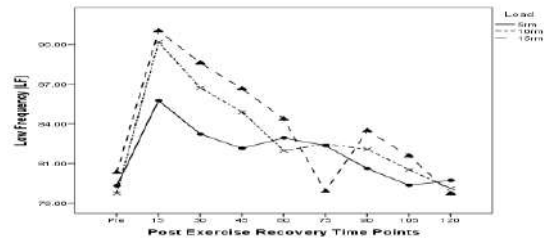


Figure 3. Low frequency responses to different load intensities.

Whereas, the 5RM load decreased the HF value for 75 minutes after RT exercise while 10RM and 15RM decreased the HF value up until 90 minutes post exercise ($p=0.05$) (Figure 4). Moreover, 30 and 45 minutes after RT session HF value were significantly different between each load ($p=0.05$).

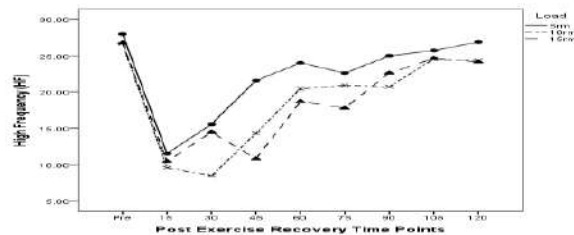


Figure 4. High frequency responses to different load intensities.

Discussion

In this study bout of RT with low, moderate and high loads intensities (5RM, 10RM and 15RM) decreased SBP up until 120 min post-exercise was recorded. However, the DBP value remained low up until 105 min for 5RM and 15RM loads, with DBP value low up until 120 min for the 10RM load. In this study amount of the SBP and DBP reduction was greater in low and moderate intensities. The SBP and DBP value in PERT was significantly different from one another. Despite some studies have stated no chronic reduction on resting BP after a RT session, which could be associated with the physical characteristics of the sample or sample age (young or elderly), load intensity, gender (male or female). Simão et al., (2005) examined the effect of two different load intensities (12 repetitions with 50% of a 6RM load vs. 6RM to

failure) in normotensive trained men, and found no significant differences in the BP changes after RT session. On the contrary, Brown et al., found a reduction on diastolic blood pressure and an increase in systolic blood pressure following a RT protocol performed at load intensities of 40% and 70% of 1RM loads with 30 seconds RI between sets. Furthermore, Niemelä et al., (2008) examined BP responses following three sets of 20 repetitions at 30% of a 1RM or three sets of 12 repetitions at 80% of a 1RM in trained men. The results did not demonstrate any significant differences in BP responses between sessions. Figueiredo et al.(2015) studied the effect of three different load intensities (80%, 70% and 60% of 1RM with 8 - 10 repetitions per set) on BP responses in prehypertensive trained men, and the results revealed significant differences in the duration of the BP reduction when the 70% of 1RM loads were used in a RT session, independent of the total volume. These results demonstrated that moderate to high intensities could result in a longer BP response in trained men.

The findings of this study showed a significant post-exercise BP and HRV changes after RT in physical active men. The extent of the cardiac response was related to load intensities performed during training. Furthermore, the lowest BP changes was observed when load was set at 10RM and the load of 5RM had the lowest impact on sympathetic activation and. Modifying the training variables to minimise the sympathetic activation and maximise the parasympathetic activation can have an important practical application. For instance, the increase or maintenance in sympathetic activation along with a reduction of parasympathetic activity raises the risk of cardiovascular events in both patients with cardiovascular disease and healthy individuals (Figueiredo et al., 2016).

It is important to address the limitations in this study which can be useful in the future studies. It is important to consider the position adopted for testing BP and HRV after RT. In this study, participants were required to stay seated for 2 hours after exercise in order to test their BP and HRV. However, the research by Gotshall, Aten, & Yumikura, (1994) suggested that prolonged seated position may affect the HRV changes which can result in venous return and increased baroreflex activity.

It is essential to consider further research on the post-exercise BP and HRV changes related to the manipulation of RT methodological variables such as rest intervals between sets, number of sets, exercise order, exercise tempo. The number of sets and rest intervals between sets are important as the higher or lower number of the sets or rest interval can affect the results. Moreover, the influence of the exercise tempo is important since during this study the first repetitions were executed at higher tempo (velocity) and when muscle fatigue occurred there was a significant reduction in repetitions velocity until the exercise was over. This may limit methodological variables of this experiment, since it may

affect the muscle fatigue, number of repetitions and type of strength training.

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Identifying Effects of Emotional Factor towards the Mental Health of Malaysian Para-SUKMA 2018 Athletes

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Abstract—Para athletes have proved that it is not impossible overcoming their disabilities to gain succeed in sports event. Despite that, there is still less research about emotion and its relation with mental health among them. This paper aim to study the level as well as the relationship between emotional factor and mental health of the Malaysian Para-SUKMA athletes. The survey method by distributing questionnaire forms to 97 respondents. The analysis used in this study is descriptive analysis and Pearson correlation analysis. The study findings show that the emotional level of the athletes is moderate which is 79 percent with the $M=2.744$, $SD=0.425$ and the mental health level is high which is 67 percent with the $M=3.904$, $SD=0.404$. The emotional level is in a moderate level while their mental health is in a high level. There is a positive relationship and significance between the variables of emotion and mental health which is ($r=0.603^{**}$, $p=0.0001 < 0.05$). The study concluded that the emotional factor influences the mental health of the Malaysian para athlete. Emotion really needs to be accentuated in every para athlete so that their mental health can be controlled, and the athletes' performances can also be enhanced in the upcoming sports events.

Keywords—*emotion, mental health, Para athlete*

I. INTRODUCTION

Research in the health and sports psychology field has now started to study the relationship between emotional behaviour and sports [11]. Previous researches focus a lot on the effects of emotion that is related with physical activity involvement, performance of athletes and behaviour of coaches. However, in today's sport environment, researchers have stressed that emotions, especially negative ones play an important role in the performance of athletes [3].

A study on the emotional effects that are caused by anxiety factor on the sports performance towards athletes in Gomal Deraismail University, Pakistan [15]. The objective of this study is to find out about the effects of emotions on mental health which are physiology, psychology and behaviour of the athletes. The data analysis concluded that emotion from

anxiety resulted to negative effects towards athletes' whole sports performance.

Emotions like fear can create anxiety in the athletes' sports experience and can affect their mental state [22]. Based on this, it appears that there are some theories and previous researches on the level of negative emotions that can influence and have a significant impact on the athletes' mental health which often occurs in various conditions and situations during the competition yet it cannot be avoided.

2279 records and 60 studies on athletes' mental health [20]. They realized that the mental health of athletes is influenced by various factors, among those are emotional disturbances by numerous causes such as anxiety, depression, injury, nutritional problem, internal and external pressure, as well as environmental factors. The findings revealed that only 25% of the existing researches are complete in terms of methodology and there are still many voids that need to be filled out on this study title.

In his study noticed that emotion is now an essential research field because of its influence towards performance Components (attention, confidence, and motivation) and psychology welfare [16]. These emotional benefits have not been fully realized in the sports context, especially in their ability to generate self-efficacy, motivation, attention, problem solving and problem confrontation. Nevertheless, this research has found at least two theoretical models that can be referred by sports education field to understand in depth about the influence of positive emotion towards sports performance and these two models are invented particularly for sports context which are *theory of challenge and threat states in athletes* (TCTSA) (Blascovich & Mendes, 2000) as well as *theory of positive emotions*.

Previous researches through observations and experiments that have been executed found that only a few studies covered

This study was primarily granted funding from Faculty of Education, University Putra Malaysia, Malaysia.

on emotional reaction towards mental health in real sports situations and only included the pre competition. Furthermore, there is no study that involve the good mental health level of athletes are caused by the influence of low emotional level particularly towards Malaysian Paralympic athletes.

This research is conducted to identify emotional and mental health levels among Malaysian para athletes and to study the relationship between emotion and mental health among Malaysia para athletes. Therefore, there are several research questions on this study which is (1) what are the emotional and mental health levels of Malaysian para athletes and (2) is there any relationship between emotion and mental health among Malaysian para athletes. Researcher developed a hypothesis which is there is no significant and positive relationship between emotion and mental health of the disabled athletes (Malaysian para athletes)

II. PROBLEM STATEMENT

Starting in the early 21st century, there are many studies on mental health of athletes has been carried [14] including in Malaysia. Among the sports involved in the studies are football, hockey and field events such as running et cetera. It can be said that majority of the sports involved in these researches only associate physically perfect athletes but does not focus on the disabled athletes in Malaysia although sports events for this group has been long introduced in Malaysia.

The first national sports competition for disabled athletes was held in Penang on 1979 [27] where the participants took part in field sports and swimming. From that moment onwards, more and more sports were introduced at the end of 1990s and early of the year 2000 including futsal, judo and tenpin bowling [27]. In Malaysia, there is a government support for people with disabilities. For example, the launch of World Programme of Actions Concerning Disabled People in the year 1982, Malaysia has introduced various policies and programmes to increase the quality of life of the disabled such as the issues in sports and recreation [9].

In the context of para sports, there is no encouraging study about athletes' emotion among these para athletes as if this group is not given attention as much as the normal athletes [17]. Previous researches among the para athletes are more focused on the coaching role and mental readiness before the games. Nevertheless, emotional position aspect and its contribution towards athletes' mental health or athletes' performance improvement are still poorly explored. Studies regarding both of these aspects in sports are essential because

it has an increasingly important role in sports performance [13] and physical activity [23]. Therefore, this study is conducted to examine the level and the relationship between the emotional factor and mental health of the Malaysian para athletes.

III. CONCEPTUAL FRAMEWORK

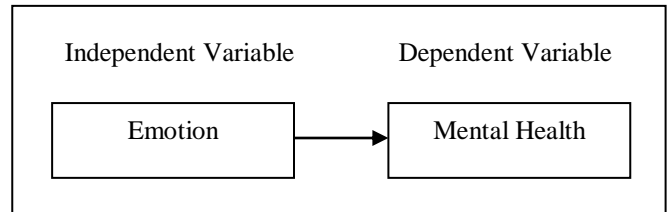


Figure 1: Conceptual Framework

IV. METHODOLOGY

A. Research Design

The research design of this study is descriptive survey. This research used a quantitative method, cross section by distributing questionnaires to respondents. This study measured the relationship between two or more variables. It also explained the strength between two relationships and result from the analysis will determine whether it is significant or not.

B. Research Sampling

The samples of this study consisted of 97 respondents (M:55, F:42) among the para athletes who have participated in the 2018 SUKMA event. The sampling method used for this study is purposive sampling. The sample of this study only focused on the para athletes of 2018 SUKMA event. Purposive sampling method is applied to choose respondents specifically in order to gain certain information that cannot be obtained from every individual [11].

C. Research Instruments

The type of instrument applied to obtain data in this research is using a set of questionnaires. [18] stated that questionnaire is the most effective measuring instrument and method as well as it is appropriate for obtaining information resources and maximum data. Sources for the design of this research questionnaire are based on the questionnaires that have been developed by previous researchers through the literature review on emotion and mental health. Background of the instrument is divided into three parts which are: -

Questionnaire Design Process I (Demography)

The questionnaire in this research is segregated into 3 sections; the first section is comprised of 9 demographic questions that provide information related to the background of respondents that answered this research questionnaire. This section covered on gender, race, marital status, age, education, sports category, athletes' participation period, their achievement level and the sports event involved by athletes.

Questionnaire Design Process II (Emotion)

The second section consisted of 15 questions which are related to emotion. This segment measured on the emotional control and stability of the participants that took part in the 2018 SUKMA championship. Questions for this emotion variable are adapted from the research [10].

Questionnaire Design Process III (Mental Health)

Meanwhile, the third section comprised of 37 questions related to mental health. This part measured the mental health level of the participants that have taken part in the 2018 SUKMA championship, in general to determine whether they experienced emotional stress, discomfort and so forth after participating in the paralympic sport activities [26].

V. PILOT STUDY

TABLE I. RELIABILITY TEST RESULT FOR PILOT STUDY ITEMS

Variable	Cronbach's Alpha Value of Pilot Study
Emotion	0.789
Mental health	0.907

A pilot study is conducted before the real study executed. This pilot study is done to confirm that the items in the questionnaire developed are in accordance with the correct language and terms as well as appropriate to be used in the study. Stated that a suitable sample size for a pilot study is between 25 to 100 respondents This pilot study has been applied to the para athletes in the 2018 SUKMA championship [4]. Cronbach's alpha is applied to determine the value of reliability and figure out the level of validity of the questionnaire items used. A Cronbach's alpha value under 0.60 is classified as weak, 0.70 as satisfying and above 0.80 is categorized as a good and high value [4]. **Table 1** shows the findings obtained from the test results demonstrated that the reliability level of both variables is in a good and acceptable credibility level.

VI. RESEARCH FINDINGS

The data and information obtained through the questionnaire distribution are analyzed using the Statistical Package for the Social Science (SPSS) version 25.0. Meanwhile, the types of analysis used to answer the questions in this research are the descriptive analysis as well as Pearson correlation analysis.

A. Descriptive Analysis

TABLE II. DESCRIPTIVE ANALYSIS ON EMOTIONAL AND MENTAL HEALTH LEVEL

Variable	Level			Mean	Standard Deviation	Result
	Low 1.00 – 2.33	Moderate 2.34 – 3.67	High 3.68 – 5.00			
Emotion	-	79 (81.44%)	18 (18.56%)	2.744	0.425	Moderate
Mental Health	-	30 (30.93%)	67 (69.07%)	3.904	0.404	High

Data analysis shows that the level of emotion is at a moderate level of 79 percent (M=2.744, SD=0.425) whereas athletes' mental health level is at a high level which is 67 percent (M=3.904, SD=0.404). Based on Table 2, the result of this research shows that the emotional condition of the Malaysian para athletes while answering these questions were in a good condition although they were in the sports pre competition situation on the national level. When emotion is in a good condition which is moderate, thus the level of mental health as well is in the highest condition that makes them to be more prepared to face sports matches and score the best position in the sports events.

B. Pearson Correlation Analysis

TABLE III. CORRELATION ANALYSIS BETWEEN EMOTION AND MENTAL HEALTH

Variables	Emotion	Mental Health
Emotion	1	
Mental Health	0.603	1

*Significant on level $p < 0.05$

Apart from that, the result of Pearson correlation test found that there is a positive and significant relationship between the variables of emotion and mental health which ($r = 0.603^{**}$, $p = 0.0001 < 0.05$). Based on Table 3, correlation coefficient value ($r = 0.603^{**}$) shows a relationship exists between both of these variables are a high positive relationship. The result also clearly shows that there is a relationship that significant among emotion and mental health variables where the significant value is 0.000, which is the value is less than set

value of alpha. This shows that hypothesis for this study is supported because of the p-value of less than 0.05, proving that there is a high positive linear relationship between emotion and mental health among Malaysian para athletes. This relationship is strongly based on the emotional influence towards behaviour, feelings, physical condition and actions of athletes which can affect their mental health if there is any uncontrollable negative emotion.

VII. CONCLUSION

In conclusion, this study shows that the level of mental health is in a high level while the emotional level of Malaysian para athletes is in a moderate position. Nevertheless, the mental health level can be influenced by the emotional level that they feel before the match occurred. An unstable emotional position can affect the mental health level thus can influence athletes' performance at the end of the sports match.

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Development of Alphabet Games to Improve Social Skills of Children with Mild Mental Disability in SDLB

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Abstract—The purpose of this research is to develop a game to improve social skills of children with mild mental disability at SDLB (Elementary School for Children with Disability). Research method used research and development with development procedures up to large-scale trials. Small-scale trial subjects used one SDLB and large-scale trials used three SDLBs. The four SDLBs used for the trials were SDLB in Bantul Regency and Yogyakarta City. Research results indicate that after going through literature studies, expert validation, and small and large scale trials, thus, it produces alphabet games for children with mild mental disability. Alphabet games is a game of stringing letters that focuses on developing the ability to think, and communicate to improve the social skills of children with mild mental disability. The effectiveness test is still needed to determine the effectiveness of the game on improving the social skills of children with mild mental disability.

Keywords: *alphabet games, social skills, mild mental disability,*

I. INTRODUCTION

Mental retardation is a syndrome of delayed or disordered brain development evident before age 18 years that results in difficulty learning information and skills needed to adapt quickly and adequately to environmental changes [1]. Johny L. Matson, states that there is a grouping of mental disability that is mild mental retardation: IQ= 50-55 to 70, moderate mental retardation : IQ= 35-40 to 50-55, severe mental retardation: IQ= 20-25 to 35-40, dan profound mental retardation: IQ= less than or = 20-25 [2].

Mild mentally disabled children are those who although have intelligence and social adaptation disturbed, they have the ability to develop in various academic fields of training, social adjustment, and ability to work [3]. The problem of social adaptation is a common problem faced by people with mental disability. This difficulty arises because it relates to people with mental disability overcoming limitations in interpersonal relationships with others.

For children with mental disability, barrier in social function is manifested in their limited interaction with peers.

It is noted that children with mental disability show lack in their social competence. Previous studies observe children with mental disability interact lesser than developing children even in inclusive class [4].

Sukhodolsky and Butter explain that most definitions agree that social skills are interactions. However, a greater understanding of social skills as sufficient social function can include many other personal characteristics such as natural characteristics and expression, language, and social-emotional growth [5]. Social skills are behaviors that allow individuals to interact influentially and distance themselves from unwanted responses [6]. These skills represent social success and individual behavior health [7]. Social skills are divided and done in five domains namely; approaches to learning, restraint/ self control, interpersonal skills, externalizing behavior problems, and internalizing behavior problems [8]. Other opinions mention social skills include communication skills, sharing, working together, discussing in community groups [9].

Children with social skills will be able to express feelings both positive and negative in interpersonal relationships, without having to hurt other people. They must respect others that means dealing with them without disturbing them or saying things that are intentionally hurtful; respect for religion, culture and other races, and all must be done by respecting themselves by showing others that he or she is very valuable to himself/ herself. It is also important for a child to show sensitivity to others and understand other's point of view and to be able to negotiate in the middle of conflict [10].

Social skills have many supporting components. Snell and Janney in Michael Horvat, Martin E. Block, & Luke E. Kelly describe the components of social skills including: listening, greeting others, joining, arguing, complimenting, making friends, doing quality work, obey to regulations, using self control, offering help, disagreeing with others, being organized, and talking [11].

Mentally disabled children will surely interact with other people. Although the problem faced by mentally disabled children is the delay in social adaptation does not mean that the social skills of mild mentally disabled children cannot be taught or practiced. Mild mentally disabled children are included in the group of children with disturbed intelligence and adaptive abilities, but having the ability to develop in the academic learning fields, social adaptation ability and ability to work.

The characteristics of mild mentally disabled children experience weakness in thinking, but on the other hand, other abilities can still be developed, especially those related to the field of skills. In talking, many children can be smooth, but the vocabulary is minimal, they have difficulty in abstract thinking, but they are still able to take academic lessons, both in ordinary schools and in special schools (SLB). The age of intelligence if it is an adult is the same as normal children that is 12 years old.

With the academic ability of mild mentally disabled children, the social skills of mild mentally disabled children can be taught / trained from family environment and school environment. If mild mentally disabled children have increased, in living their lives, they will be able to interact with people around them even without guidance or assistance from others. Education to improve social skills in schools can be obtained by mentally disabled children in SLB/ Special School for Disability.

In social field, mild mentally disabled children can be educated to improve mastery of social skills. One way to improve the skills of mild mentally disabled children is to use playing models or games that are made according to the level of growth and development of mild mental disability. Playing or game is an act or voluntary activity done within certain boundaries of space and time that have been determined, according to rules that have been voluntarily accepted but are fully binding, with a purpose in itself, accompanied by feelings of tension and joy, and other awareness from everyday life.

Through playing, mild mentally disabled children are expected to develop both physical and social aspects because one of the benefits of playing is for development of social aspects. To improve social skills mild mentally disabled children can be done by developing cooperative games. In cooperative playing, mild mentally disabled children are involved in playing with normal children in games that are not competitive. In this cooperative play activity, division of tasks or division of roles is performed, both for normal children and for children with mild mental disability to achieve an objective; children's social skill. Alphabet games are expected to be able to improve children's social skills. In addition, this game can improve children's cognitive abilities.

II. MATERIALS AND METHOD

A. Research Procedure

In general, this development research was done by following the steps which include: (a) Preliminary study, (b) Development, and (c) Field Trial/ Test.

1. Preliminary study, including: a. Literature study, reviewing relevant theories and results of research, b. Field studies, conducting surveys, reviewing the characters of research subject, and looking at possibilities if the research product in the form of game model is applied.
2. Development, including: a. Objective analysis, formulating the objectives to be achieved from development research, b. Capability analysis, estimating funds, energy, and time needed to do the development research, c. Development procedures (design development): (a) make product designs to be developed. (b) determine the research facilities and infrastructure to be used. (c) determine the stages of implementation of design tests in field and d. Expert validation, conduct validation by involving adaptive physical education experts and material experts.
3. Field Tests, including: a. Small-scale field testing is an initial field test involving 1 SLB/ Special School for Disability, and b. Large-scale field testing is field test with greater number of subjects than small-scale field trials involving 3 SLBs.

B. Data Source And Research Subject

1) Data Source

The data produced were qualitative data and quantitative data. Qualitative data were taken from preliminary survey the results in SLB/ School for Disability for teachers to investigate real conditions of Physical Education, Sport, and Health/ PJOK learning process. Qualitative data were also obtained from initial draft validation results of activity model game to improve skills of small group trial and large group trial results.

2) Research Subject

Trial subjects in this development research done were students in SLB/ School for Disability from 4 schools, they were: (a) 1 SLB for small-scale trial, (b) 3 SLBs for large-scale trial. The subjects of small-scale trial used students from SLB 2 Bantul with total 10 students. While the large-scale trials used students from three SLBs; SLB 1 Yogyakarta 10 students, SLB 2 Yogyakarta 10 students, and SLB Pembina Yogyakarta 10 students.

3) Technique and Data Collection Instrument

To get data on the process and results to be achieved, researchers used data collection technique with observation. The observation sheet used is to see social skills and to assess the products developed.

4) Data Analysis Technique

Data analysis technique used was by quantitative data analysis to analyze observation sheet data as a basis that can be tested on small scale or large scale. This analysis was

done on experts' observation result data in giving suggestions or inputs and revisions to the model. This compiled model was considered feasible to be tested on small scale if the score achieved reached minimum standard of feasibility. Score was obtained from filling out the questionnaire that had been given, there were four rating scales in the questionnaire; they were 1, 2, 3 and 4. Then the scale was interpreted into the scoring system as in Table 1 below:

Table 1. Tabulation of Questionnaire Score

No	Scale on Questionnaire	Result Score of Conversion	Maximum Score (14 questions)
1	4	4	56
2	3	3	42
3	2	2	28
4	1	1	14

From the table above, the difference in scores between the maximum top and the bottom scores is 42 points, while the midpoint of the two scores is 35. In this research, score 35 was set as a standard for a model to be considered feasible of testing in the field. If the score taken by the model was more than 35 (> 35), the model was considered feasible to be tested in the field, whereas if the model reached score less than 35 (≤ 35) then this was considered as not feasible for testing in field.

III. RESULT AND DISCUSSION

A. Research Result

• Product Design Plan

Based on the need analysis, literature review, and relevant researches, it produces three developed aspects; game design, game implementation, and observation of social skills. In the development of game design, the aspects developed are objectives of the game, game material, game equipment, and assessment of developed components in the game. In the development of the implementation the game is directed at games that are mixed in alphabet games. The initial draft of the game products is as follows:

1) Alphabet Game (Game Description)

Alphabet game is a game that is designed to provide opportunities for mentally disabled children to grow habits of knowing names, obeying teacher commands and friends, communicating verbally and non-verbally with friends. The game is played by giving information on animal images and then the group shown tries to find the name of the animal by attaching letters that match to the name of the animal. After the group succeeds in attaching the letters according to the name of the animal, then the group makes movements according to the movements of the animal.

2) Game Objectives

The aim of the game is to:

1. Get to know names
 2. Comply with teacher and friend requests
 3. Communicate non-verbally and verbally with friends
- 3) *Fields, Equipment and Supplies*

1. Game Field

- The game field is rectangular with a length of 20 x 10 m
2. Styrofoam boards and sized 60cm x 40cm

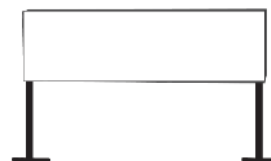


Figure 1. Board and Styrofoam

3. Letters that will be pasted.

4) Game Instruction

1. The game begins with static and dynamic stretching.
2. After warming up, students are divided into small groups, each of which consists of five children as in the picture.
3. Before the game begins, the teacher shows pictures of animals in each group.



Figure 2. Initial Game Formation

4. Before the game starts, the teacher shows pictures of animals in each group.
5. After all the groups receive the picture of the animal, the teacher blows a whistle as sign the game starts.
6. After the whistle command, students collectively look for the letters in the box then attach the letters arranged in accordance with the name of the animal given at the beginning of the styrofoam provided as shown below:

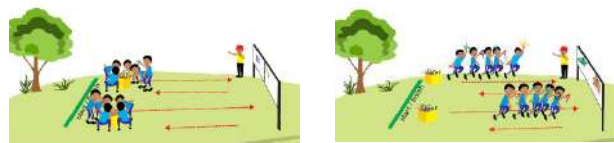


Figure 3. Students Look for Letters in the Provided Box

7. After the name of the animal is successfully assembled, then together the students make movements like the animal is headed back to the starting point as in the picture below:



Figure 4. Activities Done by Children When Arranging Letters and Back to Start Line

8. The number of pictures shown is three images with the number of letters of each of the five letters.
9. The picture is a picture of a frog to do jumping motion, a picture to do a running motion and a picture of lizard to do creeping motion.
10. The winning group is the group that first completes the arrangement of the pictures
11. The winning group gets an asterisk/ animal sign.

5) *Evaluation*

1. Students recognize names
2. Students obey to the requests of teachers and friends
3. Students communicate non-verbally and verbally with friends

6) *Expert Validity*

Before being tested in the field, both small scale trials and large scale trials, the initial draft game activity model to improve social skills of mild mentally disabled children in SDLB/ Special Elementary School for Disability was validated by 2 material experts and 2 SLB practitioners / teachers. Validation of material experts was done by Prof. Dr. Siswantoyo, M.Kes., AIFO., and Dr. Sumaryanti, M.Kes., adaptive physical education expert. Validation was done by showing the initial draft of the product accompanied by assessment sheet from the game. Product evaluation sheets used Likert scale sheets on a scale 1 to 4. From the results of the initial assessment, the initial draft of the game product still needs to be revised. Material experts still wanted to add and reduce the concept of the model. Suggestions from experts were in the form of written notes. The full suggestions from the material experts and practitioners can be presented below.

Table 2. Validity Input of Initial Draft Activity Game Model to Improve Social Skill of Students with Mild Mental Disability in SDLB by Expert

No	Name of Game	Expert Suggestion
1.	Stringing Letter Game	<ul style="list-style-type: none"> • Less activities done by students characterizing the game • To show the characteristics of the game, games are arranged in form of race. • It is better to use media that shows tasks that are then assigned to students to look for words. • Communication is considered in the preparation of the game

Based on suggestion/ input from material experts and practitioners, researchers immediately conducted revisions of the first phase of initial draft game activity model to improve the social skills of mild mentally disabled students in SDLB. The revised results are based on written records and discussion results among researchers, material experts, and practitioners presented below:

Table 3. Initial Draft Revision of Game Activity Model to Improve Social Ability of Mild Mental Disabled Children in SLB

No	Name of Game	First Initial Draft Phase
1.	Stringing Letter	• Revised by using animal

	Game	<p>pictures to be named later.</p> <ul style="list-style-type: none"> • The number of images used is 3. • The distance between the start and the place where the letters are placed is determined. • Do not use white board but is replaced by using Styrofoam.
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The assessment results from experts and practitioners in assessment sheet are as follows:

No	Assessed Aspects	Expert and Teacher Assessment Score			
		A1	A2	G1	G2
1.	Accuracy of choosing game model for students.	3	3	4	3
2.	Clarity of instructions for implementing the game.	4	3	4	4
3.	Suitability of tools and facilities used.	4	3	4	4
4.	Ease of game models for students to play.	4	4	3	3
5.	Suitability of game model with student characteristics.	3	4	4	3
6.	The game encourages the development of students' physical aspects.	4	4	3	3
7.	The game encourages the development of students' cognitive aspects.	3	3	4	4
8.	The game encourages the development of psychomotor aspects of students which include students' locomotor, non- locomotor and manipulative movements.	4	4	3	4
9.	The game encourages the development of students' affective aspects.	3	4	4	3
10.	The game encourages students' competitive abilities.	3	3	4	4
11.	The game model can be played by male and female students.	3	4	3	4
12.	The game model can stimulate students to actively move.	4	3	4	4
13.	The game model can	4	4	4	4

	improve students' social skills.				
14.	The game model is safe to play by students.	4	4	4	4
Total Score		50	50	50	52
Mean		3.5	3,5	3,5	3,7

From the data above, it shows that the stringing word game model falls into *good category* so that it can be followed by small group trials.

7) *Small Scale Trial*

Small group trial on string words game model products to improve social skills of mild mentally disabled students in SLB was held at SLB 2 Bantul Yogyakarta with total 10 students. There were three practitioners involved in the small group trial whose task was to assess the game activity model. The three practitioners were the same as those in charge of the initial draft validation stage of the product. At small-scale trial stage, there were only two suggestions from the practitioners, they are: the distance between one group to another was widened to reduce looking one another of the results of each group. The suggestion from the practitioner was then used as a basis for perfecting the stringing game activity model.

Table 4. Implementation Test Result of Physical Education Model in Small Scale Trial Group

No	Name of Game	School Trial Location
		SLB 2 Bantul
1.	Letter Stringing Game	3.71
Mean		3.71

Table 4 shows that the results of small-scale trial of perceptual motor-based physical activity model has reached 3.71 with criteria of *Good*. This means that the game activity model can be followed up to large-scale trial.

8) *Large Scale Trial*

Schools for conducting large group trials include SLB 1 Yogyakarta, SLB 2 Yogyakarta and SLB Pembina Yogyakarta. In the large group trial, the researchers used the same three practitioners with those in the small group trial. The practitioners also provide input and suggestion for refining the stringing game model, they are: pictures are made clear so that they are clearly understood in the picture of animal in question.

Table 5. Test Result of Game Model Implementation of Large Scale Trial

No	Name of Game	School Trial Location		
		SLB 1 Yogyakarta	SLB 2 Yogyakarta	SLB Pembina Yogyakarta
1.	Stringing Word Game	3.71	4.0	3.85
Average		3.71	4.0	3.85

From the Table above, it is known that the results of large group trial of games activity model has reached 3.85 or with the *Good* criteria. The results achieved in the large

group trial is better than the results of the small group trial, even though the criteria are the same. The increase of the trial results can be interpreted that the stringing words game model gets more and more inputs/ suggestions that can make it better.

B. *Discussion*

Social skills are complex skills including communication, problem solving, decision making, interaction with friends and groups, and self-control [12]. Components underlying social skills include: 1) knowledge of appropriate social goals and strategies for peer group interaction, 2) ability to translate one's perceptions and knowledge into skilled behavior, and 3) ability to read social situations and social signs accurately [13]. To improve social skills can be done by using games that are appropriate to children's characteristics.

Bodrova & Leong state that playing has relationship with cognitive development and social skills needed in learning process of children. For instance, playing develops memory, self-control, verbal communication, and recognizing symbols [14]. Eberle states that playing provides benefits in developing mental, physical, and social skills [15].

Alphabeth games are designed games to give mentally disabled children opportunities to develop habits of knowing names, obeying commands of the teacher and friends, communicating verbally and nonverbally with friends. The game is done by providing information on animal's picture then the group shown tries to find writing the animal's name by attaching letters that match the animal's name. After the group has successfully pasted the letters according to the animal's name, then the group moves according to the animal's movements. This game provides a stimulus to be able to improve several components of social skills for mentally disabled children at SDLB/ Special Elementary School for Disability).

Children with intellectual disabilities are children who have cognitive limitations and also social skills. With game activities, they are expected to be able to improve social skills of mild disabled children. Bacsata argues that adaptive behavior consists of active and passive conversations, speaking of personal safety, mobility, is a set of skills needed for mental retardation [16].

Alphabeth games are developed by considering to social skill components. The novelty of this game is that this game simultaneously observes several components of social skills performed by mentally disabled children. The benefits for mentally disabled children are that children feel happy and at the same time develop some social skills components.

IV. CONCLUSION AND SUGGESTION

Disorders that occur in mentally disabled children are disorders of intellectual function and adaptive behavior in conceptual, social and adaptive practice skills. Having good social skills in mentally disabled children will have the

function as a means to obtain good relationships in interacting with others. Games are very important for children's development, because playing can contribute to cognitive, physical, social and emotional and well-being. Alphabet game is developed to provide stimulus to mild mentally disabled children to learn recognizing and arranging letters, obey teacher's commands, cooperate, and communicate verbally or non-verbally.

Suggestion in this research is that it still needs to be tested for the effectiveness of the game in improving the social skills of mentally disabled children.

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Utilizing Different Muscle Contractions of Compound Exercises on Counter Movement Jump Performance to Elicit Potentiation

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Abstract — Post-activation potentiation (PAP) refers to the energized neuromuscular state inside the skeletal muscle after a pre-load stimulus. The aim of this research is to determine the effects of the eccentric-isometric contraction on Counter Movement Jump (CMJ) performance using compound physical exercise protocols. Twelve ($n = 12$) recreational athletes performed five subsequent trials of CMJ on each test session using crossover randomized counterbalanced study. Power output and height jump were measured before and at 5, 8, 10, and 12 minutes at low intensity (15RM) for different types of muscle contraction; isometric and eccentric movement. Two-way repeated measures ANOVA analysis were used between the variables. No interaction effect between the type of muscle contraction and time on CMJ power performance with $F(4,44) = .708$, $p = .591$ ($p > .005$). There was no statistically significant difference on CMJ power performance $F(1,4) = .453$, $p = .515$ ($p > .005$) for the main effect. Also, no statistical significant difference between the trials on CMJ $F(4,44) = 2.463$, $p = .059$ ($p > .005$). In conclusion, this research reveals the possibility of improving jump efficiency through isometric action as compared to eccentric action.

Keywords: *post-activation potentiation, eccentric, isometric*

I. INTRODUCTION

Post-activation potentiation (PAP) refers to the energized neuromuscular state inside the skeletal muscle after a pre-load stimulus. A few investigations have demonstrated consequent enhancements in power output after utilizing a pre-loading stimulus [1]. Apart from that, there is a growing body of literature that recognizes PAP to appear as a result during excitation of the central nervous system that creates an increase

in contractile capacity due to an overwhelming conditioning stimulus. This is because PAP has been ascribed to three conceivable components which are regulatory light chain phosphorylation, expanded recruitment of motor units, and muscle fiber pennation point change. In the main component, Ca^{2+} discharge from the sarcoplasmic reticulum increments does the affectability of the actin-myosin between activities, which adjusts the structure of the myosin head and results in a higher power age condition of the cross-bridges [2].

Since this mechanism is thought to improve performance, it is more beneficial when applied with different muscle contraction approaches during daily physical training [3]. During strength training, eccentric contraction has proven to be a major intervention in the promotion of neuromuscular adjustments as well as eccentric contraction with higher muscle strength production during rehabilitation process and higher muscle damage recovery, i.e., providing a protective effect. This can lead to greater impact on muscle damage; muscle stiffness and soreness in untrained athletes or subjects in the days following the exercise [4] but these changes are still debatable and they would probably increase or reduce amid eccentric bouts [5, 6]. With regard to chronic exposure, eccentric exercise leads to reduced concentration but higher strength improvement than concentrated exercise [7, 8]. Moreover, studies have shown increased muscular size in comparison to concentrated or isometric contraction after eccentric exercises. On the other hand, PAP does not simply cause the desired effects, as isometric PAP results in a substantial drop in male fencers' peak leg strength, and no major impact on a field-athlete, bodybuilder, and physically active population [9].

Apart from that, studies over the past decades have provided important information on improving sports performance by looking at the responsive coordination of agonist and antagonist muscles. Such an improvement is one of the main early adaptations to the strength or torque increases in resistance training [10–12]. The concept of "superset" is probably the most popular name for professionals to describe a pair of training sessions. "Superset" is used to describe varying protocols [13, 14]. Typically, the word is used to define the exercise (generally two) groups that successively target various muscle groups. However, it can also be used to define the grouping of protocols that target the same muscle group.

Empirical research has referred to paired training set as complex [15–17] superset [18] and paired set training [19, 20]. Currently, complex training or compounding set has been the most common word in sport science literature. In complex/compound training a comparatively broad spectrum of literature exists. Complex exercises, though, assume performance improvement through post-activation potentiation and combination of bio-mechanically comparable exercises carried out alternately [21].

Despite several research that stated complex training as a good approach to escalate sports' skills [22–24], others are unable to distinguish this consequence [25]. Based on Robbins [21], this strength training modality should be examined to discover more decisive statements regarding its efficacy. The existence of literature related to the manipulation of training factors using PAP, as expressed in the optimization of sports performance, is insufficient. Thus, the aims of the current research are to (a) investigate the interaction effects of muscle contractions across time trial on CMJ, (b) examine the main effect of different muscle contractions on CMJ, and (c) examine the main effect of multiple trial tests on CMJ.

II. METHOD

Major aim of the current study is to examine the effects of compound exercises (back squat and hip thrust) using different types of muscle contraction (eccentric vs. isometric) on vertical jump (VJ) performance, through a time trial (pre, 5, 8, 10, and 12 minutes) after pre-load. Current study follows a within-subject crossover design where repetitive measures are taken in different muscle contraction patterns for each participant. The random and balanced design order were applied. The repeated measures ANOVA (Statistical Package for the Social Sciences version 22) were used in this study to observe the effect of different types of muscle contraction (eccentric vs. isometric) on vertical jump (VJ) performance.

A. Subject

Twelve recreational athletes volunteered in this study and completed a medical screening by answering questionnaire and provided written informed consent form (mean \pm SD 171.42 m \pm 5.79 height, 69.75 kg \pm 11.23 weight, and 23.43 kg/m² \pm 4.57 body mass). Standing height and body mass were measured using Omron Body Composition Monitor HBF-375

respectively. This study was approved by the Ethics Committee of the Faculty of Sports Science and Recreation UiTM Seremban 3 before the start of the investigation. The prerequisites for the participant to be involved in this study were to perform physical activities from 3 to 5 times a week with no evidence of Achilles tendinopathy or lower limb trauma. Additionally, back squat and hip thrust exercises were set with 1RM of 60% of body mass and appropriate landing machines (Electronics Swift Performance Equipment Athlete Jumping Product).

B. Procedures

- Two weeks before the implementation of the research, the athletes gathered and underwent two familiarization sessions to become familiarized with the test procedures and to assess the reliability of the measures. On the same occasion, both of the compound exercises' (back squat and hip thrust) 1RMs were measured at each session. The athletes first performed a 10-minute general warm-up comprises various dynamic mobilization exercises for the lower body musculature. Then, three certain warm-up sets with progressively heavier barbell loads were conducted. Lastly, each participant performed additional sub-maximal repetitions, and the individuals' 1RMs were then estimated according to Baechle and Earle [11]
- During the third session, subjects were divided randomly into two groups (eccentric with low intensity (12RM), and isometric with low intensity (12RM)) and performed the compound exercises. Crossover design is used in this study. To avoid the carry effect, participants were instructed to abstain from doing any physical activities for 72 hours prior to the experimental sessions. Prior to the testing, participants did warm-up using treadmill for 10 minutes and performed CMJ (pre-test) before the protocol. Then, the protocol was conducted in which the participants were required to do hip thrust and back squat exercises with low intensity 12RM (eccentric and isometric).
- After performing the protocol, participants rested for 5 minutes before doing post-test CMJ, rested for 8 minutes then did post-test CMJ, rested for 10 minutes then performed post-test CMJ, and finally, rested for 12 minutes then did post-test CMJ.

C. Measurements

A. Countermovement Jump (CMJ)

The CMJ tests were measured using force mat (Electronics Swift Performance Equipment Athlete Jumping Product) during pre-test as well as the other five trials (pre, 5, 8, 10, and 12 minutes). Each participant stood erect on the jump mat before performing 3 trials of CMJ and the average of every jump was recorded.

B. Back Squat and Hip Thrust

In order to execute the hip thrust exercise, the participants started in a seated position on the ground before leaning their back on the bench. The barbell was placed at the crease of the hips slightly above the pelvis [5], before thrusting the barbell up until the hip was fully extended whilst maintaining a neutral, straight back. The angle of the knees was approximately 90 degrees in the upper position. The participants were not instructed to lower the weights in a controlled manner, allowing them to drop the weights from the extended position. For back squat exercise, they were instructed to apply constant downward pressure on the barbell and to keep their feet in contact with the floor for the entirety of the repetition. Recovery time between warm-up sets was two minutes with 30-second rest period before proceeding on hip thrust. For each back-squat repetition, the eccentric phase was performed in a controlled manner at a self-selected velocity until full knee flexion was achieved whereas the concentric phase was completed as fast and impulsive as possible with the aid of verbal encouragement.

III. RESULT & DISCUSSION

The results for this study showed that there was no interaction effect between the types of muscle contraction and time on CMJ power performance; $F(4,44) = .708, p = .591$ ($p > .005$). Next, for the main effect of muscle contraction only, there was no statistical significant difference on CMJ power performance; $F(1,4) = .453, p = .515$ ($p > .005$). Meanwhile, for the main effect of time trial, there was also no statistical significant difference among the trials on CMJ; $F(4,44) = 2.463, p = .059$ ($p > .005$).

A. Figures and Tables

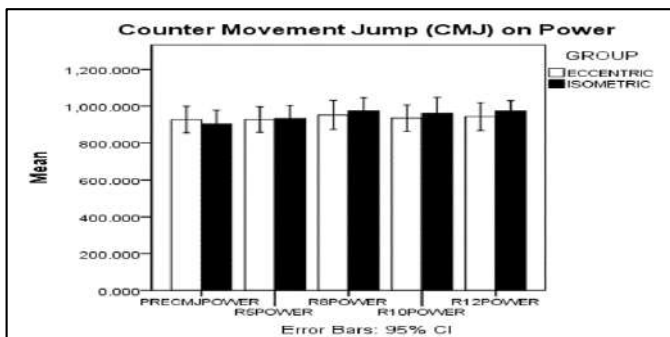


Fig. 1

Figure 1 shows the highest mean score for both types of muscle contraction during CMJ at 8 minutes, which are (953.25 ± 124.65) and (975.73 ± 111.23) respectively. In

comparing both contractions, the isometric has higher mean score compared to the eccentric type of contraction with 8 minutes as the best time to potentiate the muscle while 10 and 12 minutes show deteriorating results of CMJ performance.

TABLE I. POWER PERFORMANCE IN CMJ THROUGHOUT THE SUBSEQUENT TIME COURSE; PRE-ECCENTRIC AND POST-ECCENTRIC TIME (PRE, 5 MINUTES, 8 MINUTES, 10 MINUTES AND 12 MINUTES) WITH ECCENTRIC AND ISOMETRIC CONTRACTION AT LOW INTENSITY (12RM).

Time	Muscle Contraction	SBJ		Comparison between intensities	
		mean	± SD	Difference, ±90% CI	p
PRE	Ecc	927.27	± 112.89	74.48 ± 120.58	.629
	Iso	904.22	± 117.46	74.49 ± 120.59	.629
5 minutes	Ecc	927.44	± 109.19	98.64 ± 88.67	.913
	Iso	932.42	± 112.03	98.65 ± 88.67	.913
8 minutes	Ecc	953.25	± 124.65	122.74 ± 77.77	.646
	Iso	975.73	± 111.83	122.81 ± 77.84	.646
10 minutes	Ecc	934.73	± 112.23	132.61 ± 75.92	.579
	Iso	963.07	± 133.18	132.78 ± 76.10	.579
12 minutes	Ecc	943.67	± 118.69	119.52 ± 55.84	.469
	Iso	975.01	± 87.22	119.98 ± 57.30	.469

From Table I, the results show that the mean of each level within the subject factor is equal ($n = 12$) and there is a trend of increasing power in both eccentric and isometric at each successive time. Pre-CMJ power for ECC (927.749 ± 112.89) and ISO (927.27 ± 117.46) have increased for both types of contraction at 5 minutes, scoring (927.44 ± 109.19) and (932.42 ± 112.03) respectively.

The objective of the current research is to analyze the effects of compound exercises using different types of muscle contractions' (eccentric vs. isometric) pre-conditioning load on subsequent CMJ power performance across the time course after conditioning. The main finding of this study is that there is no interaction effect between the types of muscle contraction and time on the CMJ. The main effects for muscle contraction and time also show no significant differences.

It has been proven that performance at low intensity, 60% of 1RM is not enough to activate the PAP for power production. The mechanism that can enhance the PAP production is increased stretch of parallel and arrangement of musculotendinous structures leading to increased elastic recoil, which is mechanically similar to stretched elastic band with increased recoil force [26]. This idea is supported by other relevant systems that could have added to the improvement seen in this study, such as the flexibility of the muscle-tendon unit. The stretch of the series elastic component and parallel versatile segment of the muscle store elastic energy, and through that devoted to force creation in the restrictive way of the stretch. [27]

For instance, one physiological change related to PAP is the incremental initiation of fast twitch motor units. Furthermore, during an eccentric contraction, it has been accounted that fast twitch muscle fibers can be specifically recruited during eccentric action which has been known as the reverse size guideline [28]. This shows that recreational athletes lead to less production or activation of the fast twitch muscle fibers. Other research stated that the primary finding in the investigation is that vertical jump height and power peak increase to a similar intensity in moderate and high force conditions, with no change found in low intensity condition. The results from previous investigation of vertical jump height and power peak showed that PAP was enhanced at 8 to 12 minutes and 5 to 10 minutes commonly used by trained athletes.

Based on the current study, 8 minutes of resting period gives improvement in power performance compared to 5, 10, and 12 minutes. The study recommends that performance improvement after a high intensity warm-up is reliant on the rest after that warm-up [29]. This finding broadly supports the work of other studies. After completing the survey of the sport and exercise science literature, we have seen contradicting rest intervals, for example, 4, 5, 6, 7, 8, and 12 minutes were utilized to evoke the impact of PAP. It has been noticed that the most adequate duration of resting is somewhere in the range of 6 and 9 minutes [30]. Supported by a meta-study, short duration is insufficient to get over fatigue and may diminish the impact of PAP [31].

As a conclusion, PAP can be applied as a training tool for coaches and sports trainers as the findings of this study have shown improvement in jumping performance. The study protocol needs to be redesigned because there is a slight decrease of the jumping performance at the later stage of the testing. Most of the previous studies that observed PAP have shown positive and great findings in improving jumping performance but there are limited studies that use very high intensity, more than 1RM of eccentric loading as their testing protocol. Further studies for this intensity can be conducted in the future for the best outcome of application on PAP.

IV. CONCLUSION

These findings suggest a course of action to be considered which is intensity. To activate the post-activation potentiation, future study needs to highlight the intensity based on the objective that the study carries. Previous studies have mostly focused on high intensity to activate the post-activation potentiation. Other than that, the subject of the study must have relationship with the training status. If the training status requires using heavy load, the future researcher needs to choose individuals that contribute in athletic or sports events. This idea is supported by the previous journal which stated that

trained athletes produce more power compared to recreational athletes. Continuous efforts are needed to make PAP more accessible by determining the best recovery to activate it based on the intensity. The more intensity is needed, the more resting time is required to recover from fatigue and muscle damage.

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Ways of Coping Mediate the Relationship Between the Light Quartet Traits and Sports Motivation

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Abstract—An increasing number of studies have shown that personality traits (i.e., hope, optimism, perseverance, and resilience) are closely associated with sports attitude and performance. However, only few studies have delved into how light quartet traits affect sports motivation. And so far, to the author’s knowledge, none have studied the potential mechanism that explains the relationship between light quartet traits and sports motivation. To address these gaps, this study examines the influence of light quartet traits on sports motivation through ways of coping. The results show consistently that the ways of coping significantly mediated the relationship between light quartet traits and sports motivation these suggest that those who are hopeful optimist, persevering and resilient are likely to be motivated in their sports due to their adoptive ways of coping. The findings have important implications for coaches, particularly in sustaining their motivation by improving light quartet traits and ways of coping.

Keywords—*Light Quartet Traits, Ways of Coping and Sports Motivation.*

I. INTRODUCTION

Sport events brings out different personalities and attitudes whether from the fans, the athletes or the coach. In every game it challenges the athletes and coaches on how to deal with the rising pressure and expectations, what to think or feel, or how to behave or react when they succeed or failed the game. These attributes will help improve the athlete athletic wellbeing and performance and more importantly help build positive traits of both the athletes and coaches. There are a number of studies performed and are mostly focused on the athletes and rarely about the coaches. This research is about the personality traits (hope, optimism, perseverance and resilience) and its close connection with sports attitude and performance. However, only a number of studies were performed as to how the light quartet traits influence sports motivation. And there was no known study about the possible

mechanism that reveals relevant facts or ideas between light quartet traits and sport motivation.

The light quartet traits (hope, optimism, perseverance and resilience) has played a significant role and has been a determinant to positive personality trait on both the athlete or coach in a sport event [1]. To understand light quartet further, hope shows a strong optimistic belief in positive outcomes that includes psychological, self-esteem, strong conviction; emotional, mental and physical exhaustion and an emotional state or mood [2, 3, 4, 5], while optimism is a mental attitude that reflects a belief or hope that a successful outcome will happen [2, 6]. Perseverance, on the other hand, is the determination to perform something despite the difficulty or disappointment [2]. And lastly, resilience. It is the psychological capacity to recover quickly from any difficulty or setbacks [2, 7].

In sports motivation, there are inconsistent grounds as to why athletes and coaches are motivated to participate in sports where the reasons vary from the level of self-determination, and conceptual existence or continuum. Amotivation on the other hand works the opposite way which means an individual that is either without or have less desire to participate in any sport [8, 9]. Sports motivation also have a contrasting types called extrinsic motivation that is either controlled or self-endorsed; and intrinsic motivation, a free form of motivation where joining the activity is to enjoy it [8, 9]. These are external regulation (joining to receive money), introjected regulation (cooperate to avoid guilt), identified regulation (partaking is beneficial for advancement), integrated regulation (values the need to take part; [8, 9]).

In understanding the breach between the light quartet traits (hope, optimism, perseverance and resiliency) and sports motivation, this research will attempt to fill these gaps, and will inspect in detail on how the personality traits (hope, optimism, perseverance and resiliency) impacts sports motivation through ways of coping (coping with adversity, coachability, concentration, confidence and achievement motivation, goal setting and mental preparation, and peaking under pressure, and freedom from worry). And to establish an

evidence that ways of coping may or may not be a potential mechanism that mediates the relationship between light quartet traits (hope, optimism, perseverance and resiliency) and sports motivation.

The result of the study will have important implications for coaches and help reinforce the positive traits that has been done in coaching and will help improve further as a coach particularly in sustaining their motivation by improving the light quartet traits and ways of coping.

II. METHOD

The target sample were coaches in the Southern Philippines. Using purposive sampling technique, all the respondents were recruited on the basis that they are actively involved in coaching athletes in any competitive sports. A total of 570 coaches with age ranged from 22-65 years, with a mean age of 38.82 years (SD= 8.513 years). Female respondents comprised 55.6% (n=317) of the sample.

Prior of conducting the study, the researchers earned a packet of scales to be naturally accepted by the respondents. The researchers secured a permission by means of a letter directing to their immediate head and or directors, principals including superintendent to observe and implement proper ethical guidelines as to the target respondents were informed the purpose of the study, assurance of anonymity, perspective research benefits etc. They were given verbal instructions. Participants were encouraged to ask questions if they found any items unclear or confusing. The tests were not translated to the local dialects as to all of the respondents were able to comprehend English as medium of instruction. Further, the researchers also took consideration as to the preference of the respondents and well-being of the respondents. The study employs quantitative research design to analyze the influence of light quartet traits on sports motivation mediated by the ways of coping.

The Hope Scale (THS [10]). A twelve items questionnaire (that is I can think of many ways get out of jam). Factors such as agency subscale that is, (I energetically pursue my goals) and pathway subscale (that is, There are lot of ways around any problem). Respondents were given an 8-point scale (1=definitely true to 8=definitely false) Previous studies show high reliability [11]. In this study, the cronbach alpha of the total score is .882 and agency subscale chronbach's alpha was 0.831. Moreover, the pathway subscale's reliability coefficient is 0.761.

Life Orientation Test-Revised Version (LOT-R). Optimism was assessed using LOT-R a ten-item scale comprising of two factors or subscales such as pessimism that is, (If something can go wrong for me, it will) and optimism that is, (In uncertain times, I usually expect the best). Participants indicate the extent to which they agree with each item that corresponds categories from (0=strongly disagree till 4=strongly agree). The reliability of the scale has been well

studied [12]. In this study, this scale has a cronbach alpha of 0.662 that was marginally below the cut-off point.

Grit Scale (Grit-S: [13]). Short grit scale was used to assessed the respondents' perseverance in coaching. The scale includes two subscales: Consistency of Interest (that is, I often set a goal but later choose to pursue a different one) and Perseverance of Effort (that is, I have achieved a goal that took years of work) with corresponding categories from (1=Not like me at all to 5= Very much like me). Research showed that internal consistency has been well studied in this scale [13]. The reliability coefficient for this study was .785 for perseverance.

Ego Resiliency Scale-Revised was evaluated using a revised version of ego resiliency scale that refers to the dynamic capacity of an individual to modify a characteristic level of ego control [14]. Consisting of two factors: Optimal regulation (that is, Most of people I meet are likeable) and Openness to experience that is, (I like to do new things differently). Participants answered using a 7-point scale, from (1=never to 7=always). Past studies present high reliability coefficient [14]. The Cronbach alpha reported in this study was 0.907, optimal regulation (0.855), and openness to experience (0.821).

Athletic Coping Inventory Skills (ACSI: [15]). Used to assessed coping strategies and contains seven specific subscales that can summed up to result of personal coping resources Coping with adversity (that is, I remain positive and enthusiastic during competition, no matter how badly things are going), Concentration (that is, When I'm coaching sports, I can focus my attention and block out distractions), Confidence and Achievement Motivation (that is, When I fail to reach my goals, it makes me try even harder), Goal Setting and Mental Preparation (that is, On a daily or weekly basis, I set very specific goals for myself that guide what I do), Peaking under pressure (that is, The more pressure there is during a game, the more I enjoy it), and Freedom from worry (that is, I worry quite a bit about what others think of my coaching performance). The 28-item scale were quantified into numbers from (0=strongly disagree to 3=agree). The items were revised and contextualized in the paradigm and the side of the coaches to prevent biases and misinterpretation upon indicating their responses. Research showed that the cronbach alpha has been well studied in this scale [15]. Meanwhile, the reliability coefficient in this study is 0.885 of the total score.

Sports Motivation Scale [16]. An 18-item scale that is used to assess motivation of the participants in sports involving six factors: Intrinsic (that is, Because it gives me pleasure to learn more about my sport), integrated (that is, Because participating in sport is an integral part of my life), identified (Because I found it is a good way to develop aspects of myself that I value), introjected (Because I would feel bad about myself if I did not take the time to do it), external (that is, Because people I care about would be upset with me if I did

not), amotivated (that is, It is not clear to me anymore; I don't really think my place is in sport). There were studies showing the validity and reliability of this scales [16]. In this study, the Cronbach alpha was 0.868 for the total score, 0.940 (intrinsic), 0.931 (integrated), 0.946 (identified) 0.882 (introjected), 0.905 (external), 0.863 (amotivated)

Prior to the mediation analyses, missing values that appear at random were imputed and replaced using an expectation-maximization algorithm on the assumption that these are unintentional by-products of data collection. Series of regression were done and demographic profile particularly age and gender were the controlled variables in the model. Such that, Light Quartet Traits (hope, optimism, perseverance, and resiliency) were treated as criterion variables, while sports motivation as an outcome variable and ways of coping (confidence and achievement motivation, goal setting and mental preparation and peaking under pressure) treated as the mediating variables. The PROCESS macro for SPSS was used to perform the analyses. The indirect effects of the parallel

mediators were analyzed using the nonparametric bootstrapping procedure with 10,000 resamples.

III. RESULTS AND DISCUSSION

The means, standard deviations, and intercorrelation between the variables of the study are shown in Table I. Results of correlation analyses that hope was positively associated with ways of coping (that is, coping of adversity, coachability, concentration, confidence and achievement motivation, goals setting and mental preparation and peaking under pressure). It is also important to ponder that the other components of the light quartet traits (that is, optimism, perseverance and resilience) was consistently positively associated with sports motivation and some components of ways of coping particularly coping with adversity, confidence and achievement motivation, goal setting and mental preparation, and peaking under pressure.

TABLE I. RESULTS OF DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

		Correlations												
		1	2	3	4	5	6	7	8	9	10	11	12	
1	HOPE													
2	OPTIMISM	.288**												
3	PERSEVERANCE OF EFFORT	.449**	.179**											
4	EGO RESILIENCE	.559**	.096*	.480**										
5	SPORTS MOTIVATION	.485**	.038	.401**	.554**									
6	ACSI TOTAL	.411**	.056	.342**	.482**	.479*								
7	COPING WITH ADV	.399**	.237**	.298**	.400**	.428*	.740**							
8	COACHABILITY	.141**	-.190**	.073	.264**	.188*	.642**	.276*						
9	CONCENTRATION	.354**	-.022	.306**	.378**	.424*	.810**	.594*	.485**					
10	CONFIDENCE AND ACH	.419**	.171**	.331**	.452**	.465*	.798**	.618*	.322**	.569**				
11	GOAL SETTING	.437**	.189**	.364**	.413**	.502*	.753**	.615*	.229**	.575**	.697**			
12	PEAKING UNDE PRESSURE	.392**	.141**	.349**	.407**	.460*	.809**	.635*	.379**	.586**	.629**	.605**		
13	FREEDOM FROM WORRY	.051	-.171**	.098*	.214**	.085*	.646**	.202*	.554**	.447**	.356**	.267**	.390**	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table II shows the total, direct and indirect effect light quartet traits (that is, hope, optimism, perseverance and resilience) and sports motivation through ways of coping (that is, coping with adversity, coachability, concentration, confidence and achievement motivation, goal setting and mental preparation, and peaking under pressure, and freedom

from worry). The findings of the study show that ways of coping significantly mediated the link between light quartet traits (that is, hope, optimism, perseverance and resilience)

and sports motivation. Moreover, scrutiny of the ways of coping's seven factors, however, showed that only goal setting and mental preparation and peaking under pressure mediates consistently. This connotes that personality traits (that is, hope, optimism, perseverance and resilience) was associated with increased sports motivation indirectly through high

setting of goal and mental preparation as well as peaking under pressure.

TABLE II. MEDIATION ANALYSES

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Independent Variable (IV)	Mediating Variable (M)	Dependent Variable (DV)	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effect (c')	Total Effect (c)	Total Indirect Effect	Indirect Effects	BC 95% CI	
									LL	UL
Hope	Coping with Adversity	Sports Motivation	.0969**	.1915	.4690**	.9274**	.4584*	.0186	-.0892	.1199
	Coachability		.0393**	.5482			.0216	-.0036	.0687	
	Concentration		.0737**	.7543			.0556	-.0033	.1240	
	Confidence and Achievement Motivation		.0980**	1.0667*			.1045	.0197	.1987	
	Goal Setting and Mental Preparation		.1039**	1.8010**			.1871	.0924	.2897	
	Peaking under Pressure		.1009**	.8651*			.0873	.0040	.1847	
	Freedom from Worry		.0143	-1.1368**			-.0162	-.0628	.0090	
Optimism	Coping with Adversity	Sports Motivation	.1558**	.4463	1.0204**	1.7371**	.7168*	.0695	-.0990	.2514
	Coachability		.2479**	.2728			.0676	-.1146	.2665	
	Concentration		.1824**	.7781			.1420	-.0069	.3142	
	Confidence and Achievement Motivation		.2170**	.9623*			.2088	.0276	.4151	
	Goal Setting and Mental Preparation		.1616**	2.2306**			.3605	.1936	.5671	
	Peaking under Pressure		.2153**	.9327*			.2009	.0268	.4190	
	Freedom from Worry		.2200**	-1.5115**			-.3326	-.5536	.1786	
Perseverance	Coping with Adversity	Sports Motivation	.1516**	.2927	.7430**	1.4781**	.7350*	.0444	-.1249	.2133
	Coachability		.0215	.8423*			.0181	-.0182	.0926	
	Concentration		.1222**	.7031			.0859	-.0110	.2064	
	Confidence and Achievement Motivation		.1484**	1.2432**			.1845	.0589	.3428	
	Goal Setting and Mental Preparation		.1650**	2.0493**			.3381	.1786	.5189	
	Peaking under Pressure		.1680**	.9002*			.1512	.0143	.3235	
	Freedom from Worry		.0604*	-1.4427**			-.0871	-.2225	.0066	
Resiliency	Coping with Adversity	Sports Motivation	.0826**	-.0622	.6153**	.9151**	.2998*	-.0051	-.0906	.0767
	Coachability		.0621**	.3031			.0188	-.0267	.0687	
	Concentration		.0690**	.8636			.0596	.0100	.1192	
	Confidence and Achievement Motivation		.0897**	.8269			.0741	-.0007	.1536	
	Goal Setting and Mental Preparation		.0837**	1.7378**			.1454	.0756	.2198	
	Peaking under Pressure		.0867**	.9509*			.0824	.0188	.1594	
	Freedom from Worry		.0535**	-1.4103**			-.0755	-.1397	.0361	

** . Correlation is significant at the 0.01 level (2-tailed).

The premiere objective of this research was to examine if personality traits (that is, hope, optimism, perseverance, and resilience) increased sports motivation and even turned out higher tendencies among coping skills (that is, coping with adversity, coachability, concentration, confidence and achievement motivation, goal setting and mental preparation, and peaking under pressure, and freedom from worry). The results revealed diverse and inconsistent finding on the personality traits (that is, hope, optimism, perseverance, and resilience) and motivation of sports with the potential mechanism on the ways of coping.

A more rigid analysis of the data produces numerous of interesting results. Firstly, the positive association of hope and optimism with sports motivation through ways of coping, specifically confidence and achievement motivation, goal setting and mental preparation, and peaking under pressure. Coaches who have higher hope and increased level of optimism are likely to be more motivated in coaching due to high level of confidence and their desire to achieve more, increasing work settings towards specific performance goals, plans and mentally prepares for games, and clearly has a game plan for performing well, and a higher composure of one's self in all challenges than threatened by pressure situation. This truly affirms to the concept of hope in general, for high hope individuals reproduce more pathways thinking (a sense of being able to generate successful plans to meet goals) than individuals with lesser hope whose reaching these goals people must be capable of generating workable routes [11]. Several studies indicated that low hope individuals tend to have a sudden view of the future while high-hopers were likely to have an increased utilization of coping strategies effectively and seems to have a positive effect on desirable workplace outcomes [11, 17]. In a broader sense, coaches are adults who are internally motivated (that is, internal needs and values) that helps them solve problems or that leads in internal play offs [18].

Another predictor of sports motivation that plays a significant role is increased level of optimism, although the respondents of a certain study were athlete, however, yield the same result a group of optimistic athlete improved the speed of their second swimming performance yet given a falsely-negative feedback after their first swim while pessimistic ones found decreased of their second swimming performance [12]. Other contributing factors was their level of mental toughness, coping strategies and optimism. Optimistic individuals tend to exhibit increased effort to achieve goals. Alternatively, less optimistic individuals are more likely to withdraw or disengage attempts at achieving a goal [19, 20, 21]. Numerous studies that is parallel to the result that individuals who have high level of optimism was significantly associated with task-oriented coping and likely to be focused by self-determination whereas pessimism predicted disengagement-oriented coping [19, 22]. On the other side of the chessboard, there is an association of avoidance motivation and optimism of individual due to the avoidance of negative result that may leads to the reduce threat appraisals and even enhance challenge appraisals (i.e., cognitive therapy) [23, 24]. The results of this line of research

have illustrated that individuals cope in sports with various techniques (that is, problem-focused, emotion-focused, and avoidance coping) to link with, people who have high tendencies to peak under pressure through confronting the phenomena which is the root of challenge and or threat will feel better. On the contrary, negative outcomes will likely to occur when unable to compose their affect and distress, and decide to disengage from a task as a means of coping [25]. It was further observed the link of optimism and motivation brought by increased level of freedom from worry that yielded parallel results, although, different participants being employed, where optimistic athlete displayed decrease emotional/physical exhaustion and less of a reduced accomplishment. Therefore, developing optimistic emotion and attitude may be a potential mechanism of preventing stress anxiety and burn out [26, 27]. While another study claimed that increasing level of optimism were strongly correlated with effective adjustment to stressful situation. Consequently, optimist individuals tend to foresee the future favorably yet, they could be more likely to be distinct in behavior comparing to low-level optimist when handling stressful situations [28, 29].

The second important finding noteworthy of further discussion is the positive significance of perseverance and resilience towards sports motivation through ways of coping (that is, concentration, confidence and achievement motivation, goal setting and mental preparation and peaking under pressure). Supporting the tenet of [30] when individuals engage in activities, various reason lies from being connected to external outcomes, to being integrated to self. They become coherent to individual's value or objectives and the individual's experiences higher quality motivation and increased positive outcomes. Motivated coaches are more likely to engage in autonomy-supportive behaviors [31]. Additionally, previous research has shown that autonomous control influences not only one's experience in sport participation but also in behavioral involvement [32, 33]. On one hand, numbers of studies concluded the likeness of perseverance, grit and resilience, recently it has been defined that grit as perseverance and passion for long-term goals. Gritty individuals are said to portray passion and perseverance over time. Consequently, having an internal desire to persevere is a salient feature of a gritty individual [13, 34, 35, 36]. Literatures expresses factors in strengthening the relationship between motivation and resilience (that is, self-efficacy, self-esteem, positive relationship with others, sense of purpose and learning to keep things in perspective) [37, 38, 39]. The capacity to be resilient and or motivated is present in everyone yet choices are made to be motivated and/or resilient [40]. Study shows that resilience has a positive correlation with sport achievement, high level of resilience can help individual to utilize positive vibe for surpassing unfavorable experiences and eventually return to its normal status [41]. Moreover, coping strategies also significantly impacted the level of resiliency a certain studies yield the same result although, utilizing different participant indicates that coping strategies influence the level of resiliency such that coping with adversity or

personal coping resources and confidence and achievement motivation had the highest impact on the context of the athlete's level of resilience specifically, resilience positively correlated with task-oriented coping whose a good predictor of positive outcomes during stressful situations. [42, 43, 44]. Empirical evidences aligned in this point of research concludes that both athlete and coaches with high resilience reported a low rate of incidence of burnout compared with decreased level of resiliency [45]. Parallel to this issue, indicates that enhancing the resilience of the coach might improve reports of reduced accomplishment, physical and emotional exhaustion, and devaluation of coaching experienced towards organizational stressors [46, 47, 48].

On one hand, this point of research has seen a negative relationship between perseverance and resiliency towards freedom from worry. Coaches who are persevere and resilient are motivated, yet turned out having a low tendency of being free from worrying. This result confirms the conservation of resources (COR) theory in its first principle (primacy of loss principle) that losing of resource (that is, personality traits) is disproportionately important than resource gain [49]. In connection with, individuals must have resilient sense of self-efficacy to sustain perseverant effort in the face of failure and competitive situation, for these experiences with failure and setbacks helps in enhancing robust sense of personal efficacy [37]. On the contrary, several studies indicated that champions are high on personal standards yet low on concern over mistakes, expectations, criticisms, and doubts about actions. Thus, outstanding performers had high confidence, freedom from worry, goal setting and mental preparation, concentration and or focus, high determination and commitment and an "in control but not forcing it" attitude, and "do it right" attitude while preventing excessive expectations [50, 51, 52]. Interestingly, resilient individuals are characterized by high positive emotionality and those with higher positive emotional granularity are less likely to mentally self-distract during stressful times and more engaged in coping process and likely to think their behavior before acting [53, 50, 54, 55]. These findings are important in lieu of the mediation results showing that goal setting and mental preparation and peaking under pressure consistently mediated the relationship between light quartet traits (hope, optimism, perseverance, and optimism) and sports motivation. Experts posits that goal setting model concentrates in technical and performance elements, for its main goal is to enhance individual's self-sufficiency capability to make decisions (that is, competitions), perception availability to decide to intensify their effort [56]. It shall consider as a whole context in which mental preparation can be integrated, also, this model will sustain the picking of cognitive and emotional strategies to affect sports behavior and a psychological profile [57, 58]. Similarly, realistic goals, techniques to combat anxiety, strategies that develops the performers (that is, positive self-talk, imagery and relaxation) and dealing with environmental stress as vital for achieving success [59, 60]. Individuals who possessed psychological coping skills exhibited greater success for coping (i.e., psychological coping) positively predict individuals'

performance [61]. Furthermore, relevant studies in relation to peaking under pressure has been identified such that this phenomenon defined as "choking under pressure", meaning it is associated to attentional disturbances caused by heightened society [62]. However, explicit- monitoring theories foster that pressure increases self-consciousness about performing correctly. In other words, performers focus their attention on skill execution to ensure optimal outcome, disrupting learning execution of systematic processes that normally run outside of conscious awareness [63, 64]. Thus, coaches who have high level of personality traits (that is, hope, optimism, perseverance, and optimism) are more likely motivated in sports brought about their higher tendencies of setting their goals and being mentally prepared, and being composed and ease under pressure.

Despite the potential contribution of this study to the extent literature, some limitations must be considered in interpreting its results. Firsts the study made use of self-report measures, which makes responses vulnerable to social desirability bias. Future studies could use social desirability scales to statistically control and prevent for potential biases. Second, the study employed a cross-sectional designed; thus, it is not possible to establish definite causal relationships among the predictor and outcome as well as mediating variables. Longitudinal designs would provide stronger support to potential causal relationships.

IV. CONCLUSION

To conclude, the generalizability of the results may be limited only to the coaches. Future studies may replicate this model in various samples because the results may vary depending on the of characteristic of athlete being coached (that is, person with disability athlete /paralympics, inmates athlete). Amidst these limitations this study offers significant contribution to the literature. First, this is one of the very few studies showing the relationship between light quartet traits and motivation in coaches. The current findings emphasizing the role of personality traits and its effect to sports motivation. Second, the mediating role and the potential mechanism of ways of coping is yet to be explored in the said relationship.

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Abstract. This study aims to determine the increase the learning result of basketball using multimedia on physical education and health students in the Faculty of Teacher Training and Education. Multimedia used is based on macro flash. This research is a classroom action research aimed at determining the effectiveness of multimedia based learning macro flash. The subjects in this study were physical and health education students. Classroom action research was conducted using 2 cycles. The results of the study in cycle 1 showed that there was an increase in student learning outcomes in the first test. There were 4 students (10%) in the good category, 14 students (35%) were in enough category, and the lower category was initially 22 students (55%). The results in cycle 2 are that there is a significant increase in the good category to 32 students (80%), and 8 students (20%) in enough category. The findings in this study are multimedia macro flash can improve student learning outcomes on the basketball. The implication of this study is that multimedia macro flash-based learning can be used as a medium of learning choice to improve the learning of basket ball.

Keywords: *multimedia, learning result basketball, classroom action research*

I. INTRODUCTION

The subject of expertise in students is a compulsory subject in the study program of physical and health education FKIP UNSRI which contains special subjects in education, health and sports. One of the subjects is a basketball skill basic course. This course weighs 2 credits which consists of 1 theory credit and 1 practice credit. Base on the field, get the results of the interviews were limited to students, which found that students had difficulty understanding basic basketball techniques when the lecturers delivered the material. Difficulties of students understanding the material will affect learning outcomes. Understand basketball shooting learning materials multimedia is needed.

A primary application of the interactive multimedia for instruction is in an instructional situation where the learner is given control so that maybe reviewed the material at their own space and in keeping

with their own individual interests, needs, and cognitive processes. The basic objective of interactive multimedia material is not so much to replace the teacher so to change the teacher's role entirely. As such, multimedia must be extremely well designed and sophisticated enough to mimic the best teacher, by combining in its design the various elements of the cognitive processes and the best quality of the technology [2]. The effectiveness of multimedia blogging was evaluated, in terms of the acquisition of knowledge of the specific basketball skills and the self-efficacy in Information and Communication Technologies (ICT), as compared to that of an equivalent multimedia website which lacked the blogging component. Participation in the blogging activity did have a positive impact on students' ICT self-efficacy, given that Group A students exhibited significant gains in Internet self-efficacy as well as in multimedia processing and blogging self-efficacy, whereas those of Group B did not [4]. Base on the result of research is interactive multimedia in the form of flash media and user manual. Implications in this research that can be used as a medium of learning in the subjects work basic volleyball skills [6].

Multimedia learning used in this study is that it contains text, images, sounds, video displays used in basketball game material. This research is limited to only one technique in basketball games, namely shooting techniques. The mass formula in this study is how the effectiveness of multimedia on the results of skills in learning shooting techniques in basketball games.

The effectiveness of learning is a measure of the success of the interaction process in educational situations to achieve learning goals [5]. Conceptual learning effectiveness can be interpreted as a treatment in the learning process that has characteristics namely a) an atmosphere that can influence or something that impresses on appearance and b) the success of a business or action that affects student learning outcomes. The effectiveness of learning through visual media can be seen from the level of students when studying [3].

The purpose of this study was to find out the results of learning the basic techniques of shooting basketball in physical and health education students of FKIP Unsri after using multimedia.

II. METHODS RESEARCH

The research method used in this study is classroom action research. Action research is a series of steps (cycles) consisting of planning, action, observation and continuous reflection resulting in a new cycle until class action research is stopped [1]. The sample in this study were 40 physical education students.

III. RESULTS AND DISCUSSION

Before carrying out the cycle in the implementation of this Classroom Action Research, students were given a test to see their initial abilities. During the learning process carried out in the field with shooting material in basketball games.

TABLE 1. ASSESSMENT TABLE

No	Score	Relative Meaning
1	86-100	Very good
2	71.00-85.99	Good
3	56.00-70.99	Enough
4	41.00-55.99	Less
5	<40,99	Very less

(Handbook, 2017: 18)

With reference to the above table then in the initial data can be as follows :

TABLE 2. DISTRIBUTION OF PRELIMINARY TEST DATA ON SHOOTING BASKET BALL

Value	The number of students	Category	Percentage
86-100	0	Very good	0%
71.00-85.99	4	Good	10%
56.00-70.99	14	Enough	35%
41.00-55.99	22	Less	55%
<40,99	0	Very less	0%

Preliminary data that has been obtained that can be explained that students are in the good category as many as 4 students (10%), enough categories 14 students (35%), 22 students (55%). Based on the above data, it can be concluded that the results of the pretest shooting game of basketball students are in the less category. Such conditions are needed to take actions that can improve the results of learning shooting skills in basketball learning.

Cycle Results 1

TABLE 3. DISTRIBUTION OF SHOOTING BASKETBALL DATA OVER CYCLE 1

Value	The number of students	Category	Percentage
86-100	0	Very good	0%
71.00-85.99	8	Good	20%
56.00-70.99	28	Enough	70%
41.00-55.99	4	Less	10%
<40,99	0	Very less	0%

Based on posttest result of cycle 1, it can be explained that student has increased. It can be seen on posttest result of student is in good category as many as 8 students (20%), enough category 28 students (70%), there are fewer category there are 4 student (10 %), and very less category there are 0 students (0 %).

Results Cycle 2

TABLE 4. DISTRIBUTION OF SHOOTING BASKETBALL DATA OVER CYCLE 2

Value	The number of students	Category	Percentage
86-100	2	Very good	5%
71.00-85.99	34	Good	85%
56.00-70.99	4	Enough	10%
41.00-55.99	0	Less	0%
<40,99	0	Very less	0%

The results of the second cycle posttest that has been obtained, that students experience a significant increase. This is seen based on the results of the posttest of students in the excellent category of 2 students (5%), in the good category 34 students (85%), there are enough 4 students (10%), and very less 0 students (0%).

IV. CONCLUSION

Based on the results of research obtained on learning basketball shooting techniques using multimedia-based which is effective in terms of student learning outcomes. This study resulted in an increase in learning outcomes seen from the initial data before the action was carried out by 20% in the good category. After being given actions in the form of providing multimedia based on learning the results of basketball shooting increased to 85% of students. Based on this study found findings in the form of an increase in student learning outcomes on basketball shooting techniques because it was given using multimedia. The implication of this research is that macroflash-based multimedia can be used as one of the

media that can improve the learning outcomes of basketball games.

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Readiness of Physical Education Students Islamic University of Riau to Become a Teacher

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Abstract **Teacher Competency Standards are the main capital that must be possessed by teacher candidates, one of them is a student of Health and Recreation Physical Education Study Program (Penjaskesrek) FKIP UIR. This study aims to find out how much the level of readiness to become a teacher in the 2014 Penjaskesrek study program FKIP UIR students. The type of this research is quantitative research. The population in this study is the 2014 Penjaskesrek study program students with a total number of 240 people. The sampling technique used is incidental sampling. Based on this technique, the number of samples used was 43 students. The instrument in this study uses questionnaire in the form of questionnaire. The data analysis technique used is the percentage calculation technique. The results showed that the readiness of the 2014 Penjaskesrek student FKIP UIR to become a competent teacher with teacher competency standards that must be possessed by students was ready, it can be seen from the achievement of 84% in the range of 81% -100% with a very strong category.**

Keywords: *Teacher Competency Standards, Readiness*

I. INTRODUCTION

Education is one of the most important factors in gaining the authority of a country. With good education, of course, it will give birth to a smart and competent future generation so that the nation's condition will continue to experience improvement and change will be more advanced and developed than before. Thus, a country will gain prosperity and prosperity.

The existence of teacher roles and functions is one of the most significant factors in the world of education. Teachers are the most important part of the teaching and learning process, both in formal,

informal, and non-formal education. Therefore, in every effort to improve the quality of education, teachers cannot be separated from various things related to their existence (Daryanto, 2013). Efforts to improve the quality of education may not be carried out well if it is not balanced with making standards for implementing education, education service standards, graduation standards, education staff standards, and teacher competency standards.

In law No. 14 of 2005 concerning teacher and lecturer article 1 which mandates that professional teachers must have expertise, proficiency, and skills which must meet certain quality standards or norms. The standard in question is one of which is the teacher competency standard and is divided into four main competencies, namely: pedagogic competence, personality competence, social competence, and professional competence. The four competencies are then elaborated in detail in sub-competencies through the Minister of National Education Regulation 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies (Marselus, 2011).

In the current era of globalization, it cannot be denied that the professionalism of teachers is a need that cannot be delayed any more along with the increasingly increasing competition. It requires people who are truly experts in their fields, according to their abilities. pursued so that everyone can play a maximum role.

Universitas Islam Riau is one of the universities in Riau which organizes academic education in several disciplines. The Universitas Islam Riau has 9 faculties and 1 postgraduate program, each of which is engaged in different fields. The faculties include: (1) Faculty of Law, (2) Faculty of Social and Political

Sciences, (3) Faculty of Education, (4) Faculty of Psychology, (5) Faculty of Agriculture, (6) Faculty of Engineering, (7) Faculty of Islam, (8) Faculty of Economics, (9) Faculty of Communication Sciences.

Faculty of Education has 9 study programs, one of which is Physical Education where the study program prepares students to become a physical education teacher. The final semester students starting from semester 5 to semester 7 have to prepare themselves to become a physical education teacher. In preparing themselves, students in general must have the ability to teach based on teacher competency standards that have been set for a teacher.

Based on the results of observations that have been made by the researcher, the students of physical education of UIR starting from the fifth semester are equipped with the knowledge to make a lesson plan. Skills in making lesson plans must be mastered by students as an illustration when teaching so that systematically structured learning is created. In semester 6, students are given courses in the form of teaching training in small groups called microteaching. The microteaching course is a course that aims to improve students' abilities and skills in managing physical learning by applying certain teaching techniques. After graduating in the microteaching course, in the 7th semester the students of physical education were sent directly to schools in the Pekanbaru and surrounding areas to carry out field experience practices. In implementing this is, students are expected to be able to apply the knowledge they have obtained from the lecture bench.

Next, the researcher surveyed through questions and answers to the students of physical education after graduating and getting their S1 degree where they will go. From some of the answers made by students there are still many students whose soul has not been called to become an educator. Still many of them aspire outside the world of education. Whereas they are educated and prepared to fill the energy needs in the world of education. In fact, not a few education graduates move to other institutions and do not become penjas teachers. One of the reasons for this is because the wages or salary offered are higher

than being a teaching staff (honorary). This can be seen from graduates of health education who have achievements in the field of sports then move to other institutions such as banks. The occurrence of things like this, probably because students want to maximize their achievements. In addition, students also get high wages from their achievements. Graduates of physical education who do not have achievements wish to move to other institutions and prefer to register as members of the police. This is probably due to the fact that undergraduate diplomas with a bachelor's degree are able to obtain higher positions than those who register police using high school or vocational diplomas.

Based on some of the problems above, it can be seen that there is a possibility that students of physical education are not ready to become competent physical education teachers. Therefore this study was conducted with the intention of knowing in depth about the readiness of students physical education. FKIP UIR can prepare students to become competent physical education teachers before entering the real world of education, so it needs serious attention from various parties involved. Thus, researchers wished to examine the level of readiness to become a teacher for students of the 2014 Physical Education of the Universitas Islam Riau.

II. METHOD

This research is a quantitative descriptive study with the aim of describing the level of readiness to become a student teacher in the Department of Health and Medical Sciences, class of 2014 Teacher Training and Education Faculty of the Islamic University of Riau. The method that will be used by researchers is the survey method with data collection techniques using questionnaires as instruments.

III. SUBJECT

According to Sugiyono (2016: 117), the population is a generalization region consisting of: objects / subjects that have certain qualities and characteristics set by researchers to be studied and then conclusions drawn. The population in this study were students of the Department of Education and Culture of the 2014 class of the Teaching and

Education Faculty consisting of 8 classes with a total of 240 students.

A. *Research Samples*

The sample is part of the number and characteristics possessed by the population (Sugiyono, 2016: 118). The sampling technique used in this study is incidental sampling technique. According to Sugiyono (2016: 124), incidental sampling is a technique of determining samples based on coincidence, that is, anyone who accidentally / incidentally meets with a researcher can be used as a sample, if viewed by the person who happened to be found to be suitable as a data source. The sample criteria that have been determined by researchers are: 1) Students of the Department of Education and Culture of the Teaching and Education Faculty, especially the class of 2014, because in the class of 2014 students generally have implemented all microteaching and PPL programs. 2) The student has implemented the PPL program, because when he has implemented the PPL program, students become aware of the duties and obligations of a teacher which is the goal of the Health Education Study Program. 3) The student is willing to be a research sample to be used as a source of data without any element of coercion.

According to Arikunto (2006: 135) said that if the subject is less than 100 people, then all of them are sampled and if the subject is more than 100 people then the sample will be taken and used 20-25% of the total population. Based on the total population of 240 students, the researchers determined the number of samples was 20% of the total population of 240, so that the sample in this study was 48 students. This was due to the limited time, effort and costs of the researchers.

The instrument used in this study is a questionnaire (questionnaire). According to Sugiyono (2016: 199) states that the questionnaire is a technique of data collection conducted by giving a set of questions or written statements to the respondent to answer. Questionnaires or questionnaires in this study consist of variables that are described through indicators, sub indicators and questions.

B. *Questionnaire*

After the indicators are determined and arranged in the questionnaire above, then the grid is used as a reference to compile the questions distributed in the form of questionnaires. The questionnaire used in this study is to use questionnaires from Yusup (2016) that have been expertly validated (expertjudgement) in the field of learning technology and the teaching profession, namely Saryono and Wibowo. In the questionnaire an instrument trial was also carried out on samples that had characteristics similar to the actual sample conditions. The number of questions in the questionnaire were 21 questions consisting of 5 items regarding pedagogic competencies, 6 questions about personality competencies, 5 questions about professional competencies and 5 questions about social competence.

In addition to the trials, the questionnaire was also tested through reliability testing using calculations using the Cronbach Alpha formula and with the help of SPSS.16. The results of the reliability test showed that the test results were 0.679 which included the criterion.

IV. DATA COLLECTION TECHNIQUE

The steps taken in collecting data on the readiness to become a student teacher in the Department of Education and Culture of the Department of Education and Culture are carried out in the following ways:

- a) The student gave an explanation of the procedure for filling out the questionnaire.
- b) The researcher also emphasized that filling out this questionnaire had no effect on student grades so that students were expected to fill answers honestly.
- c) The questionnaire was distributed to students and then guided each question until students understood what was expected of the question.
- d) After students complete the questionnaire, the questionnaire is collected again.

A. *Data analysis technique*

Analytical techniques to provide scores or scores on the answer to the questionnaire, namely, This

study uses descriptive statistics, namely the calculation of percentages through steps using the formula by means of frequency divided by the number of samples then multiplied by 100 percent. This is consistent with the statement of Sugiyono (1997) in Yusup (2016: 30) which presents the following formula:

$$P = f / n \times 100\%$$

Information :

P = Percentage

F = Frequency

N = Number of samples

100% = Fixed number

V. RESULTS AND DISCUSSION

After describing the research data per indicator, the next step is to look for the overall average score to find out the level of readiness of the 2014 physical education students in the UIR FKIP to become a teacher who is competent with teacher competency standards that students must have.

No	Answering	Number of answers	Total Score	Relative Frequency	Achievement
1	Very happy	358	1432	49.19%	80,59%
2	Happy	434	1302	44.73%	
3	Not happy	66	132	4.53%	
4	Very unhappy	45	45	1.55%	
Total		903	2911	100%	

After calculation, the overall achievement is 80, 59%. Based on the criteria for determining the achievement score is in the range of values between 81% - 100% with a very strong category. That is the level of readiness of the students of the 2014 Penjaskesrek Faculty FKIP UIR to become a competent teacher with teacher competency standards that students must have very ready.

VI. DISCUSSION

Education is a conscious and planned effort that is carried out with responsibility by adults to children so as to create a learning atmosphere and learning

process in order to develop self-potential in achieving maturity that is useful for himself, society, nation and country. Thus, education can be interpreted as a system that has the task of producing a good generation, more cultured human beings, humans as individuals who have better personalities.

Physical education is the process of education through the provision of learning experiences to students in the form of physical activity, play and exercise which are planned systematically to stimulate physical growth and development, motor skills, thinking, emotional, social and moral skills.

In accordance with the statement of Andun Sudijandoko (2010: 03) which states that physical education is a process of education of a person as an individual or member of the community carried out consciously and systematically through various physical activities to obtain physical growth, health and physical fitness, abilities and skills, intelligence and the development of character and harmonious personality in the framework of the formation of quality Indonesian human beings based on Pancasila. Teachers are educators who are responsible for educating, teaching, guiding, training, evaluating, and evaluating students to reach maturity as the ultimate goal of the education process.

Therefore, a physical education teacher must be fully prepared and understand the purpose of education so that the teacher will be able to determine the right steps to achieve a guaranteed educational goal.

VII. CONCLUSION

The conclusion that can be drawn from this study is the readiness of students in the 2014 of physical education in FKIP UIR to become competent teachers with teacher competency standards that must be owned by students are ready, it can be seen from the results of achievement of 80.59% in the range of 81 100% with a very strong category.

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Revitalization of Scouting Course in Strengthening Students' Characters to Face the 4.0 Industrial Revolution

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Abstract—The era of industrial revolution 4.0 requires students to be able to actively follow every development and progress of technology and science. Facing the industrial revolution era 4.0, it is necessary to strengthen the character of Indonesian young generation based on Pancasila (the five pillars of Indonesia). Scouting is a compulsory course given to students of the PJKR (Pendidikan Jasmani, Kesehatan dan Rekreasi – Physical, Health, and Recreation Education Program) at the State University of Medan. Through Scouting courses, it is expected that guidance can be given to students to have knowledge and technology about scouting in accordance with the objectives of national education and the character of Pancasila. Revitalization of Scouting courses, development of concepts of learning models, provision of literacy, and various infrastructures that can support the learning process in the 4.0 industrial revolution era need to be well prepared. The revitalization of Scouting courses is expected to have implications for strengthening the character of students to become the millennial generation 4.0 with the identity of Pancasila.

Keywords: *Scouting Course, Character Strengthening, 4.0 Industrial Revolution Era, Revitalization*

I. INTRODUCTION

Students are expected to be active in every advancement in technology and science which is always developing at all times. Infinite development requires students to be agents of technological advancements capable of pushing towards a better and even able to create technology. With the development of an increasingly rapid era, technological developments make us more advanced in technology, but in reality technological advances restrict our identity development. Our social life is disrupted due to the lack of direct social interaction. The progress or destruction of the nation and state depends a lot on the young people as agents of change.

Universities in Indonesia are required to be able to anticipate the increasingly rapid technological developments that occur in the era of industrial revolution 4.0. The design of the curriculum and methods of education must be adapted to all developments. Changes that occur are very influential on human character. Scouting courses are one of the compulsory subjects given at The Faculty of Sport Sciences State

University of Medan. Preparing graduates who are qualified and have character is an important thing to do. Thus, the support and role of higher education is expected to improve the competitiveness of the nation, so that the improvement of the quality of learning is one of the challenges for Scouting lecturers. Scouting courses are expected to be able to shape character, identity and nationalist spirit in accordance with development.

II. MATERIAL AND METHODS

A. 4.0 Industrial Revolution

The latest industrial revolution experienced by the world's population is the 4.0 industrial revolution. The industrial revolution 4.0 is interpreted as an era that uses digital technology in its life activities. The era of the industrial revolution 4.0 refers to the next leap in industrial change which is the latest combination of technologies that has been achieved in the past two decades [1]. Besides creating opportunities, the industrial revolution 4.0 also presents its own challenges. The field of education has also been affected by the 4.0 industrial revolution. Life skills in the 21st century are juxtaposed with education in era 4.0 consisting of leadership, collaboration, creative, digital literacy, effective communication, emotional intelligence, entrepreneurship, global civilization, problem solving, and teamwork [2]

The next challenge is how universities through courses play an active role in solving various problems that arise. The challenge is even greater when the development of digital technology with artificial intelligence has transformed data into easily accessible information. This change certainly has a big effect on students to be able to adjust to the changes that occur. Students who are tough and have character will be able to sort out and choose information needed for their development and progress in taking education in college.

B. Character

Facing the industrial revolution era 4.0, students must have a strong character to be able to fortify themselves from the conveniences offered from this digital era. Character is typical value and personality which are formed from the results of

internalization of various policies that are believed and used as a way of looking, thinking, behaving, speaking and behaving in everyday life. In the National Character Development Policy, character is defined as good values (know the value of goodness, willingness to do good, real good deeds, and good impact on the environment) that are imprinted in self and manifest in behavior. Coherent characters emanate from the results of thinking, though the heart, sports, and the feeling and intention of a person or group of people. Character is a characteristic of a person or group of people who contain values, abilities, moral capacity, and determination in the face of difficulties and challenges [3]

People with character means people who have personality, behavior, or conduct. With such meaning, the character is identical to personality or morals. Personality is a characteristic, quality, or attribute of a person that comes from the formations received from the environment, such as families in childhood and congenital birth [4]. This nation should be able to build people who have character, and build a nation that has a strong character. Not only building human beings or intelligent young people who master science, but also strong young people who have personality, noble mind and character to uphold the unity and unity of Indonesia.

III. RESULT AND DISCUSSION

A. *Scouting Course*

Scouting is essentially a fun educational process for young people, under the responsibility of adult members, carried out outside the school and family education environment, with specific goals, basic principles and methods of education. According to Boden Powell himself, scouting is considered a challenging and educational activity. Scouting is a matter of experience and game-based education that uses scouting methods to cultivate spiritual, emotional, social, intellectual, and physical values. Scouting is all aspects related to scouting. For scouts, scouting is a media for self-improvement so that it can form a character towards a happy life.

At the Faculty of Sports Science, Scouting is one of the compulsory subjects given in semester six. Scouts are members of Scout Movement who carry out Scouting Education. Scouting is an educational process carried out by the Scout Movement in forming true scouts. Scouting education acts as (1) complementary to formal and informal education; (2) developers of knowledge, interests and talents that have students; (3) the means of the educational process throughout the life using creative, recreational and educational procedures in achieving the goals and objectives; (4) educational vehicles that are fun, interesting, challenging, and not boring so that students are expected to develop mental, physical, knowledge, skills, experience, social, spiritual and emotional stability; and (5) the core of the scout movement organization in carrying out its management duties.

In Law Number 12 of 2010 concerning the Scout Movement, article 3 states that the scout movement serves as a forum to achieve scouting goals through: (a) Scout education and training; (b) scout development; (c) community service and parents; and (d) educational-oriented games. In article 4 it is stated that the scout movement aims to form each scout to have a personality that is faithful, pious, noble, patriotic, law-abiding, disciplined, upholds the noble values of the nation, and have life skills as a cadre of the nation in safeguarding and building the Unitary State of the Republic of Indonesia, practicing Pancasila, and preserving the environment.

Facing the era of industrial revolution 4.0, it is expected that all students and graduates of The Faculty of Sport Sciences State University of Medan can become alumni and students who answer the challenges of the times. We recognize that work that has never been replaced by the progress of ICT is work that requires the power of innovation and creativity, so that universities have the duty to prepare innovative and creative graduates. To respond to this, universities begin to reformulate curricula that are compatible with the demands of the times and have adaptive abilities to changes that are increasingly common. The ability that must be possessed to be able to adapt to change includes the ability to solve problems that are increasingly complex, think critically, creatively, be able to be good managers, and have good coordination skills. In addition, it is also expected to have good emotional intelligence, the ability to judge and decide appropriately, service oriented, good at negotiation and flexible cognitive power [5]

Responding to the changes that occur at present, scouting courses must make breakthroughs and developments to follow changes to keep instilling national character values so that students and or alumni remain human beings who have identity. Scouting has character values in each order, so reinforcement needs to be done in lectures. Scouting needs to be done, so that the values contained in the material provided are explored and the target achieved.

B. *Revitalizing Scouting Course*

Revitalization was proclaimed by President Susilo Bambang Yodoyono on the anniversary of the Boy Scouts in 2006. For revitalization, seven strategic activities were made which were delivered by the Chairperson of the National Quartier Prof. Dr. dr. Azrul Azwar, MPH. The activities included updating the curriculum, updating methods, preparing trainers, revitalizing the front line, quality control, actualization forms, and strengthening management organizations and resources for the Scout movement. The seven curricula are the same as the revitalization of the Scout Movement globally. Through revitalization of scouting courses that are integrated in scouting courses, it is hoped that Scouting courses will be able to adjust to developments in the 4.0 industrial revolution.

Revitalization is the process of reviving something that was previously empowered. As with scouts, scouts have been

empowered to date. But the demands of the times make us have to revitalize the scout movement to fit the era of industrial revolution 4.0. Strengthening the character through the revitalization of the Scout Movement is carried out in several ways, one of which is by integrating scouting into Scouting courses. Through the revitalization of the Scout Movement, it is expected to have implications for the personal resilience and character of students.

The Scout Movement revitalization is the empowerment of the Scout Movement which is carried out systematically, continuously and planned to further enhance the role, function and main tasks of the Scout Movement and strengthen the existence of the Scout Movement organization. Students who take Scouting courses are included in the Pandega Racana group. During lectures, students not only learn scientifically the things related to the material contained in scouting, but also as actors and members of the Scout Movement. Students who graduate from Scouting courses at the final stage will take an Advanced Basic Course (KMD), after which students can become coaches in the front group.

Through Scouting courses, it is hoped that strong national character will be formed. When they become educators and scout coaches in schools, besides they already have strong character, they are also able to apply and instill national values and national character to their students.

A part of the revitalization of Scouting courses is that the Scout Movement can be accepted and sought after by young people as a pillar in organizational learning, as a vehicle to shape the character and develop the personality of young people and can help solve various problems for young people. The rationale for the revitalization of the Scout Movement was based on a quote from the speech of the President of the Republic of Indonesia at the 45th Scout Day commemoration ceremony, namely: (1) Strengthening the Scout Movement as a vehicle for the formation of national cadres; (2) Achieving success through smart and sincere hard work; (3) Encouraging young people to improve their national defense; (4) Establishing the determination of young people as patriots of development; (5) Prioritizing the interests of the nation and state above all; (6) Establishing the unity and unity of the Republic of Indonesia; (7) Promoting Satya and Darma Pramuka [6]

Revitalization of Scouting courses is done by adding reinforcement of theories and skills that are in accordance with the era of industrial revolution 4.0. Revitalization of scouting courses refers to some revitalization carried out in the Scout Movement, namely: (1) Strengthening leadership and management; (2) Closing the ranks of students as candidates for Scout Trustees; (3) Activating Pandega Racana as a medium for strengthening fellow and peer groups in the front

group; (4) Strengthening the application of the Basic Principles of Scouting, Systems Among and Scouting Methods; (5) Prioritizing student programs that have a positive impact on increasing the spirit of defending the country; (6) Strengthening partnerships and supporting resources from all components of the nation; (7) Practicing Satya and Scout Darma.

The revitalization of Scouting courses is expected to improve the quality of human beings by providing skills-based character education and competency-based science and technology which will be the provision of life for Indonesian youth to face the era of industrial revolution 4.0. The role of the scout unit (saka) needs to be increased to create job opportunities based on special skills in each of its cases. This nation should be able to build people who have character, and build a nation that has a strong character. Not only building human beings or intelligent young people who master science, but also strong young people with their personalities, noble in character and upholding Indonesian unity and unity

IV. CONCLUSION

Based on the discussion and analysis presented, the authors can draw conclusions as follows:

1. Scouting courses become compulsory subjects at the Faculty of Sport Science at State University of Medan.
2. Revitalization of Scouting courses is carried out to strengthen the character of students as prospective educators in the era of industrial revolution 4.0.

Revitalization refers to 7 points of invitation from the President of the Republic of Indonesia in order to revitalize the Scout Movement

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Sports Emotions Mediate the Relationship Between Authentic Leadership Style and Sports Engagement in Filipino Coaches

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Abstract—The influences of emotions to athletes’ wellbeing have been well investigated. However the roles of emotion among coaches are rarely studied. This study investigates the mediating role of sports emotion between leadership styles and sports engagement. A total of 570 coaches working of various sports answered a series of questionnaire assessing coaching leadership styles, sports emotion and sports engagement. Results indicate that the perceive authentic leadership styles predict sports engagement due to higher excitement, happiness, and lower dejection. The findings suggest the vital role of emotions in the effect of coaches’ leadership on their engagement to sports.

Keywords—Sports emotion, authentic leadership style, coaching engagement

I. INTRODUCTION

Little research has explored the leader behaviors that facilitate effective coaching. Most efforts to apply leadership theory to sport have yielded minimal success. While leader behavior often discussed, it is one of the least understood aspects in coaching. This is ironic, considering that the coach is the definer, provider and deliverer of sport experience for an athlete. The sports experience is a direct reflection of the coach’s philosophy, beliefs, values and priorities: the quality of an athlete’s experience can never exceed the quality of the leadership providing it.

In addition, It is well established that sport is an emotional performance domain [1,2], and emotions play a key role in

determining performance outcomes [3]. The emotion-performance relationship has received substantial attention within sport psychology research [2] however, the primary focus of studies investigating emotions in sport has been centered upon athletes and their experience of anxiety [4]. More recently the examination of the emotion-performance relationship has broadened to include the consideration of a wider range of emotions such as hope and anger [5] and begun to consider coaches’ emotional experiences [6].

The role of context in shaping coach-athlete relationships and coaches’ leadership styles is less understood. An important dynamic within leadership styles and team outcome relationships is the kind of social support available to coaches and their teams. Such support could be the size and quality of the technical team and athletes’ access to professional services [7]. At the elite level, athletes place higher value on coaches’ technical, instructional, and game strategy competencies than on their interpersonal, social, and motivational skills. Coaching style is the Participative style, a leadership style where the leader takes “asking” approach to his team and adjusts the routine if majority of the team can’t get the right thing to do the task. Participative leaders also base their decisions on his team’s opinions and approach. Research proven that being intrinsically motivated to follow the welfare of the team is necessary to improve the quality of performance and cooperation. Style of leadership, as used in this study focused on allowing high level of member participation,

inspirational motivation, and very low intensity during practice.

Coaches engagement in their controlling style are said to have great expertise and have a desirable side-effect among coaches, due to their strong focus on increasing their need-supportive coaching behaviour. As these strategies are more related to sport-specific coaching, they may be more self-evident and already applied by coaches in their daily practice. [8]. From this we see how connected authentic leadership style and coaches engagement though the mediating role of emotion has not yet been made clear.

II. METHODS

A. Participants

The target sample of the study was coaches in any sport both primary and schools Iligan City, Philippines who were actively coaching athletes and engaged in any sports competition. A minimum of five hundred (500) respondents were required in the study whose ages ranging from 25-59 years old. The respondents were determined through the aid of the principals.

B. Procedure

Prior of conducting the study, the researchers earned a battery of scales to be naturally accepted by the respondents. The researchers secured a permission by means of a letter directing to their immediate head and or directors, principals including superintendent to observe and implement proper ethical guidelines as to the target respondents were informed the purpose of the study, assurance of anonymity, perspective research benefits etc. They were given verbal instructions. Participants were encouraged to ask questions if they found any items unclear or confusing. The tests were not translated to the local dialects as to all of the respondents were able to comprehend English as medium of instruction. Further, the researchers also took consideration as to the preference of the respondents and well-being of the respondents. The study employs quantitative research design to analyse the mediating role of sports emotion between leadership styles and sports engagement.

C. Measures

The respondents answered a battery of scales measuring constructs relevant to this study.

Demographic Information. A research made scale was used to gather personal information, such as age, gender, years of coaching, sports being coached, and school

Coach-Athlete Relationship Questionnaire. A 7-point responses scales were adopted for all 25 items. The scale ranged from 1(Not-at-all), to 7(extremely) with a mid-point 4(half-way) In this study, the cronbach alpha of the total score is 0.968

Sports Emotions Questionnaire [9] is composed of 22-items questionnaire that consist of 5 subscales Factors such as anxiety subscale (five items: (11,21,6,1 and 16), dejection subscale (five items: 12,2,7,17 and 22), anger subscale (four items: 4,9,14 and 18), excitement subscale (four items: 3,8,13 and 19) and happiness subscale (four items: 5,10,15 and 20). Respondents were given a five-point scale ranging from 1(not at all), 2 (A little), 3 (Moderately), 4 (Quit a bit), 5 (Extremely). In this study, the reliability rho is 0.905

The Sport Engagement Scale is composed of 15-items distributed in three factors of five items each: Vigor (1, 2, 6, 7, 8), Dedication (3, 4, 5, 9, 12) and Absorption (10, 11, 13, 14, 15). A Likert scale was used ranging from 1 (Never) to 7 (All of the time). An example of an item corresponding to the vigor factor is "*I am strong and vigorous in my sport activity*". When looking at the dedication factor, we can find items such as "*I am proud of the work I do*". Lastly, an example of an item for the absorption factor is "*While I am training I am oblivious to everything that is going on around me*".

D. Statistical Analysis

All statistical procedures for the data that was gathered were performed using the Statistical Package for Social Sciences (SPSS) Version 2.0. Prior to the mediation analyses, missing values that appear at random were imputed and replaced using an expectation-maximization algorithm on the assumption that these are unintentional by-products of data collection [10]. Series of regression were done and demographic profile particularly age and genders were the controlled variables in the model. Such that, authentic leadership style were treated as criterion variables, while sports engagement as an outcome variable and Sports Emotions (Anxiety, Dejection, Anger, Excitement and Happiness) treated as the mediating variables.

III. RESULTS AND DISCUSSION

A. Descriptive Statistic

The means, standard deviations, and correlations between the variables of the study are shown in Table I. Results of correlation analyzes revealed that authentic leadership style was negatively associated with dejection, it was positively associated with ALS particularly excitement, and happiness. It is also significant to note that sports engagement were consistently positive correlated with generalized excitement and happiness.

B. Mediation Analysis

Table II. shows the total direct, direct and indirect effect of sports emotions (i.e. anxiety, anger, dejection, excitement and happiness) and sports engagement through authentic leadership style.

TABLE I. Results of Descriptive Statistics and Correlation

Independent Variable (IV)	Mediating Variable (M)	Dependent Variable (DV)	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effect (c')	Total Effect (c)	Total Indirect Effect	Indirect Effects	BC 95% CI	
									LL	UL
Leadership	Anxiety	Sports Engagement	-.0046	-.2453	.5366**	.6880**	.1514*	.0011	-.0025	.0109
	Dejection		-.0269**	-3.5061**				.0942	.0533	.1481
	Anger		-.0180**	.7908				-.0142	-.0442	.0076
	Excitement		.0245**	1.4129*				.0346	.0017	.0761
	Happiness		.0173**	2.0616**				.0357	.0128	.0648

** Correlation is significant at the 0.01 level (2-tailed).

TABLE II. Results of Mediation Analysis

		1	2	3	4	5	6
1	Leadership						
2	anxiety	-.059					
3	dejection	-.300**	.656**				
4	anger	-.216**	.597**	.850**			
5	Excitement	.381**	.317**	.089*	.180**		
6	happiness	.298**	.177**	.066	.164**	.697**	
7	sports engagement	.714**	-.169**	-.408**	-.289**	.380**	.325**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

C. Discussion

The primary goal of the present study was to explore the mediating role of sports emotion toward authentic leadership styles and sports engagement among Filipino coaches. The findings of the study show indicate that perceive authentic leadership styles predict sports engagement due to higher excitement, happiness, and lower dejection.

The second goal of this study was to examine coach's emotion and engagement in sports and to achieve goal orientation based on the perceived coaches' authentic leadership style. The findings of the present study indicated that coaches with more democratic, less autocratic and less verbal aggressive behaviours were more satisfied in dealing their athletes. The field is currently limited of studies in examining the mediating role of sports emotion toward authentic leadership styles and sports engagement. However, the findings of a previous stud that examined coaching behaviour and their impact on their feeling are in accordance with the findings of the present study. More specifically, the findings of this previous study suggested that coach's' verbal aggressiveness lead their athletes to experience less satisfaction. Additionally athletes feel more satisfied when they perceived that their coaches exhibit higher democratic and lower autocratic behaviours [11]. Similarly, coaches' democratic style may lead their athletes to feel more satisfied during practice. Thus, it can be stated that coaches, who avoid

exhibiting verbally aggressive behaviour and rather tend to adopt a democratic leadership style, may urge their athletes to adopt in cases or reinforce in other cases task-oriented behaviours. Conversely, verbally aggressive coaches adopting at the same time an autocratic leadership style may reinforce their athlete's ego oriented behaviours.

IV. CONCLUSION

The authors declare that they have no conflict of interest.

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Conceptual Similarities and Differences: Physical and Core Literacy in Physical and Health Education

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Abstract—Physical Education literature written in English have been focusing on a concept called Physical Literacy beginning in the early 1990s by researchers headed by Margaret Whitehead. Physical Literacy has been described as a quality that can be acquired by individuals and it comprises physical competence, knowledge and understanding, and the motivation and confidence to carry out and improve purposeful physical pursuits as an integral part of their lifestyle. In China however, the ministry of education started reforming the curriculum for all subjects including Physical and Health Education which asserted that core literacy should include essential qualities and key abilities that students should have to adapt to lifelong development and social needs. As in all literature, inconsistency in terminology can lead to problems when researchers try to reproduce previous research, and also to relate results across studies. With this in mind, analysing the conceptual similarities and differences in both physical and core literacy in physical and health education is important that to reduce the likelihood of misinterpreting conclusions in related studies. By using research methods such as literature review and logical analysis, this paper explores and uncovers the relationship between physical and core literacy of physical and health education. Analyses suggest that the components within physical and core literacy are closely related, that is the two are mutually reinforcing. Both types of literacy, although written in different languages have similar purposes for instruction and education – physical literacy is the goal of core literacy for physical and health education in China. This analysis serves as the first part of an investigation that is expected to provide direction for help reform the physical education curriculum in China, and by doing so, comprehensively improving students' core literacy and helping them acquire all-round development. In conclusion, physical and core literacy are two different concepts, and both should not be mixed up. However, both are based on physical activity as the carrier and both are indispensable to help individuals realise lifelong sports, practise an active and healthy lifestyle to achieve all-round development.

Keywords—*Physical literacy, Physical education and health discipline, Core literacy, Relationship*

I. INTRODUCTION

With the popularity of the word "physical literacy" in the international academic circle in recent years, scholars from all over the world have carried out in-depth research on it. Physical literacy has been widely recognized and applied in the field of physical education and physical activities, and has become an important focus in this field. [1] However, due to the influence by the different culture of different countries, the understanding of physical literacy is different, including that of China. In 2017, China released the latest version of the curriculum standards for physical and health education in ordinary high schools which explicitly presented that the development of students' core literacy as the main goal of physical and health education. At present, it is an important period of deepening curriculum reform for school education in China. Therefore, it is great significance to further implement the reform of physical education curriculum and realize the all-round development of students by learning advanced international research concepts and clarifying the relationship between physical and core literacy of physical and health education.

II. DEFINITION AND ELEMENTS OF PHYSICAL LITERACY

A. *The Concept of Physical Literacy*

In 1969, American scholar Morrison first put forward a comprehensive understanding to the concept of Physical literacy. He thinks that people with Physical literacy are not only more efficient, but also very creative and enthusiastic. He describes Physical literacy as a tendency to reflect human abilities. [2] Until 2001, British scholar Whitehead first proposed Physical literacy as a philosophical concept. She is against the dualism and believes in the monism, and she believes that our body and mind are a whole rather than two independent parts, and she thinks that Physical literacy should not be simply regarded as an existence state, but as an ability of exploitation and maintaining in the whole life process. [3] As the discussion of Physical literacy continues to ferment in the academic world, in 2010, Whitehead further refined the concept of Physical literacy into

"motivation, confidence, sports skills, sports knowledge and the ability to understand and maintain lifelong participation in Physical exercise". [4] After 2010, many western scholars expanded the concept of Physical literacy from different perspectives according to Whitehead's viewpoint, among which the American scholar Mandigo was the most influential. He proposed that people with Physical literacy have the knowledge, skills and the attitude of fitness lifestyle, and are willing to help others to develop sports skills. [2] In 2014, Whitehead further elaborated the concept and connotation of Physical literacy and proposed that "Physical literacy refers to an ability and tendency of individual to engage in physical activities for life with motivation, confidence, sports skills and knowledge and understand the value of physical activities". At the same time, she proposed that Physical literacy should include the following four aspects: emotional, Physical, cognitive and lifelong participation in physical activities. [2] It is worth noting that the International Physical Literacy Association (IPLA) defines Physical Literacy as: "Physical Literacy can be described as the motivation, confidence, Physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life." [5] This is consistent with the concept of Physical literacy proposed by Whitehead. This definition is also widely recognized by the international community.

B. The Components of Physical Literacy

From the definition of physical literacy, physical literacy mainly includes four aspects: affective, physical, cognitive and behavior. The affective aspect can be understood as the individual's motivation, confidence and passion to participate in physical activities, and regard physical activities as an indispensable part of their life, forming a lifelong sports idea from the psychological aspect; [6] Physical competence mainly refers to the physical fitness and the ability to master sports skills, as well as the ability to adapt to various sports intensity and duration. Physical quality is an important performance of physical competence. Enhanced physical competence can make individuals better participate in various physical activities and quickly adapt to the complex environment; [6] The cognitive aspect refers to the individual's deep understanding to physical activities and the ability to master the necessary knowledge of physical activities, including the understanding of sports quality and sports morality, learning the benefits of active lifestyle to physical health, and mastering the necessary health knowledge to deal with the potential safety hazards in physical activities; [6] Physical behaviors refer to an individual take part in lifelong physical activities. This behavior is that an individual freely choose one or several physical activities to regularly carry out physical exercise according to his or her own interests and hobbies, and it is an important part of individual lifestyle.[6] The components of Physical literacy are shown in Fig. 1.

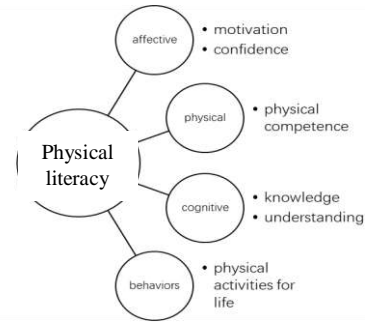


Fig. 1. The components of Physical literacy

III. INTERPRETATION OF CORE LITERACY IN PHYSICAL AND HEALTH EDUCATION

A. Proposal of Core Literacy in Physical and Health Education in China

In 2005, The organization for economic cooperation and development (OECD) published the findings of a study entitled *The Definition and Selection of Key Competencies: Executive Summary*. The aim of the research is to find out what the literacy of talent cultivation should be. Subsequently, on the basis of the framework of core literacy proposed by OECD, European countries released their own core literacy system for talent cultivation according to their national conditions, and an educational and teaching reform followed. [7] As the word "core literacy" becomes popular all over the world, Chinese scholars begin to study and explore the framework of core literacy of talent cultivation. Subject education is the basic component in school education, so the construction of the core literacy of each subject has become the guiding ideology of school education to cultivate talents and has also become an important breakthrough in deepening curriculum reform in China. In 2014, China's ministry of education issued relevant documents on deepening curriculum reform, which clearly pointed out that the core literacy system of student development should be studied and formulated, and the essential qualities and key abilities that students should have to adapt to lifelong development and social needs should be clarified. [8] Under the guidance of this document, the ministry of education released the system and framework for the development of Chinese students' core literacy in 2016. The system is divided into three aspects: cultural foundation, independent development and social participation. [8] On the basis of this framework, in order to further deepen the means and paths of curriculum reform in all subjects, the ministry of education organized more than 260 experts from all subjects to revise the 14 subject courses in ordinary high schools, and released the new curriculum plan and curriculum standards for all subjects in 2017. The new curriculum standards have also extracted the core literacy of each subject, including the curriculum standards of physical and health education in ordinary high schools. Since then, the core literacy of physical and health education

in China have been formally proposed and become an important guiding ideology for physical education curriculum. [8]

B. The Components of Core Literacy in Physical and Health Education

The core literacy of physical and health education is the concentrated embodiment of the value of subject education which can achieve the goal of promoting students' physical and mental health, physical fitness and comprehensive development through studying physical and health education. The core literacy of physical and health education includes three aspects: sports ability, healthy behavior and physical morality. [9] These three aspects are first-level indexes, and each first-level index contains different second-level indexes and specific performance forms. The components of core literacy in physical and health education are shown in table 1.

It can be seen from table 1 that sports ability is the comprehensive performance of physical fitness, mental ability and technical and tactical ability in physical activities, and it is the basic guarantee for human to take part in physical activities. The development of students' sports ability focuses on developing physical fitness, using skills and improving sports cognition. The specific performance forms include the physical fitness condition, the movement cognition and skill and tactics application, sports show and competition. The specific goal is that students can use the sports knowledge and skills they have learned to participate in and organize sports competitions, and effectively improve the level of their physical fitness and sports skills, and skillfully use the referee knowledge and rules of sports events they have learned, and be able to independently or cooperate with others to make physical exercise plans. Meanwhile, people who have strong sports ability should have the ability to understand and analyze major domestic and international sports events and sports appreciation; [9] Healthy behavior is a comprehensive performance of

improving physical and mental health and actively adapting to the external environment. It is the key to improve physical health and gradually form a good lifestyle. The key point of healthy behavior training for students is physical exercise habit, emotion regulation and adaptive capacity. Health behaviors include forming good habits of physical exercise, diet, work and rest and health, faring away from the bad habits, learning to prevention of sports injury and disease, keeping good state of mind, paying attention to health, cherishing life, loving life, developing a positive lifestyle, adapting to the natural and social environment, and improving the ability of survival and life, and so on; [9] Sports morality refers to the behavioral norms and the formed values and spiritual outlooks that should be observed in sports. Sports morality plays a positive role in maintaining social norms and establishing good social trends. Sports morality includes three aspects: sports spirit, sportsmanship and sports character. The specific performance of sports morality is that students can self-respect and self-reliance, actively overcome various difficulties, have brave, tenacious, aggressive, and self-motivated spirit. They can correctly view the outcome of the game, win or lose, and be qualified for different sports roles, abide by the rules, civility and courtesy, respect the opponent, and have an awareness and behavior of fair competition. [9]

IV. THE INTERNAL RELATIONSHIP BETWEEN PHYSICAL AND CORE LITERACY IN PHYSICAL AND HEALTH EDUCATION

A. The Components Within Physical and Core Literacy of Physical and Health Education are Closely Related

Physical and core literacy in physical and health education are all based on physical activity as the carrier to realize the all-round development of people. Since the carriers are consistent, there must be some correlation. Physical literacy can be simply understood as a general body literacy, and the core literacy in physical and health

TABLE 1. THE COMPONENTS OF CORE LITERACY IN PHYSICAL AND HEALTH EDUCATION

first-level indexes	second-level indexes	specific performance forms
Sports ability	1. Physical fitness	1. Physical fitness condition
	2. Technical and tactical ability	2. Sports cognition, skill and tactics application
	3. Mental ability	3. Sports show and competition
Healthy behavior	1. Exercise habits	1. Awareness and habit of physical exercise
	2. Emotion regulation	2. Master and apply health knowledge
	3. Adaptive capacity	3. Emotion regulation
		4. Environmental adaptation
physical morality	1. Sports spirit	1. Self-respect, self-confidence, courageousness and tenacity, positive and enterprising, and self-transcendence
	2. Sportsmanship	2. Obey the rules, honesty and self-discipline, Fairness and justice
	3. Sports character	3. Civility, mutual respect, social responsibility, correct view of victory and defeat

education is limited to a body literacy within the scope of physical education curriculum. From this perspective, Physical literacy includes the core literacy of physical and health education, and the components of the two are also interrelated. The relationship of the two components is shown in fig. 2.

As can be seen from fig. 2, there is a corresponding relationship between the components within physical and core literacy of physical and health education. In other words, each component of core literacy in physical and health education can be embodied and echoed in physical literacy. For example, physical fitness condition, sports show and competition, and environmental adaptation correspond to physical competence of physical literacy. Only after physical competence can be enhanced, students can have a good physical fitness to better show themselves in sports competitions, and they can cope with the challenges brought by different environments; In addition, sports cognition and skill and tactics application, health knowledge, sportsmanship and sports character correspond to the cognitive of physical literacy. When the cognition of the movement reaches a certain height, students can better apply the theoretical knowledge to the skills and tactics, and quickly understand the intention of the teacher or the coach. Of course, this cognition also contains the necessary health knowledge and sportsmanship that should be followed in physical activities, such as obeying sports rules, honesty and self-discipline. At the same time, improving the cognition of the movement can help students form good sports character, and know how to be polite, respect each other and fair competition, and so on; Besides that, emotional regulation and sports spirit correspond to affective of physical literacy. These three components are all related to psychological factors and enhanced affective will greatly help both the regulation of self-emotion and developing the sports spirit of self-esteem and self-confidence; Finally, physical exercise awareness and habits obviously correspond to behaviors of physical literacy. A good awareness and habit of physical exercise can form good physical behavior, thus laying a solid foundation for lifelong sports and the formation of a positive and healthy lifestyle.

B. The core literacy of physical and health education is an important part of physical literacy and they are mutually reinforcing

Physical literacy is a quality that needs to be cultivated throughout an individual's whole life process. It extends from childhood to old age, and each stage has different requirements and goals. People with physical literacy gradually form a good lifestyle and benefit for life through physical activities. However, the core literacy of physical and health education is gradually cultivated by the individual through the physical and health education curriculum during the special period of the school stage. In other words, almost everyone will experience the physical and health education curriculum during the student stage, so the core literacy in physical and health education is an important part of the process of cultivating physical literacy.

Generally, everyone will go through the physical education over ten years, then when they enter the society, the core literacy of physical and health education formed during the student stage will become the motivation to further promote the cultivation of physical literacy. From another point of view, each individual has not the core literacy of physical and health education before they receive the systemic school education, so the cultivation of physical literacy is extremely crucial for students in this stage. Good physical literacy can also promote the formation of core literacy in physical and health education before the stage from infancy to receive physical and health education, therefore, both are mutually reinforcing.

C. The target groups within physical and core literacy are different but the purpose is consistent

The objective group of physical literacy is everyone as an individual in the process of social development. It emphasizes the ability that each person to adapt to social development and pursue a healthy and active life with physical activity as the carrier. Physical literacy provides a guarantee for the sustained and good development of social individual and focuses on the lifelong health of social individuals. The target group of the core literacy in physical and health education is limited to the students and tends to the educational value and idea of the subject, and reflecting the educational effect of the subject, that is to say, students can obtain the core literacy of the subject with sports attribute through the study of physical and health education curriculum in school education. Although the two have different target groups, the ultimate goal of physical and the core literacy of physical and health education is the same. They both aim to realize the all-round development of people and achieve the purpose of healthy life and enjoying life through physical activities for life. Therefore, the purpose and direction of cultivation are the consistent.

D. Physical literacy is the goal of core literacy in physical and health education

The United Nations educational, scientific and cultural organization (UNESCO) once declared that the result of physical education is a person with physical literacy who has skills, confidence and understanding the meaning of lifelong physical activity. Later, based on this, Whitehead thought that physical literacy is a kind of ability, a kind of character and a process throughout a whole life, which allows everyone to pursue meaningful physical activities throughout their life, no matter what your physical quality is. [10] In addition, she also pointed out that physical literacy is neither the alternative for physical education nor a competitor. The physical and health education is a subject area in the school curriculums, and physical literacy is the goal of physical and health education which has also been recognized by researchers. [10] Therefore, with this in mind, the goal of the cultivation of the core literacy in physical and health education can be understood as physical literacy. Because Physical literacy runs through the whole life, and the core literacy of physical and health education is only

cultivated in school. After entering the society, if Physical literacy is not formed, it will be difficult to achieve the ultimate goal of all-round development and a healthy life. Therefore, physical literacy is also the goal of core literacy in physical and health education.

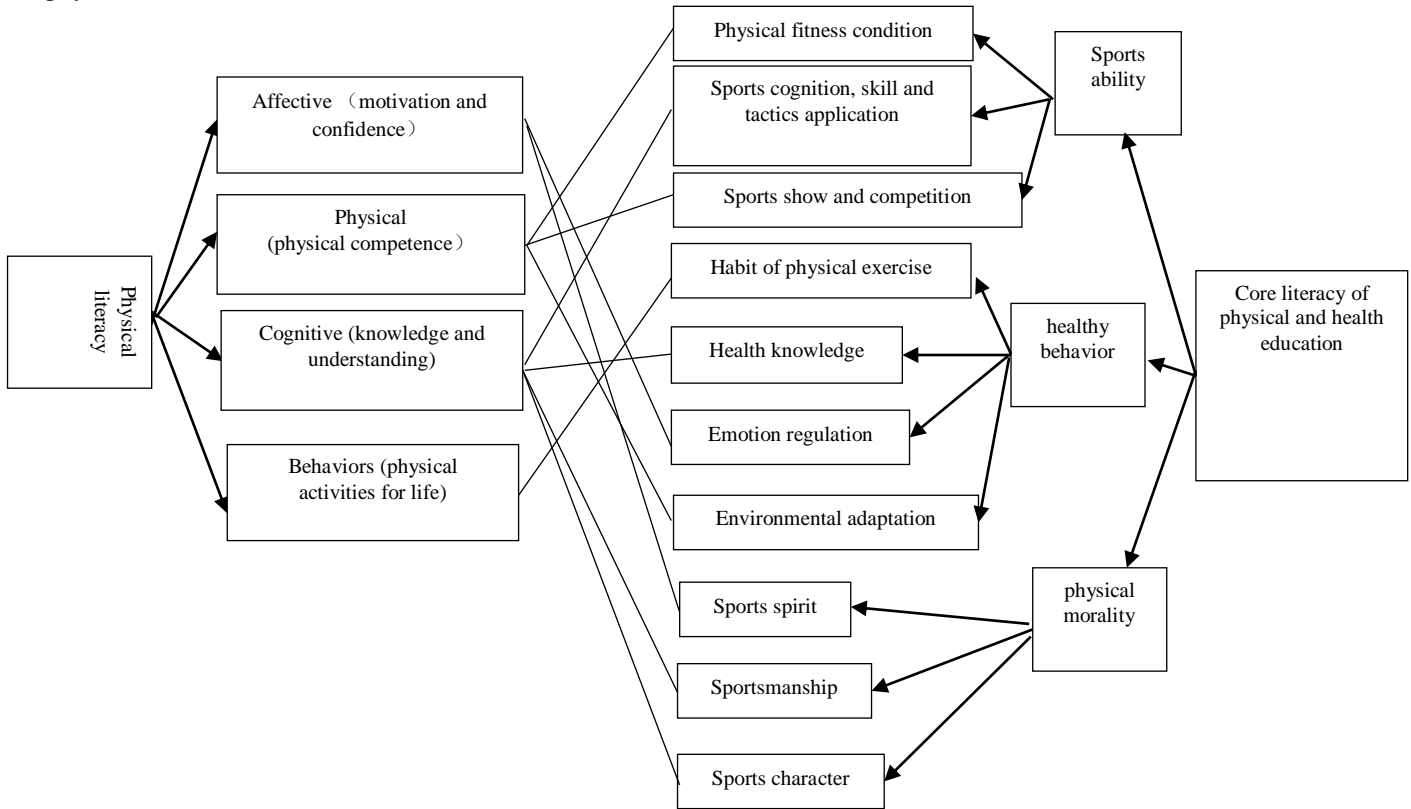


Fig. 2. The relationship of components within physical and core literacy

V. CONCLUSION

Physical and core literacy of physical and health education are two different concepts, and both can not be confused. In addition, their target groups and stages are also different. However, both are based on physical activity as the carrier and there is a close internal relationship between their components, and both are indispensable to realize lifelong sports, promote an active and healthy lifestyle for people and achieve the full development of people. It is helpful to realize China's physical education curriculum reform and achieve all-round development of students by clarifying the relationship between physical and core literacy of physical and health education.

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Self-Efficacy and Commitment Serially Mediate the Relationship between Authentic Leadership and Performance in Filipino Secondary School Athletes

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Abstract: *Although perceived authentic leadership styles of coaches have been suggested to foster positive environment that facilitates athletes' performance, only few have empirically examined a more nuanced mechanism on how Authentic Leadership affect performance. This study investigates the relationships between perceived authentic leadership and athletes' Performance, taking into consideration the serial mediating roles of self-efficacy and commitment. A sample of 644 secondary student athletes responded in a packet questionnaires which included Authentic Leadership Self-Assessment Questionnaire, the General Self-Efficacy, the Sport Commitment Questionnaire-2, and the Perceived Personal Performance Questionnaire. The results revealed that authentic leadership is positively associated with performance due to the effect of Self-efficacy to commitment. The results have a significant implications in the role of coaches' leadership style in the wellbeing of athletes.*

Keyword: *authentic leadership, self-efficacy, commitment, performance*

I. INTRODUCTION

Coach and their leadership plays a significant role on the development of an athlete. With the hope of transforming them into being efficient and effective during sports competition, they make use of different techniques and methods that leads to defining and acquiring their own leadership style. Several leadership styles (i.e., transformational leadership, autocratic leadership, democratic leadership and authentic leadership), who have unique strengths and characteristics, have been used in the field of sports. Despite the differences, defined leadership as "the ability to engage in an act that initiates a structure in the interaction as a part of the process of solving a mutual problem". However, athletes' perception of a coach directly regulate behavioral responses and the kind of leader a coach is plays an important role on the athletes' well-being. Authentic

leadership, relatively new in leadership literature, has gained trust and recognition in leadership studies [1][2]. Walumba et al defined Authentic leadership "as a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development." [3]. This implies that authentic leaders leads with a purpose, knows his strength and weakness, and communicates with his followers by taking into consideration their perspective that leads to growth and development of the followers. Scholars suggest that authentic leadership becomes important and urgently needed to have desirable outcomes, proposed that authentic leaders affect their followers' commitment and performance. Thus, authentic leader type of coaches positively contributes to the athletes' performance. Their leadership tend to drive authenticity to their athletes which involves fostering greater self-awareness. In connection, being aware of one's capacity is a behavior attributed to self-efficacy [3] [4].

Self-efficacy as "the faith one has in being capable to perform a specific task in an effort to meet a specific outcomes" [1]. Further, efficacy beliefs are influenced by what others say to one, regarding what they believe one can or cannot do [5]. This implies, that the authenticity of a coach affects the self-efficacy belief of an athletes by developing self-awareness and building self-confidence in them which in return, results to positive performance during competition. That self-efficacy positively influence performance [1]. This statement was also present on the study of Moritz who claims that self-efficacy strongly correlates to performance. In sport, the athletes belief to his own capacity and strength makes

them feel that they could take on challenges and task which enable them to perform to the fullest [6].

In line with this, when an athlete believes that he is capable and equipped, the sense of commitment is very strong. Gardner and Moore define commitment as “*the process of actively choosing behaviors that are directly in pursuit of clearly delineated valued goals*”[7]. Also, subjects with high general self-efficacy expectations are those that are more committed in their own field and authentic leadership drives commitment to their follower [8], which in return commitment has a direct effect to performance. The goal setting theory combined with self-efficacy and commitment further explained that it helps athletes enhance their activities in sports and physical activities in general. For instance, the more confident, which is an attribute associated to self-efficacy, and the more committed and athlete is, the higher the personal goal which is subsequent to performance attainment [9].

Authentic leadership theory has been emerging over the last several years from the connection of the leadership, ethics, and positive organizational behavior and scholarship literatures [10]. Authenticity can be defined as “owning one’s personal experiences, be they thoughts, emotions, needs, preferences, or beliefs, processes captured by the injunction to know oneself” and behaving in accordance with the true self. Initially, authentic leadership defined “as a process that draws from both positive psychological capacities and a highly developed organizational context, which results in both greater self-awareness and self-regulated positive behaviors on the part of leaders and associates, fostering positive self-development”. An authentic leader leads with purpose, values, and integrity [11]. Thus, it advocates a leader which is more authentic in leadership and has self-awareness to the strengths and weaknesses of every individual, an authentic leader tends to give good experiences and a climate favorable to the followers and provide followers openness and great motivation among them as they exchange ideas with transparency in every decision they made. In return, athlete’s fosters authenticity and development, resulting in wellbeing and genuine, sustained performance. Furthermore, Hannah et al indicated that the importance of the role of Authentic Leadership as a factor to influence effective leadership and team effectiveness. Since an athlete needs a good leader to boost his confidence in a sports competition setting. In this scenario, Authentic leadership thereby contributes to the athlete’s skills that enable them to perform in the fullest [4] [7].

There have been a number of attempts to conceptually and through research link self-efficacy and leadership. Since self-efficacy is supported by theory and research to be a psychological state (as opposed to a fixed trait) and thus open to development [1] [3]. Propose that authentic leader behavior can play a significant role in developing self-efficacy and

subsequently performance over time [4]. Self-efficacy is defined as the faith one has in being capable to perform a specific task to meet a specific outcome [1]. To be able to believe in one’s capacity to do task in accordance. However, it was highlighted that among the four sources of self-efficacy Verbal persuasion strengthen one’s belief to perform at the fullest and succeed, as it was contributed by the Influential people surrounds us like our parents, teachers, managers, and coaches. Maddux also supports the notion that efficacy beliefs are influenced by what others say to us about what they believe one can or cannot do. He identifies two interacting factors that can contribute to self-efficacy with leadership implications: (1) the development of the capacity for symbolic thought and the responsiveness and, (2) supportiveness of the social context in which leaders and followers are embedded over time. Self - efficacy needs to be increased to be successful in performance. A person with strong self – efficacy enhances self-accomplishment and personal well – being in many ways. People with high assurance in their capabilities be likely to succeed in challenges that they encounter in life. In addition, point out, performance self-efficacy as one of the most important and influential psychological constructs for facilitating achievement in sports. To conclude, an individual cognitively appraises a situation of performance achievement effects or changes his or her future self-efficacy. And gain positive connection between authentic leadership and self-efficacy in sports setting [1].

Recently, however, Researchers have mentioned a link between self-efficacy and sport commitment. Commitment is defined as the eagerness or determination to try to for a goal and the persistence in pursuing it over time. Furthermore, in the sports viewpoint, commitment serves as the strong foundation and the inner motivation of an athlete to pursue and face obstacles face in the competition and keep on stable no matter how difficult the situation is. According to a study, Athletes with a stronger sense of commitment are more likely to make productive efforts in their roles and strive to meet perform their assigned duties, in line this athlete improve their performance and confidence to attain success in the competition. That commitment and the achievement of higher goals and experiencing mastery are both important sources to evaluate self-efficacy. Cognitive processes and self-efficacy are also related in terms of behavior change. In Additional, they believe that without the commitment, athletes would lack the motivation and skills to pursue their athletic goals [1].

Performance and self-efficacy also share an important relationship. Performance is defined as the actions and behaviors of individuals that contribute to organizational goals. In an overview of the self-efficacy in sport literature, most studies relating self-efficacy and performance revealed a moderate to strong positive relationship ($r = .38$) [6]. Achievement in performance was found to be one of the most significant sources of self-efficacy due to achievement being a reflection of personal mastery experience. Thus, it leads one’s

to be more effective and develop a high sense of performance in self-efficacy because of its relationship with greater effort and persistence during an activity, which translates into better performance. Finally, performance accomplishments were found to be related to mastery experiences, and those experiences are the basis for developing self-efficacy [1].

A central focus of this study is to show the association between authentic leadership, Self – efficacy, commitment and the sports performance an individual. Recent psychology and organizational behavior research related to training and performance suggests that both optimism and self-efficacy can be enhanced, increased, and nurtured with appropriate coaching.

Because authentic leaders demonstrate an understanding of strengths and weaknesses; they gain an insight into the self through exposure to others and being cognizant of one's impact on other people. With clarity and understanding of their capabilities, and with the willingness to be self-aware, a coach viewed to be authentic will be less likely to engage in defensive behaviors and more likely to correct personal predispositions [1]. Research has shown that these characteristics potentially increase commitment in followers of authentic leaders. Thus, authentic coaches may stress the importance of attending to the shared interests of the team and individual leading to commitment. Sport commitment represents a psychological state reflecting an athlete's desire and resolve to continue his or her sport participation [12].

The Authentic Leadership characteristics contribute and complement the needed capabilities of the follower for performing well. For example, in their initial model of AL development, Luthans and Avolio posited that authentic leaders draw from their own positive psychological resources to contribute and complement their followers' psychological capital in order to enhance their performance [10]

Authentic leaders develop and influence their followers by invigorating them with positive psychological states, which are conducive to their performance [7]. Authentic leaders can influence follower performance. Authentic leaders behave in accordance with their values and strive to achieve openness and truthfulness in their relationships with followers [7]. Authentic leaders can lead by example and demonstrate transparent decision making [4]. Leading by example demonstrates a leader's commitment to his or her work and provides guidance to followers about how to remain emotionally and physically connected and cognitively vigilant during work performance. Walumbwa et al. argued that ethical behaviors of authentic leaders are likely to guide their followers because of their attractiveness and credibility as role models [3].

Based upon the discussion, authentic leadership is an important aspect in sports leadership studies. It is a unique leadership style that promotes authenticity to promote

optimized athlete performance. However, to date, few have empirically examined a more nuanced mechanism on how Authentic Leadership affect performance. The current study hypothesize that authentic leadership positively affects the self-efficacy belief and commitment of athletes which in return result to good sport performance.

II. MATERIALS AND METHODS

This study was comprised of 644 student athletes from public and private schools in Lanao del Norte. The respondents were chosen on the basis that they are athletes who are actively involved in sports competitions. The list of students were provided by relevant school authorities. The sample's age ranged from 13-23 years.

Before conducting the study, permission was sought from the respective school principals of the respective schools, and test administration was conducted in coordination the school principals, coaches and teachers. Written informed consent forms were collected from the respondents. The form stipulated the nature and purpose of the study, the rights of participants, and data confidentiality. Data gathering were conducted during the available time of the respondents to avoid conflict from their classes. Respondents answered the packet of scales with the assistance of the researchers and were readily available if questions or clarifications arise during the conduct of the study.

The Authentic Leadership Self-Assessment Questionnaire (ALSAQ) is composed of 16 items designed to measure the athletes' perception of their coach's authentic leadership behavior. On a 5-point scale ranging from 1(strongly disagree) to 5 (strongly agree). Samples include: "I listen closely to the ideas of those who disagree with me", "I listen very carefully to the ideas of others before making decisions", and "I can list my three greatest weaknesses". ALSAQ can be considered a reliable and valid tool for self-assessment of leadership skills [13]. For this study, ALSAQ obtained a Cronbach's alpha of .924.

The athletes' commitment to sports was measured using the Sports Commitment Questionnaire-2 (SCQ-2). It is a 58 items scale that is composed of 13 subscales. The study use a short version of the questionnaires by selecting 14 high-loading items from this survey. The participants rated the items on a 5-point scale 1(strongly disagree) to 5 (strongly agree). Samples includes: "I am determined to keep playing this sport", "I am willing to do almost anything to keep playing this sport", and "Staying in this sport is more for a necessity than a desire". The composite reliabilities and psychometric support for the SCQ-2 was established [14]. In the current study, SCQ-2 had a Cronbach's alpha of .904.

The athlete's performance in sports was measured using the Perceived personal Performance Questionnaire (PPPQ).

This scale was originally conceptualized as the Perceived Performance in Team Sports Questionnaire and has been adapted to measure an individual's perception of his or her own performance during the current or previous athletic season. Changes were made on the wording of each items to orient each question towards the individual and not the team [15]. All items were rated using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Samples includes: "Was able to overcome obstacles on the field/court", "Used my abilities to their maximal potential", and "Coordinated my movements well". PPPQ obtained a Cronbach's alpha of .880 in the current sample.

The athletes' self-efficacy was measured using the General Self-Efficacy (GSE). It is a self-report measure of self-efficacy. This measure contains 10 items (e.g., "I can always manage to solve difficult problems if I try hard enough", "It is easy for me to stick to my aims and accomplish my goals", and "I can remain calm when facing difficulties because I can rely on my coping abilities"). Participants rated each item on a 4-point scale (1=not at all true to 4-exactly true). The internal consistency reliability for the GSE had been proven from several studies [5]. GSE obtained a Cronbach's alpha of .822.

The serial mediation analysis was performed using the SPSS macro PROCESS [16], to test whether authentic

leadership was related to athlete's performance through self-efficacy and commitment. The indirect and total effects of authentic leadership, self-efficacy, commitment, and athlete's performance were calculated while controlling the effect of age and gender. Bootstrapping method was implemented to analyze the indirect, direct, and total effect of the serial mediators with 95% confidence intervals.

III. RESULTS AND DISCUSSIONS

Table I shows the intercorrelation of the variables authentic leadership, self-efficacy, commitment, and athletes' performance. The results show that all the variables are positively correlated with each other. Authentic leadership is positively correlated with self-efficacy, commitment, and athletes' performance. Self-efficacy is positively correlated with commitment and athletes' performance. Finally, commitment is positively correlated with Athletes' Performance.

Table II shows the total, direct, and indirect effect of authentic leadership and athlete's performance through self-efficacy and commitment. The findings of the study show that authentic leadership is linked to athlete's performance due to the mediation of self-efficacy and commitment.

TABLE I. RESULT OF DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

Correlations			
	1	2	3
1. Authentic Leadership			
2. Sports Commitment	.585**		
3. Self Efficacy	.410**	.359**	
4. Athletes' Performance	.570**	.440**	.389**

**. Correlation is significant at the 0.01 level (2-tailed).

TABLE II. RESULTS OF SERIAL MEDIATION ANALYSIS

Path Analysis Results of Serial Mediation				
Path	Indirect Effects	SE	BC 95% CI	
			LL	UL
Serial Mediation 1				
Authentic Leadership ->Self-efficacy->Performance	.0642	.0143	.0791	.1962
Authentic Leadership ->Self-efficacy->Commitment->Performance	.0071	.0036	.0019	.0168
Authentic Leadership -> Commitment->Performance	.0640	.0248	.0186	.1161
Total indirect	.1353	.0295	.0791	.1962
<i>Note: all coefficients are unstandardized; *p< .05, **p< .01; significant indirect effects are indicated in boldface. N=644</i>				
<i>Abbreviations: SE, Standard Error; LL, Lower Limit; UL, Upper Limit</i>				

The primary aim of this study was to determine if authentic leadership positively affects the sports performance of athletes. It aims to prove the significance of the serial mediation composed of self-efficacy and commitment. The

results show that authentic leadership positively influenced the performance of the athletes due to high self-efficacy belief and strong commitment.

The results revealed that authentic leadership is positively associated with self – efficacy and substantial contributing factor of performance in the context of sports. That an authentic leader with high moral perception described by high ethical standards that guide decision making and gives transparency to consider other's opinions without the feeling of being precluded, most likely provide self-efficacy to their followers which results positively outcomes. Results provided support for the mediating role of Authentic Leadership between self-efficacy and performance. These findings are consistent with a similar study by Bandura and Jourden (1991), Locke et al. (1984), and Early and Lituchy (1991). The study indicated that the motivational climate given by the Authentic leaders helps the athletes to boost their self - efficacy, and since, was highly contributor to good performance in sports setting. To clarify this concept, Bandura states that a linear relationship most likely exists between performance self-efficacy beliefs and performance [1]. As self-efficacy beliefs increase, so does effort and perseverance which then helps to increase in the actual performance. This relationship indicates a positive relationship between self-efficacy and performance that is mediated by Authentic leadership. Another study by YUERU MA, et al, support for the theory of Authentic Leadership, demonstrating that leaders using an authentic leadership style to encourage athlete's improvement by evoking positive emotions in their individual team members. As result athletes successfully do their best through the encouragement given by their coaches. A. Wong & H.K.S. Laschinger's (2012) results demonstrated that authentic leadership was significantly related to self - efficacy through its effect in the performance. The study demonstrates the effect of authentic leadership on structural empowerment and the mediating role of self – efficacy, and performance. The present study shows that an athlete self - efficacy was likely to be contributed with an authentic leader and results with good performance attainment.

The data provides results that authentic leadership positively influenced the commitment of the Athletes due to the effects of AL to the athletes' commitment. An authentic coach could have athletes who feel more dedicated and determined because they are achieving their goals which are associated with commitment. In addition, athletes could feel more committed due to coaches being viewed as authentic leader which promotes positive influenced on the athletes through giving the athletes a worthwhile experience. An authentic coach knows the strengths and weaknesses of his/her athletes. Thus, authentic coaches may stress the importance of attending to the shared interests of the team and individual leading to commitment.

The data provides positive effects of Authentic leadership to performance. An authentic leader can influence follower performance. That is why coach can positively influence the athletes which enhancing their performance. This is because

authentic leaders behave in accordance with their values and strive to achieve openness and truthfulness in their relationships with followers [7]. A Coach should demonstrates commitment to his or her work and gives guidance to his athletes about how to remain emotionally, cognitively and physically connected. According to Walumbwa et al. that ethical behaviors of authentic leaders are likely to guide their followers because of their attractiveness and credibility as role models [3].

Athletes with a coach viewed as authentic have a strong positive quality to the leaders, with commitment that leads to positive performance. According to Avolio et al, the behaviors of authentic leaders are viewed by followers as being guided by high moral standards and characterized by fairness, honesty, and integrity in dealing with followers. And this could reinforce their commitment. Coaches should give chance for the athletes make choices and create new experiences that may lead to strong athlete's commitment [4].

The data provided results that, authentic leadership positively influenced the performance of the athletes due to the influence of authentic leadership to self-efficacy which in return strengthens the athletes' commitment to the sport that leads to a better performance. Since an authentic leader is someone who draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development. Authentic leader can play a significant role in developing self-efficacy and which in time leads to optimal performance [3]. Several studies supports the positive relationship between authentic leadership and self-efficacy. According to Roux, One can influence self-efficacy beliefs by imagining oneself or others behaving effectively in situations and may be induced by verbal persuasion. Further, efficacy beliefs are influenced by what others say to one, regarding what they believe one can or cannot do. The potency of verbal persuasion as a source of self-efficacy expectancies will be influenced by such factors as the expertness, trustworthiness. This is consistent with authentic leadership theory, emphasizing the role of authentic leaders in building trust open and transparent relationship posited to share information with each other, building credibility and winning the respect and trust of their followers [3] [5]. In addition, authentic leader are realistically hopeful and trustworthy and such leaders can enhance a follower's sense of self-efficacy [10]. On the other hand, commitment is also influenced by self-efficacy. According to Theodorakis, 2008,) that commitment is related to self-efficacy in a positive way and Osiet et al., (2016) noted that self-efficacy will enhance commitment to organization and committed people identified with organization goals and values and job performance and one of the predictors of job performance is self-efficacy. This implies that athlete who are committed to their organization

seek to increase their effectiveness and efficiency because commitment translate the athletes' beliefs in their efficiency. In addition, as cited by Chestnut and Burley in their study that in the organizational psychology perspective, organization commitment can be characterized by strong confidence in the organization goals further commitment is a form of motivation and that commitment is a goal directed behavior that is influenced by intrinsic and extrinsic motivators. In connection, intrinsically motivated individuals generally experience high degree of self-efficacy that results to commitment [9].

Second finding of the study is the positive significant relationship between commitment and performance. The data provided result that when athletes have a strong feeling of commitment in their respective field of sport, they are likely to perform well due to their sense of commitment. This was also supported in the study conducted by Theodorakis, 2008 that states that commitment related to self-efficacy influenced performance in a positive way. In this study, commitment was interpreted as the commitment of athletes in their field of sport. The study states that when an athlete is highly committed it will result to optimal performance. These findings resonate with several studies showing that the more confident and the more committed an athlete is, the higher is the personal goal and its subsequent performance attainment, further the Mindfulness-Acceptance-Commitment (MAC) approach also states that optimal performance may rather be enhanced by inner and outer stimuli which can be seen as impermanent events. Thus, athletes needs to be deeply committed to his/her sport in order to achieve better performance, further the study conducted by Leroy et al., 2011 demonstrate authentic leadership is related to follower affective organizational commitment, fully mediated through perceptions of leader behavioral integrity and that that leader integrity is related to follower work role performance and that this effect is fully mediated through follower affective organizational commitment [9].

IV. CONCLUSIONS

In conclusion, the results of this study demonstrates that authentic leadership positively influence the self-efficacy belief of the athletes which in return promotes strong commitment in sport and will eventually lead to optimal performance. Coaches who are authentic leader, promotes positive communication and transparent relationship on their

athletes which in return boast self-efficacy and commitment that corresponds to their performance.

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Abstract—*The purpose of this research aims to develop a smart agility ladder drills prototype for improving the physical performance of Thai people in the 21st century, which is an electronic device that uses wireless technology and operated by rechargeable battery. We improved timing measurement accuracy and add foot step counter feature to the equipment. This tool consists of five modes: automatic stopwatch mode, automatic foot step count mode, automatic stopwatch with foot step count mode, manual stopwatch with automatic foot step count, automatic foot step count within thirty seconds. The results will be displayed on the master control box screen. The sensor pads are installed lights and buzzer. Variety people can use including blind and dumb. By comparing between conventional ladder drills and smart agility ladder drills. It was found that the smart agility ladder drills can count time and a number of foot step more accuracy than conventional ladder. The quality was certified by content validity experts.*

Keywords—*agility, smart ladder, measurement, physical fitness*

I. INTRODUCTION

One factor that reflects good health is having physical fitness for good health that means the body's ability to perform each profession. Recreation and activities in everyday life without excessive fatigue. One important element of physical fitness is agility. That agility is the ability to move or move in the shortest time. It is a work that requires the relationship of Neuromuscular system Which acts as a coordinator with good reaction and awareness and response Fast and able to move and change direction smoothly and instantly [1].

Agility is the ability to change positions or the direction of movement of the body with speed and efficiency As a result of the ability to contract various muscles To work together well Exercise activities that will help strengthen the body, including activities that allow the muscles of the body to work together and coordinate to change the position and direction of the movement of the body [2].

agility it consists of four components: speed, muscle power, weakness and coordination of the nervous and muscular systems. The four elements will work together to support each other. Agility is the basic element of physical fitness that is important to daily life and is an important and essential factor for playing various sports [3].

Agility is the ability to change direction quickly and efficiently. Which can be controlled while moving by using force as much as possible, such as running the store Zig Zag Run [4].

That agility is the ability to move or part of the body to move or change the position of the body with prosperity. The ability to move or move in the shortest time Is a work that requires the relationship of Neuromuscular system Which acts as a coordinator with good reaction and awareness and response Fast and able to move and move, change direction smoothly and instantly [5].

That agility means being knowledgeable in Move freely Able to change direction as needed, such as in punching, can dodge the opponent's punch and respond immediately [6].

That agility means the body's ability to change posture quickly. Without errors, which this agility requires control and Coordinate the nervous system and muscles as well. Thus, making it faster and more accurate. In addition, it requires strength, muscle weakness, joints and skills to Moving in. Therefore, will have agility must have to train themselves always to keep the muscles and nervous system in preparation and increase skills in various movements [6].

That the factors that affect agility are body shape. People who are tall, thin or obese are usually less active, people with moderate height and the muscles are strong, have good agility [5].

The basic definition of agility is too simplistic, because it is now thought to be much more complex involving not only speed, but also balance, coordination, and the ability to react to a change in the environment [7].

Speed and agility are important components of nearly every athletic performance. Both involve moving the body as rapidly as possible, but agility has the added dimension of changing direction [8][9][10]. Sport coaches typically spend time working with athletes on developing speed and agility by focusing on movement technique and reaction time in drills [7].

Measuring speed and agility can help the fitness professional spotlight weaknesses in sport or task performance, which can help direct training goals [11].

Agility is an element of physical fitness that affects performance of performing activities such as fast walking fast running, stopping movement. Agility is important for exercise

and playing sports such as football, futsal, basketball, badminton, tennis etc. and have many academic scholars give the meaning of Agility.

We can see that agility is the ability of the body to moving and changing directions quickly or instantly. It also takes a short time. It requires a good relationship between the musculoskeletal system and the nervous system and requires muscle strength. Therefore, requires regular training Agility Necessary for daily life and important for sports. Those who are agile and good will be able to play sports effectively, such as football. There must be movement throughout the game. Especially for speed training and practicing agility. It is important to almost every athlete. Most trainers will use the ladder to practice, which is a rope device in the middle of the stage, with a plastic similar to the staircase. There are a variety of lengths, ranging from 4 meters, 5 meters, 8 meters and 10 meters depending on the area used for training. This training helps develop agility and speed, which each practice for training with this person must use the speed of short-term movement to create a relationship between brain and movement to practice the ladder. If we practice frequently, we will have more skills. We can be used in everyday life, such as when we go to play sports with friends. We will have more skill and agility than our friends. Gives us an advantage or kicking football. We will have skills to evade faster than others. But in that athlete, practicing this style is very important. Because of that football player Must use agility, speed, competition, who practice skills, speed and agility. It has a chance to win more in each practice. It will help with the training of Cardio in himself as well. Because it is a continuous training. Each time practicing, it will make our heart rate dance high and in the zone that helps burn fat well.

In conclusion, agility means the ability of the body to move. And changing directions Quickly, efficiently It takes a short time to work. The relationship between the musculoskeletal system and the nervous system as well have a quick response requires strength and muscle strength. Therefore, requires regular training. Agility necessary for daily life and is important for sports. Those who are agile and good will be able to play sports effectively, such as football. There must be movement throughout the game. If the player or athlete with agility is agile Expressing behavior in using various skills effectively, such as receiving a ball and changing the direction of delivery or running away from the opponent's back for a short time. That has changed the direction of the body factors influencing agility.



Fig. 1. Conventional ladder for agility.

From the reasons mentioned above. We are interested in developing a smart ladder drills prototype for agility. Which is different from conventional ladder (Fig.1) for general agility training because it has the ability to accurately timer. There are five modes operation. A conceptual design is shown in Fig.2. We use touching sensor to count the foot step and report data via wireless communication channels which will allow the trainees to be effective. It can be controlled easily via wireless signal. We developed a prototype used to practice and test for all Thai people in various age groups to use for the benefit of health promotion.

II. MATERIALS AND METHODS

A smart ladder is designed to be portable and easy to use. All equipment run on rechargeable battery power. It can operate in both manual or automatic modes. A Wireless transmission is used for send/receive data and command between a master control box and remote sensor pad nodes. A smart ladder has five operation modes.

1. Automatic stopwatch mode.
2. Automatic foot step count mode.
3. Automatic stopwatch with foot step count mode.
4. Manual stopwatch with automatic foot step count.
5. Automatic foot step count with limited time.

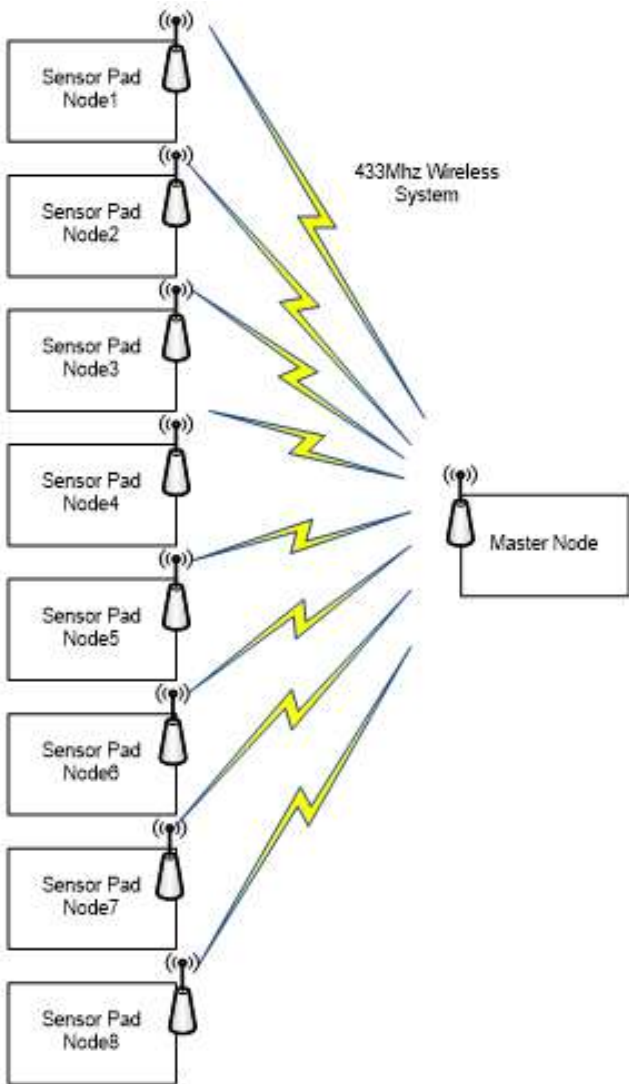


Fig. 2. Smart ladder conceptual design.

Fig. 3. The master control box.

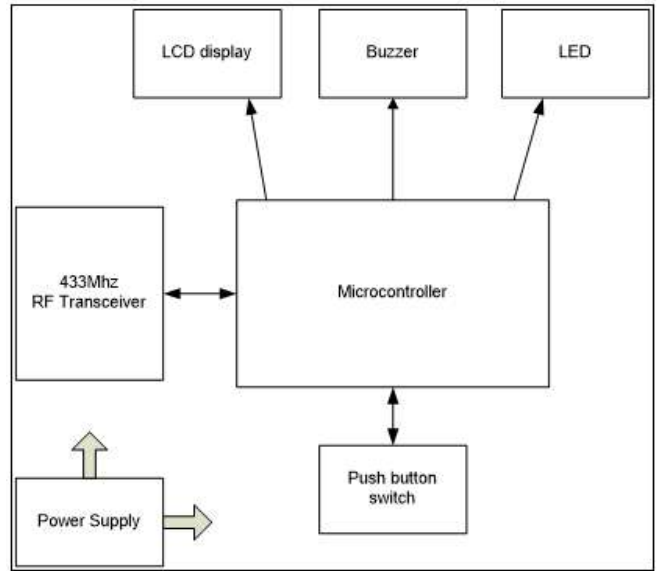


Fig. 4. The master control box working concept.

The system consisted of two parts. A master controller used for mode selection and display results is shown in Fig.3 and working concept is shown in Fig.4. Remote sensor pads used for sensing foot step is shown in Fig.5 and working concept is shown in Fig.6.



Fig. 5. Remote sensor pads.

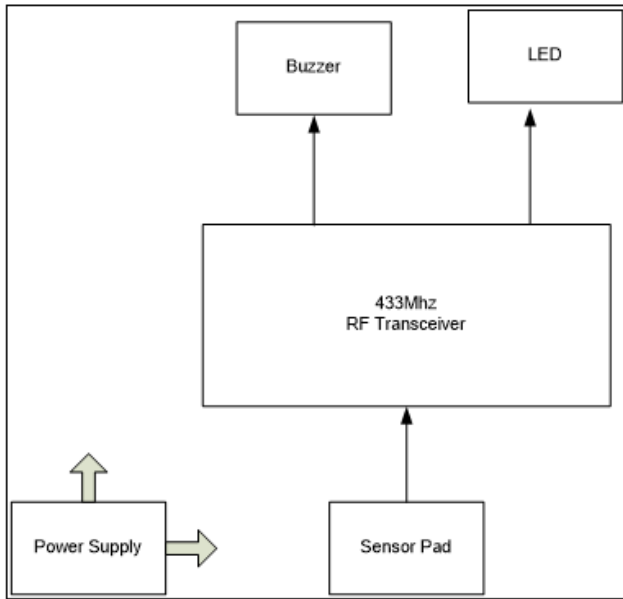


Fig. 6. The remote sensor pad working concept.

When we switch on a power at a master control box, LED and radio frequency (RF) module initial work. Then configure an address of RF, test LED, and buzzer. After that, mode selection menu will be shown on monitor screen and wait for choosing.

1. Automatic Stopwatch Mode

A Timer will be started when a foot touch on the first sensor pad and stopped when a foot touch on the last sensor pad. Assume user has a correct movement. This mode focus on time measurement.

2. Automatic Foot Step Count Mode

Each sensor pad will counter foot step when a foot touch on each pad and also summary display. This mode focus on a foot step counting to practice a correct movement.

3. Automatic Stopwatch with Foot Step Count Mode

It is a combination of the first and second mode. So, a smart ladder can do stopwatch and foot step counting simultaneously. This mode use for measure a foot step agility. Summary of foot step counting and time will be displayed at the end.

4. Manual Stopwatch with Automatic Foot Step Count Mode

This mode works similar to a normal stopwatch. Timer will be started and stopped manually by user. Foot step will be count automatically and display summary at the end.

5. Automatic Foot Step Count with Limited Time Mode

Sensor pads will count foot step with time limited 30 seconds.

A master control work flow is shown in Fig.7 (a), Fig.7 (b), and Fig.7 (c).

When we switch on a power at remote sensor pads, LED and radio frequency (RF) module initial work. Then configure an address of RF, test LED, and buzzer. After that, sensor will waiting for something touch on it. If a foot step on a pad, LED and buzzer will be activated. A remote sensor pad work flow is shown in Fig.8.

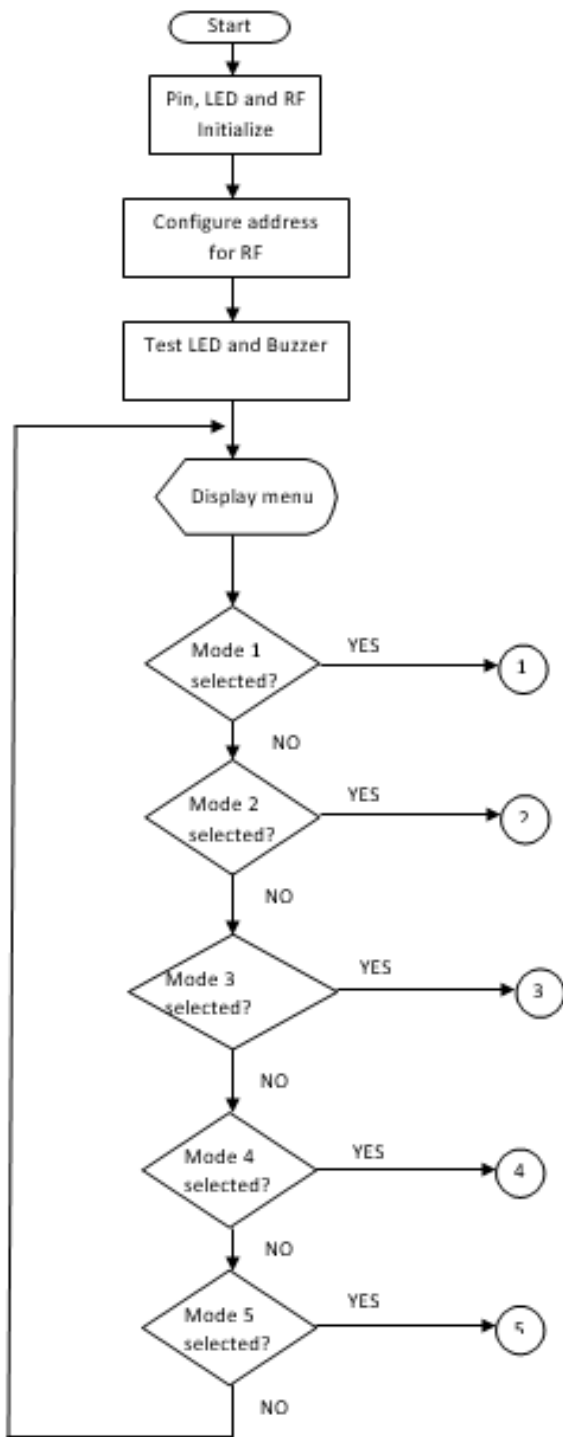


Fig.7 (a). A master control working flow.

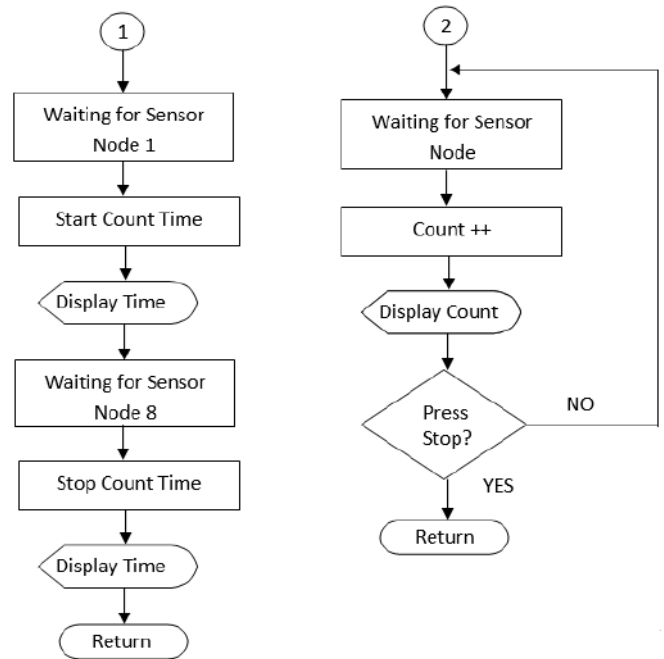


Fig.7 (b). A master control working flow.

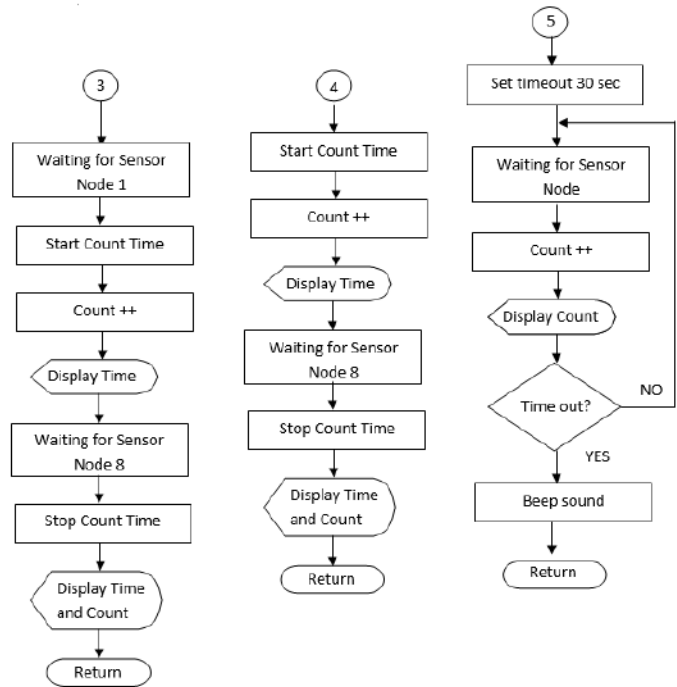


Fig.7 (c) . A master control working flow.

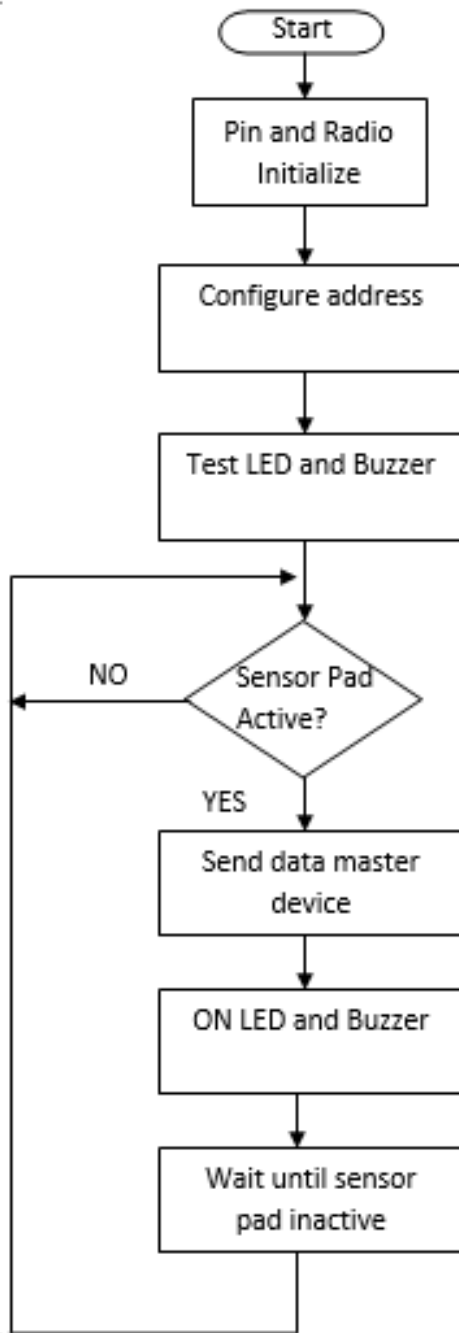


Fig. 8 remote sensor pads work flow.

III. RESULTS AND DISCUSSIONS

A Smart ladder prototype was created and all features function were implemented after improved many times. It works well according to research objective purpose to physical fitness testing. We can compare between a traditional ladder and a smart ladder as shown in results comparing table.

TABLE I. RESULTS COMPARING

Traditional Ladder	Smart Ladder
1. Human error using stopwatch.	1. Automatic and very high accuracy.
2. Simple design.	2. New design but still maintain original identity.
3. Suitable for some person.	3. Suitable for various person.
4. No technology.	4. Use sensor and wireless technology.
5. No light and sound signal.	5. Light and sound signal.
6. No mode selection.	6. Various mode selection.
7. Low cost	7. Reasonable cost

IV. CONCLUSIONS

Smart ladder drills prototype for agility was develop. It is an electronic device that uses wireless technology and operated by rechargeable battery. It is easy to use for measure speed and agility drills. Automatic foot step counter and stopwatch accommodate user to evaluate physical fitness agility. Various mode selection useful for each purpose.

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Physical Fitness of Senior High School Students in Boyolali Academic Year 2018/2019

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Abstract—This study aims at determining the physical fitness of senior high school students in Boyolali Regency based on the perspective of geographical locations of the high and low lands area. This research employs a descriptive method with a survey study approach where the population of all senior high school students in the Boyolali Regency 2018/2019 is an infinite number. Samples were collected through a purposive sampling technique consisting of 30 students from SMAN 1 Cepogo and 30 students from SMAN 1 Ngemplak Boyolali.

The results of fitness tests from male students of SMAN 1 Cepogo have 1 (6.7%) very good category, 5 (33.3%) quite good, 6 (40%) less good category and 3 children (20%) poor category, once while female students as follows from 15 children 100% in the quite good category. The results of fitness tests from male students of SMAN 1 Ngemplak there are 1 (6.7%) very good category, 4 (26.7%) quite good category, 6 (40%) less good category and 4 (26.7%) poor category, once while female students were mostly in the quite good category as many as 14 children (93.4%) and 1 child (6.7%) in less good categories.

Keywords—physical fitness test, senior high school students, boyolali regency

I. INTRODUCTION

Physical education for students in schools is important to combine cognitive, psychological and affective students. Including physical education subjects, sports and health can be a knowledge and reference to exercise and improve physical conditions. Physical education is "the teaching process through physical activity and also as a process for honing physical skills". This opinion shows that physical fitness is one part that has an important role to support the learning process of learning as a whole [1].

Senior High School is a formal education that is carried out by the Indonesian government, both state and private. Physical education in schools must get full attention in the delivery of education. A good level of physical fitness is the initial capital for high school-age children to achieve physical fitness, with good physical fitness it will increase the quality of learning and increase enthusiasm. This means that a

person's fitness status affects both readiness and physical and mental abilities to accept workloads (learning activities) which are the obligations of a student every day. Monitoring the status of physical fitness is also very important to do because it is a measure for students to improve their physical fitness and for teachers as an evaluation tool to improve and improve the quality of the physical education learning process and as a basis for evaluating the success of the learning process in school.

Boyolali Regency is one of the districts in Central Java Province. The geographical location of the Boyolali Regency is very strategically located at 110o22'-110o50' east longitude and 7o36'-7o70' latitude south. Topographically, the area of the Boyolali Regency has 2 parts of the plain. The highest point is in the sub-district of Selo with a height of 1500 meters above sea level and the lowest level in the sub-district of Banyudonodan, the sub-district of Palm, which is 75 meters above sea level.

Based on the explanation above, the researcher wanted to find out whether, with different geographical places, the physical fitness status of high school students in the lowlands was different from that in the highlands. This problem is very interesting to examine because no one has previously established the norms of physical fitness tests for the physical abilities of high school students which are reviewed from the geographical location (highlands and lowlands) in Boyolali Regency to find out, the authors conducted a study entitled: Physical High School Students Boyolali Regency 2018/2019 Academic Year (Viewed from the perspective of highland and low geographical location) "

II. DISCUSSION

A. Physical Fitness

1. The Nature Of Physical Fitness

Physical fitness is a concept that contains many components describing the meaning of physical fitness. Understanding the concept of physical fitness can be discussed about the meaning and meaning of physical fitness. Physical fitness is more focused on physiological fitness; that is, the body's ability to adjust the function of its body organs within the physiological limits of the state of the environment and physical work in a manner that is sufficiently efficient

without excessive fatigue, so that it can still carry out other activities.

2. Factors Affecting Physical Fitness

To get adequate fitness, systematic planning is needed through understanding healthy lifestyles for every level of society, including three fit efforts, namely eating, resting and exercising [2]. Eat, to be able to maintain a decent life, every human needs enough food. Both the quantity and quality, namely fulfilling the requirements of balanced healthy food, sufficient energy, and nutrition. Factors that influence physical fitness are very important to consider to maintain and maintain one's physical fitness. These factors are one unit that is interrelated to achieve total physical fitness. Other factors that affect physical fitness are stated by Wardany (2014: 14), the reasons are: Heredity, Exercise, Gender, Age, Body Fat, and Physical Activity

3. Components Of Physical Fitness

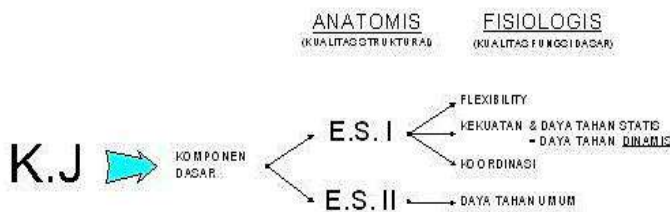


Fig 1. Components of physical fitness

The picture above explains that physical fitness is functionally divided into 2, namely:

- 1) ES-1 embodies anaerobic capacity which is a limiting factor for primary maximal ability.
- 2) Whereas ES-2 manifests aerobic capacity (VO₂ max) which is a limiting factor for maximum secondary ability.

B. Geographical Position the High and Low Plains in Boyolali Regency

1. Geographical Location Of Boyolali Regency

Boyolali is located in Central Java province which its geographical position is between 110° 22' - 110° 50' East Longitude and between 7° 7' - 7° 36' South Latitude. Boyolali consists of 19 sub-districts, which is further divided into 260 villages and 7 sub-districts. The administrative center is in Boyolali District, located about 25 km west of Surakarta City. The district is bordered by Semarang Regency and Grobogan Regency in the north, Sragen Regency, Sukoharjo Regency, and Surakarta City (Solo) in the east, Klaten Regency and Yogyakarta Special Region in the south, and Magelang and Semarang Districts in the west.

2. Topographic conditions Of Boyolali Regency

The topography of the area of Boyolali Regency is, as follows:

- 1) Between 75 - 400m above sea level, namely Teras, Banyudono, Sawit, Mojosongo, Ngemplak, Simo, Nogosari, Kemusu, Karanggede, and parts of Boyolali.
- 2) Between 400-700m above sea level namely Boyolali, Musuk, Mojosongo, Cepogo, Ampel, and Karanggede Districts.
- 3) Between 700-1000m above sea level, which is part of the District of Musuk, Ampel, Cepogo.
- 4) Between 100-1300m above sea level, which is part of the Districts of Cepogo, Ampel, and Selo.
- 5) Between 1300-1500m above sea level namely Selo District.

C. Characteristics Of Senior High School Age 16 -19 Years

Psychologists view high school-age children as individuals who are at an unclear stage in their development process. This is unusual because they are in a transition mass, namely: from the period from childhood to adults. At that time they went through a period called adolescence or puberty. Generally, they do not want to be said as children but if they are referred to as adults, they are in real terms not ready to bear the title as adults.

There are changes that are universal in adolescent adolescence, namely the increase of emotions whose intensity depends on the level of physical and psychological changes, changes in body, changes in interests and roles expected by certain social groups to play which then cause problems, changes in interests, behavior, and values, are ambivalent to change. These changes ultimately have an impact on their cognitive, affective and psychomotor physical development

D. Physical Fitness Test and Measurements

Physical fitness of a person can be measured through a physical fitness test that has been standardized, for example with a physical fitness test (TKJI), a physical test, a multistage test, a 15-minute jogging test, a cooper test or another test. In this study, the test used to determine the level of physical fitness was the TKJI test which consisted of 5 tests including:

- a) Fast running (60-meter male and 50-meter female) for ages 16-19 years, this test aims to measure speed.
- b) Hang the body for 60 seconds, this test aims to measure the strength and endurance of the muscles of the arms and shoulder muscles.
- c) The bed sits for 60 seconds, this test aims to measure the resilience and endurance of the abdominal muscles.
- d) Jump upright / vertical jump, this test aims to measure leg muscle strength and explosive energy.
- e) Run 1200 meters away from the age of 16-19 years, this test aims to measure the endurance of the heart, blood circulation, and breathing.

III. RESULTS AND DISCUSSION

1. Research Results for Male Physical Fitness Tests for Cepogo 1 High School (Highlands) and Ngemplak 1 High School (lowlands) Boyolali Regency

TABLE 1. RESULTS FOR MALE PHYSICAL FITNESS TEST THE HIGHLANDS

Interval	category	Frequency	Percentage
22-25	excellent	0	0%
18-21	very good	1	6.7%
14-17	quite good	5	33.3%
10-13	less good	6	40%
5-9	poor	3	20%
Σ		15	100%

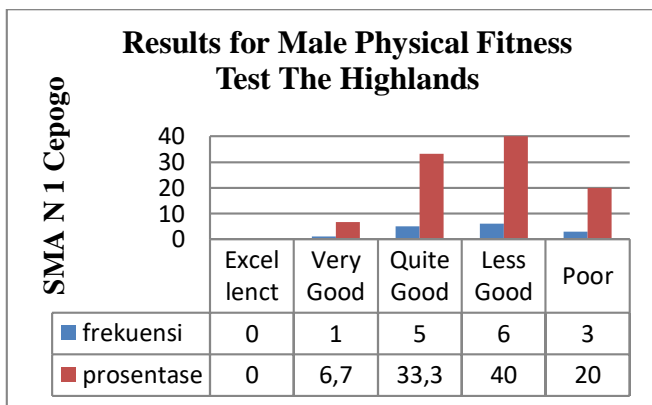


Fig 2. Results for male physical fitness test the highlands

The results of the assessment were 0 children (0%) classified as excellent physical fitness level, 1 child (6.7%) physical fitness level is in a very good category, 5 children (33.3%) quite good physical fitness level, 6 children (40%) level physical fitness in the less good category and 3 children (20%) the level of physical fitness in the poor category.

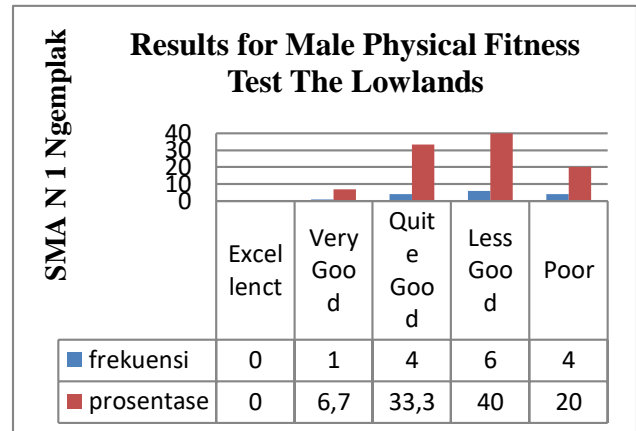
TABLE 2. RESULTS FOR MALE PHYSICAL FITNESS TEST THE LOWLANDS

Interval	category	Frequency	Percentage
22-25	excellent	0	0%
18-21	very good	1	7%
14-17	quite good	4	27%
10-13	less good	6	40%
5-9	poor	4	27%
Σ		15	100%

Fig 3. Results for male physical fitness test the lowlands

The results of the assessment are 0 children (0%) classified as excellent physical fitness level, 1 child (7%) physical fitness level is in a very good category, 4 children (27%)

quite good physical fitness level, 6 children (40%) level physical fitness in the less good category and 4 children



(27%) the level of physical fitness in the poor category.

2. Research Results for Female Physical Fitness Tests for Cepogo 1 High School (Highlands) and Ngemplak 1 High School (lowlands) Boyolali Regency

TABLE 3. RESULTS FOR FEMALE PHYSICAL FITNESS TEST THE HIGHLANDS

Interval	category	Frequency	Percentage
22-25	excellent	0	0
18-21	very good	0	0
14-17	quite good	15	100
10-13	less good	0	0
5-9	poor	0	0
Σ		15	100

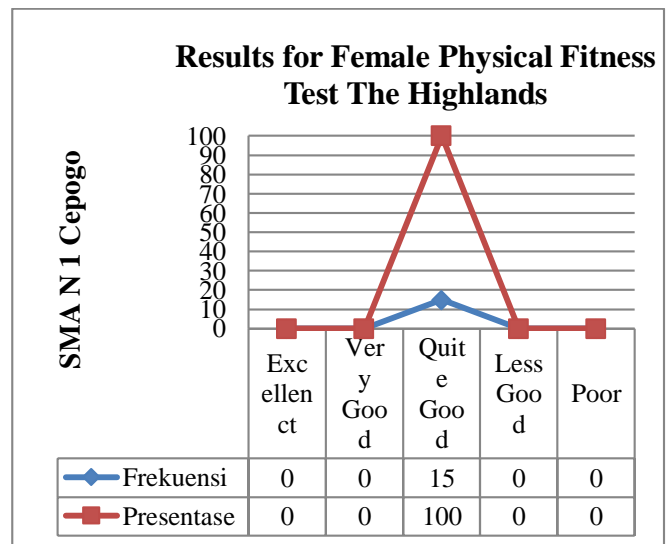


Fig 4. Results for female physical fitness test the highlands

Thus it can be seen the results of the categorization of physical fitness test results for high school girls in Cepogo 1 High School Boyolali District into the norms of TKJI categories are as follows: 0 students (0%) classified excellent physical fitness, 0 students (0%) classified very good

physical fitness level, 15 students (100%) physical fitness level in the quite good category, 0 students (0%) classified physical fitness level is less good, 0 students (0%) classified the level of physical fitness is poor. Besides, from the results of the study, the level of physical fitness of female students at SMA 1 Ngeemplak, Boyolali District was found to be in the quite good category, which was 15 students (100%).

TABLE 4. RESULTS FOR FEMALE PHYSICAL FITNESS TEST THE LOWLANDS

Interval	category	Frequency	Percentage
22-25	excellent	0	0
18-21	very good	0	0
14-17	quite good	14	93,4
10-13	less good	1	6,6
5-9	poor	0	0
Σ		15	100

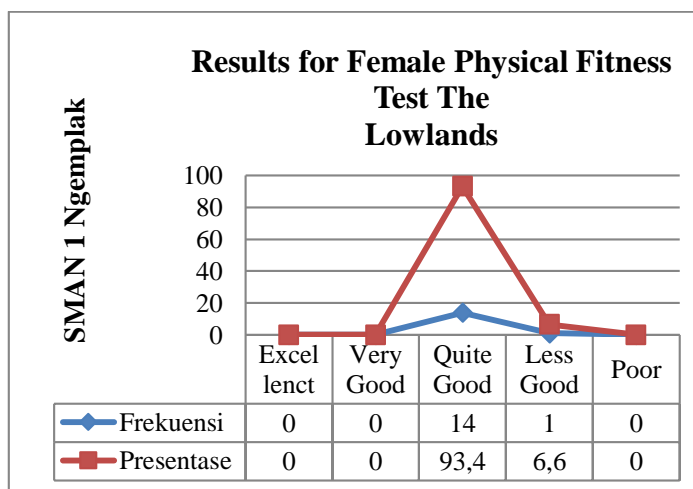


Fig 5. Results for female physical fitness test the lowlands

The result of the assessment is that 0 student (0%) is classified as the excellent physical fitness level (BS), 0 student (0%) is classified very good physical fitness level (B), 14 students (93.4%) physical fitness level is in the

category of quite good, 1 student (6.6%) physical fitness level is less good, 0 student (0%) is classified as poor physical fitness level. Besides, based on the results of the study, it was found that the physical fitness level of female students of Cepogo 1 Public High School in Boyolali District was mostly in the moderate category, which was 14 students 93.4%).

IV. CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results of the research and the results of the data analysis carried out the following conclusions can be obtained:

Among the two results of the above data, there is a difference in the value of the physical fitness test results of high school students in Boyolali Regency between the lowland areas and the highland areas in Boyolali Regency even though the difference in test results is not so significant

B. Suggestion

Based on the research that has been done and sees the results, the following matters can be suggested:

- With the existence of Indonesian physical fitness test norms for high school students aged 16-19 years can be a reference to measure the level of physical fitness later.
- With the existence of this study can be a picture of the school to pay more attention to the level of physical fitness of students
- Geographical position of the plateau has a more beneficial impact than the lowlands on the quality of physical fitness of high school students in Boyolali Regency due to many factors, including pollution, nutrition, and lifestyle

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Investigating the Mediating Role of Personal Psychological Resources in the Relationship between Sports Engagement and Academic Well-being

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Abstract— This study contends to investigate the mediating role of personal psychological resources in the relationship between sports engagement and academic wellbeing. A sample of 644 secondary student athletes who are actively involved in sports competition answered by a set of questionnaires which included Participation Motivation Questionnaire, Trait Hope Scale, Grit Scale, Resilience Scale-14, Student Athletes Motivation toward Sports and Academics Questionnaire, and Personal Optimism and Self-efficacy Optimism Scale. The results revealed that Personal Psychological Resources, positively associated the link between sports engagement and academic wellbeing. The results have a significant implications in the role of personal psychological resources in the sports engagement and academic wellbeing of athletes.

Keywords— *Personal Psychological Resources, Sports Engagement, Academic Wellbeing*

I. INTRODUCTION

Instructive formative specialists reliably perceive athletic interest as one of the basic operators in creating positive companion affiliation and higher confidence among youths [6]. Having high confidence and being socially acknowledged are key factors that add to positive sentiments related with school, which subsequently lead to better scholarly execution. While any advantages from games support is important, the scholastic advantages alone are generous enough to warrant the consideration of understudies, guardians, and instructive partners across the nation in accordance with endeavors to address the steady accomplishment hole and broad level of secondary school dropouts [4]. Most research discoveries show that understudies who partake in school-supported athletic groups regularly perform preferred in school over the individuals who are not engaged with sports [4]. Physical training and school sports are additionally seen as useful instructive fulfillment [1]. Discoveries from another investigation likewise uncovers that secondary school sports interest builds school goals, which thusly expands scholastic execution [6]. Research normally proposes that athletic cooperation in school-matured kids has numerous advantages, one of which incorporates a beneficial outcome on instruction.

Scholarly accomplishment and its indicators have been a significant point of concentrate for instructive analysts and policymakers for a long time. Analysts have tried to clarify why a few understudies accomplish at higher levels than others do, and what elements add to these distinctions. On the off chance that in certainty athletic cooperation positively affects the scholarly accomplishment of secondary students can be utilized to instruct positive propensities prompting expanded scholastic accomplishment, at that point it is basic to empower their athletic support and to sanction approaches that expand upon components that emphatically sway their scholastic execution in school.

Various examinations have detailed that racial and ethnic minority understudy interest in games improves their confidence, grades, test scores, and instructive maintenance (Erkut & Tracy, 2002; Marsh & Kleitman, 2003; Miller et al., 2005). Nonetheless, writing has risen that proposes sports cooperation may obstruct individual mental assets on understudies' instructive advance, particularly for the understudies who are as of now scholastically underestimated, in light of the fact that sports investment occupies them from their investigations. In spite of the fact that there are a few instructive advantages coming about because of investment in secondary school sports, understudies don't generally encounter the positive results that different populaces share on occupies them from their investigations [3]. This examination concentrated on recognizing pertinent variables that impact Personal mental assets' duty to interest in high school games and depicting the effect sports interest has on scholarly accomplishment. The specialist additionally wanted to investigate the components adding to secondary school understudies' scholarly achievement while taking an interest in school-supported sports.

The motivation behind this examination study was to explore the individual mental assets between games commitment, athletic interest and the scholarly prosperity among secondary school understudies openly and non-public schools in Lanao del Norte, Region X. A differed determination of extracurricular exercises and an effective

athletic program are frequently basic parts in the general accomplishment of a school. Notwithstanding, the talk of the writing uncovered that the accord in regards to the constructive outcome that athletic investment has on scholastic prosperity stays easily proven wrong. The objective of this examination is to decide whether a relationship exists between games commitment support in secondary school and academic wellbeing scholarly prosperity. The populace for this investigation will be 644 secondary school understudies out in the open and tuition based school zone of Lanao del Norte. If a positive relationship between participation in high school athletics and academic achievement does exist, then educational stakeholders should put effort into recruiting, motivating, and encouraging students in high school level to get involved in school-sponsored sports.

II. METHODE

This study was comprised of Six hundred Forty four (644) secondary student athletes from public and private schools in Lanao del Norte, Region X, Philippines, who are enrolled in the school year 2018-2019. The sample's age ranged from 13 to 23 years.

A standardized questionnaire was used to gather the necessary data for the study. It was utilized in gathering the respective profile of the respondents. Questionnaires were administered in the school setting under the supervision of the researcher, and anonymity of the data was ensured. Instructions given to the athletes included the presentation of the study's goal and the request to complete all the items of each questionnaire. To ensure better retrieval of the data of this study, the researchers personally distributed the questionnaire to the respondents. The filled out questionnaires were collected by the researchers and subjected to statistical analysis.

The Participation Motivation Questionnaire (PMQ) is composed of 30 items designed to measure student's reasons or motivations for participating in physical activity. A five-point scale ranging 1 (*not at all important*) to 5 (*very important*), respondents were asked to answer the stem "I participate in sport because...", indicating their motives for exercise. For this study, PMQ obtained a Cronbach's alpha of .969.

The Trait Hope Scale defines hope as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy), and (b) pathways (planning to meet goals)". This is a 12 item scale in which the four items measure the pathways thinking, four items measure the agency thinking, and four items are fillers. Respondents respond to each item using an 8-point scale ranging from 1 (definitely false) to (definitely true). Scores can range from 8 to 64, with higher scores representing higher hope levels. (Snyder, C.R., Harris, C., Anderson, J.R.,

Holleran, S.A., Iring, L.M., Sigmon, S.T., et al. 1991). The THS demonstrates moderately high reliability. In the current study, THS had a Cronbach's alpha of .837.

The Personal Optimism and Self-Efficacy Optimism Scale is a 9 items shortened version of Personal Optimism and Social Optimism— Extended (POSO-E; Schweizer and Koch 2001), with the Personal Optimism Scale consisting of 4 items and the Self-Efficacy Optimism Scale consisting of 5 items. This scale demonstrated adequate reliability in internal consistency and adequate concurrent and convergent validity. For this study, the POSO had a Cronbach's alpha of .803.

To measure resilience, The Resilience Scale 14 by Wagnild (2009) was used. It constitutes of 14 items on 7-point Likert scale. The scores in the scale ranges from 1= strongly disagree to 7= strongly agree. The RS-14 obtained a Cronbach's alpha of .807.

The Grit Scale (GS) is a set of measures designed to measure trait-level perseverance and passion for long-term goals. The Grit Scale comes in a 12-item form, all items are measured on a 5-point Likert scale ranging from 1 (not like me at all) to 5 (very much like me). GS had a Cronbach's alpha of .875.

The Student Athletes' Motivation toward Sports and Academics Questionnaire (SAMSAQ) consisted of 30 items created to measure academic and athletic motivation of college athletes. The questionnaire was designed using a six-point Likert-scale. Participants were asked to respond to each item based on their level of agreement with each statement ranging from 1 (very strongly disagree) to 6 (very strongly agree). The SAMSAQ obtained a Cronbach's alpha of .928.

All data were entered into and analyzed using SPSS 17.0. All records were inspected for missing data and outliers. Records with missing data and outliers were deleted from the analysis. Descriptive statistics (mean, standard deviation, Cronbach's alpha reliability coefficients, correlations) were computed and compared to previous research studies to establish the reliability and validity of the measures.

III. RESULT AND DISCUSSION

The means, standard deviations, and bivariate correlations between the variables of the study are shown in Table 1. Results of correlation analyses revealed that sports engagement as well as the academic well-being of students' athletes were positively associated with personal psychological resources- the self-efficacy, hope, resilience, and optimism.

Table 2 shows the total, direct, and indirect effect of sports engagement and academic wellbeing through PPRs. The findings of the study show that the PPRs significantly

mediated the link between of sports engagement and academic wellbeing.

The primary objective of this study was to determine if sports engagement increased one’s PPRs (i.e., self-efficacy, hope, resilience, and optimism), and in turn increased the academic wellbeing of student’ athlete. The results showed that higher sports engagement higher the academic wellbeing due to strengthening of PPRs.

TABLE I. RESULTS OF DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

	1	2	3	4	5
1. Sports Engagement					
2. Self-efficacy	** .294				
3. Hope	** .356	** .779			
4. Resilience	** .280	** .696	** .643		
5. Optimism	** .272	** .519	** .604	** .483	
6. Academic Wellbeing	** .473	** .577	** .562	** .520	.424**

TABLE II. RESULTS OF MEDIATION ANALYSIS

	1	2	3	4	5
1. Sports Engagement					
2. Self-efficacy	** .294				
3. Hope	** .356	** .779			
4. Resilience	** .280	** .696	** .643		
5. Optimism	** .272	** .519	** .604	** .483	
6. Academic Wellbeing	** .473	** .577	** .562	** .520	.424**

Correlation is significant at the 0.01 level (2-tailed)

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Fitness Level and Academic Performance among Senior High School Students of Iligan City

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Abstract—Education in the Philippines mainly focuses on academic achievement and increased educational accountability. Growing academic accountability standards resulting from the No Child Left Behind Act, have caused a reduction of time spent in physical education classes, to allow more time spent in academic classes. Hence, the purpose of this study is to re-examine the relationship between students' physical fitness level and their academic performance to the Senior High School students of forty-four (44) Barangays of Iligan City. The researcher used the descriptive-correlational research design and used a standardized Physical Fitness Tests with corresponding standardized score scale or norms for the evaluation of the respondents' Physical Fitness tests results. The respondents' academic performance was not affected by their demographic profile; age, sex, and family income, however their chosen strand affect their academic performance. Also, the academic performance of the respondents doesn't affect their health related-fitness level specifically cardiovascular fitness, muscular endurance, muscular strength, flexibility and body composition. Lastly, the skill related-fitness level specifically agility, agility, balance, power and speed doesn't affect their academic performance. However the skill related-fitness of the respondents in terms of reaction time and coordination affects their academic performance.

Keywords—academic performance, fitness level

I. INTRODUCTION

Schooling is an experience that most adolescents worldwide have in common. It is the most common means by which these adolescents be prepared for the future and enable to develop their academic performance in school. They can also get involved in a lot of extracurricular activities by joining sport teams, student council, and all of the other after school activities that are available to get involved in and be physically fit.

In the Philippines, adolescence swell in an unprecedented rate of acceleration and the challenge of making them an asset in the society should be addressed. With this, a new generation of increased academic accountability has taken hold in. Education in the country mainly focuses on academic achievement and increased educational accountability. Growing academic accountability standards resulting from the No Child Left Behind Act, have caused a reduction of time spent in physical education classes, to allow more time spent in academic classes [1]. As a consequence, students'

opportunities for physical activity have been reduced or eliminated from the daily school schedule. This is an alarming situation for young generations' fitness since as young people become more sedentary; their level of physical fitness also declines. The impact of a non-active lifestyle not only affects the physical domain of young people, but also the cognitive realm as well which most people fail to acknowledge.

A portion of the research over the last fifty years concerning the relationship between physical fitness and academic performance centers on the physiological changes during exercise, and how those changes aid memory and learning. All of the body's systems change dramatically when a person transitions from resting state to exercise. Increased blood flow, because of cardiorespiratory response to exercise, includes an increase of blood flow to the skin and active skeletal muscles. As this happens, oxygen extraction and pulmonary ventilation occurs instantaneously (U.S. Surgeon General). Short term and long-term effects of improved cardiorespiratory fitness may include a reduction of depression and anxiety, and an increase in self-esteem. These effects may lead to a positive relationship with academic performance. For young ones, play has been recognized as a valuable, even essential, component of learning. Based on [2] physical activity involvement exerts beneficial effects on the functioning of the cardio respiratory, vascular, metabolic, endocrine and immune system which is also basically needed to be physically fit. In addition, an information gathered in the country stated that sedentary lifestyle caused by too much time spent in using 21st century gadgets by adolescence have clearly shown to be associated with sedentary lifestyle that may lead to a poor academic performance. Young ones will then no longer be interested in the class and will tend to avoid school activities.

The focus of education in the Philippines nowadays is facing with challenges in students' health and academic competent. With this, this study was implemented to know the significant relationship between students' physical fitness level and academic performance for it is crucial to researchers, educators and policymakers to understand and acknowledge this significance. Hence, the purpose of this study is to re-examine the relationship between students' physical fitness level and their academic performance to the Senior High School students of forty-four (44) Barangays of Iligan City.

II. MATERIALS AND METHODS

The researcher used the descriptive-correlational research design to determine the relationship between two variables which are fitness level and academic performance among senior high school students of Iligan City where the research was conducted. The date of implementation of the study was on June 2018 to November 2018. The researcher chose to conduct the study in Iligan City National High School because it offers five (5) Senior high school programs and the only secondary school that caters and offers Sports track curriculum in the city.

In this study, the researchers used a standardized Physical Fitness Tests with corresponding standardized score scale or norms for the evaluation of the respondents' Physical Fitness tests results. Students' academic performance is the reflected average grades in their first and second quarter marked grades in form 138 as the whole 1st semester.

The target respondents of this study were the ABM, STEM, HUMSS, TVL and SPORT Track adolescent (between ages 16-25, World Health Organization) senior high school students of Iligan City.

The researchers randomly picked 20 students in their classes by the approval of their Advisers. There were 20 respondents each of the strands namely; ABM, HUMSS, STEM, SPORT TRACK, and TVL.

A standardized Physical Fitness Tests with corresponding standardized score scale or norms were used for the evaluation of the respondents' Physical Fitness results. The standardized Physical Fitness Test (PFT) by [3] in DepEd manual. The manual is composed of eleven (11) components with corresponding tests namely;

1. Tests for Health-related Fitness
 - 1.1 Body composition (BMI)
 - 1.2 Flexibility (Sit-and-Reach)
 - 1.3 Cardiovascular fitness (3-minute step test)
 - 1.4 Muscular fitness (Push-up)
 - 1.5 Muscular strength (Planking)
2. Tests for Skill-related Fitness
 - 2.1 Speed (40-m Sprint)
 - 2.2 Leg power (Standing long jump)
 - 2.3 Agility (Hexagon Agility Test)
 - 2.4 Reaction time (ruler Drop Test)
 - 2.5 Coordination (paper ball bounce Test)
 - 2.6 balance (one-leg balance test)

The following tests mentioned were performed by the respondents of this study. This instrument was used to evaluate physical fitness level of the respondents. The scoring procedure

on how to classify the physical fitness level of the respondents is found on appendix B-P.

The researcher sent a formal letter to the Iligan City National High School Principal, Mr. Rex Lao Razo through the P.E Department asking permission to conduct the study the Senior High School Sports Track, STEM, TVL, AMB and HUMSS students. Upon approval, the researcher set a schedule to the respondents on when to conduct a physical fitness test using the standardized physical fitness test with corresponding score scale to determine the physical fitness level of each respondent (Appendix B to L). When the PFT was done, the researchers asked the advisers of the respondents to gather their first semester average grades as basis for the academic performance of the respondents.

When the respondents' physical fitness tests results were available and the academic performance of the respondents were identified as reflected in the form 138, the researcher then uses SPSS to statistically work on the data and consulted a reliable statistician to statistically re-check the significant relationship of the two variables.

To analyze and describe the data obtained, the researchers made use of a computer program called Statistical Package for the Social Sciences (SPSS version 20). The data gathered were statistically treated using the Pearson Chi Square. Statistical procedure was used to analyse and interpret the data. The statistical formula and models that were used in the analysis are as follows:

1. Pearson Chi Square

It is use to determine the relationship between two quantitative variables, the Pearson Chi Square. The relationship between each of the two variables that is to be determined using this statistical tool.

A. Fitness level

B. Academic Performance

III. RESULTS AND DISCUSSION

The profile of the respondents in this study was consists of the following; age, gender, respondents' SHS strand, family income, and percentage of physical fitness in terms of skill related and health related components.

The respondents' age is presented in Table I, it shows the total number of respondents, frequency, and valid percentage distribution belonging to each age category.

TABLE I. FREQUENCY AND PERCENTAGE DISTRIBUTION OF RESPONDENTS' AGE

Age	Frequency	Percent
16.00	3	3.0
17.00	21	21.0

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18.00	65	65.0
19.00	9	9.0
20.00	1	1.0
23.00	1	1.0
Total	100	100.0

Table I presents the respondents' age that shows 65 out of 100 or 65% of the sampled senior high school students from the Iligan City National High School are 18 years old. According to the data gathered, ages 20 and 23 years old are the least age group found among the respondents garnering only 1% out of 100 % of the respondents. This indicates that most of the respondents were able to take their senior high school class on the preferred age starting at 16 years old.

Accordingly, more than half of the respondents are 18 years old and in Grade 12 class. Thus, the least age group of respondents ages 20 and 23 may have encounter problem causing them not to be in school at the early age. Even though there is a law that is enacted in the year 1988 "Republic Act No. 6655 An Act Establishing and Providing For A Free Public Secondary Education and For Other Purposes", most low income family can't afford to send them to school.

The respondents' gender is presented in Table II; it shows the gender distribution of the respondents, frequency, and percentage distribution belonging to each gender category.

TABLE II. FREQUENCY AND PERCENTAGE DISTRIBUTION OF RESPONDENTS' SEX

Sex	Frequency	Percent
Male	43	43.0
Female	57	57.0
Total	100	100.0

Table II clearly shows that 57 out 100 of the total number of respondents' sampled senior high school students from the Iligan City National High School are female and 43 out 100 sampled senior high school students are male. Maybe this happen because most strands that is offered in Iligan City National High School are most preferable by female students, thus some male students preferred to enrolled themselves to those courses that is more preferable by men.

The respondents' strand is presented in Table III that shows the total number of respondents according to strand, its frequency and percentage distribution belonging to each strand.

TABLE III. DISTRIBUTIONS OF THE RESPONDENTS ACCORDING TO THEIR STRANDS

Strand	Frequency	Percent
Sports	20	20.0
TVL	20	20.0
STEM	20	20.0
HUMSS	20	20.0
ABM	20	20.0
Total	100	100.0

Table III shows that the 100-target sample were divided equally for the five (5) strands offered in the Iligan City National High School, these are Sports Track, TVL, STEM, HUMSS, and ABM. Twenty samples from each strand. There are 7 males and 13 females for the ABM respondents', 8 males and 12 females for HUMSS respondents', 12 males and 8 females for STEM respondents. For the TVL respondents there's a male and consists of 19 females, Sport Track has 15 males and 5 female respondents.

TABLE IV. FAMILY MONTHLY INCOME

Family Income	Frequency	Percent
10,000 below	70	70.0
10,000 to 15,000	13	13.0
15,000 to 20,000	10	10.0
20,000 above	7	7.0
Total	100	100.0

Table IV shows the family income of the senior high school students from Iligan City National High School. As the table presented, 70 out of 100 or 70% of the students' family income only earns 10,000 below per month.

This is possible because most low income generating families preferred to enrol their children in a public school. The family income, high or low, can have its impact on student's achievement in all their learning years. Since they are in their early years, their family incomes can affect their education.

Some students from low income have difficulties to understand or learn as fast as others. Their vocabulary can be less and not that much as the other students from different background. Also, their way of learn and understand are different from others, because their parents may not help them at home or they have single parent.

In addition, there were only 7 % respondents who checked higher earning salary which is 20,000 and above. Thus, this indicates that most family of the senior high school students of Iligan City National high School are earning below the minimal monthly income which teachers and other stake holders must be aware of.

TABLE V. DISTRIBUTION OF RESPONDENTS' CARDIOVASCULAR FITNESS

Cardiovascular Fitness	Frequency	Percent
Very Poor	21	21.0
Poor	19	19.0
Below Average	20	20.0
Average	15	15.0
Above Average	12	12.0
Good	4	4.0
Excellent	9	9.0
Total	100	100.0

Table V shows that most of the sampled senior high school students' cardiovascular fitness are very poor, poor and below average which accumulates 60% or 60 out 100 sampled senior high school students and only 40% of the sampled students are average, above average, good and excellent.

Study showed that an estimated 7.5 million adolescents (34 %) and 8.5 million adults (14%) have poor fitness. Prevalence of poor fitness was higher in adult females (16%) than males (12 %). By this in can be clearly realized that females have a higher prevalence of having poor fitness than men. According to British Heart Foundation risk factors for cardiovascular disease are particular habits, behaviours, circumstances or conditions that increase a person's risk of developing cardiovascular disease, including lack of exercise, unhealthy eating, smoking, diabetes, age and family history.

Also, the students nowadays didn't really engage themselves on any physical activity because they prefer to spend their leisure time on social media, online games and other internet stuff.

TABLE VI. DISTRIBUTION OF RESPONDENTS' MUSCULAR ENDURANCE

Muscular Endurance	Frequency	Percent
Very Poor	40	40.0
Poor	37	37.0
Below Average	1	1.0
Average	16	16.0

Good	5	5.0
Excellent	1	1.0
Total	100	100.0

Table VI shows that most of the sampled senior high school students' muscular endurance are very poor and poor which accumulates 77% or 77 out 100 sampled senior high school students and only 22% of the sampled students are average, above average, good and excellent.

According to an article from Personal Touch Fitness muscular endurance is the ability of a muscle to repeatedly exert force against resistance. Performing multiple repetitions of an exercise is a form of muscular endurance, as is running or swimming. If your muscles have to contract in a similar pattern more than one time, you are using muscular endurance.

To have a better muscular endurance an individual should have a regular exercise such as weight training, thus it can be seen on the table that mostly of the senior high school students have poor muscular endurance maybe because they don't engage themselves to any kind of physical activities regularly.

TABLE VII. DISTRIBUTION OF RESPONDENTS' MUSCULAR STRENGTH

Muscular Strength	Frequency	Percent
Very Poor	6	6.0
Poor	8	8.0
Below Average	24	24.0
Average	60	60.0
Above Average	2	2.0
Total	100	100.0

Table VII shows that 60 out of 100 or 60% of the sampled senior high school students' muscular strength is average. Since most of the respondents ages 16-23, studies shows that another factor over which we have little control is age. Also people of all ages can increase their muscle size and strength as a result of a safe and effective strength training program. However, the rate of strength and muscle gain appears to be greater from age 10-20, the years of rapid growth and development. After reaching normal physical maturity, muscular improvements usually don't come as quickly.

TABLE VIII. DISTRIBUTION OF RESPONDENTS' FLEXIBILITY

Flexibility	Frequency	Percent
Poor	1	1.0
Below Average	12	12.0
Average	9	9.0
Above	9	9.0

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	Average		
	Good	3	3.0
	Excellent	66	66.0
	Total	100	100.0

Table VIII shows that 66 out of 100 or 66% of the sampled senior high school students' flexibility is excellent. Since most of the respondents are females it can be easily realized why the result of the respondents' flexibility test is excellent because female are more flexible than male.

There are 3 reasons why female is more flexible than male because of genetics, sports played and psychological.

Generally, men have larger frames and higher testosterone levels than women. In studies, higher testosterone levels are associated with muscle gain and weight loss. This means that men will generally be leaner and stronger than women. The larger frame of men means that they have relatively bigger hearts and lungs which help a lot with cardiovascular exercise. Estrogen causes women's bodies to hold more fat than men.

TABLE IX. DISTRIBUTION OF RESPONDENTS' BODY COMPOSITION

Body Composition	Frequency	Percent
Obese	2	2.0
Severely Obese	4	4.0
Underweight	25	25.0
Healthy Weight	67	67.0
Overweight	2	2.0
Total	100	100.0

Table IX shows that 67 out of 100 or 67% of the sampled senior high school students' body composition is healthy; however there are 25 students who are underweight which might be high for a given sample. Body composition refers to the amount of lean body mass (muscle) and fat mass in the body. Below is a chart indicating the normal percentage of body weight from specific tissues. Many factors influence body composition, including gender, age, diet, activity level, and genes.

Percentage of Physical Fitness Sport: Skill Related Components

TABLE X. DISTRIBUTION OF RESPONDENTS' AGILITY

Agility	Frequency	Percent
Poor	9	9.0
Below Average	32	32.0
Average	47	47.0
Above	8	8.0

	Average		
	Good	1	1.0
	Excellent	3	3.0
	Total	100	100.0

Table X shows that 47 out of 100 or 47% of the sampled senior high students' agility is average, however there were 41 students who are below average and poor in terms of their agility which might be a significant figure. Agility is an extremely important skill for field and court sport athletes. The ability to change direction quickly and safely in response to stimuli is crucial for high level performance and limiting injury potential.

Thus, sports track students must have above average level of agility since this group of students will always be exposed in different forms of activities designed in their curriculum. Agility is an extremely important skill for field and court sport athletes. 41 students who are below average and poor in terms of their agility which might be a significant.

TABLE XI. DISTRIBUTION OF RESPONDENTS' BALANCE

Balance	Frequency	Percent
Very Poor	3	3.0
Poor	49	49.0
Below Average	21	21.0
Average	12	12.0
Above Average	3	3.0
Good	2	2.0
Excellent	10	10.0
Total	100	100.0

Table XI shows that 49 out of 100 or 49% of the sampled senior high students' balance is poor. Only 27 out of 100 sampled students has an average, above average, good and excellent in terms of their balance. 73 out of 100 are below average, poor and very poor in their balancing.

In biomechanics, balance is an ability to maintain the line of gravity (vertical line from centre of mass) of a body within the base of support with minimal postural sway. Sway is the horizontal movement of the centre of gravity even when a person is standing still.

A certain amount of sway is essential and inevitable due to small perturbations within the body (e.g., breathing, shifting body weight from one foot to the other or from forefoot to rearfoot) or from external triggers (e.g., visual distortions, floor translations). An increase in sway is not necessarily an indicator of dysfunctional balance so much as it is an indicator of decreased sensorimotor control.

TABLE XII. DISTRIBUTION OF RESPONDENTS' POWER

Power	Frequency	Percent

Very Poor	1	1.0
Poor	27	27.0
Below Average	40	40.0
Average	17	17.0
Above Average	4	4.0
Good	8	8.0
Excellent	3	3.0
Total	100	100.0

Table XII shows that 40 out of 100 or 40% of the sampled senior high students' power is below average. Only 32 out of 100 sampled students has an average, above average, good and excellent in terms of their power. 68 out of 100 are below average, poor and very poor power. Characterized by speed and strength, power almost always determines the kind of motion you possess during any sports or activity. Highly definitive of motor controls, coordination serves as the contributing factor for establishing the movement skills.

TABLE XIII. DISTRIBUTION OF RESPONDENTS' REACTION TIME

Reaction Time	Frequency	Percent
Poor	1	1.0
Below Average	11	11.0
Average	18	18.0
Above Average	43	43.0
Good	7	7.0
Excellent	20	20.0
Total	100	100.0

Table XIII shows that 43 out of 100 or 43% of the sampled senior high students' reaction time is above average. 88 out of 100 sampled students has an average, above average, good and excellent in terms of their reaction time. Only 12 out of 100 has a below average and poor reaction time. Simple reaction time (SRT) tests, where subjects simply respond as fast as possible to the occurrence of a stimulus, are among the most basic measures of processing speed.

SRTs were first studied by Francis Galton in the late 19th century. More recent studies have shown significant correlations between SRT latencies of processing speed and measures of fluid intelligence. Indeed, Jensen argued that SRT latencies provide one of the most objective metrics for comparing processing speed, and hence fluid intelligence, across different populations.

TABLE XIV. DISTRIBUTION OF RESPONDENTS' COORDINATION

Coordination	Frequency	Percent
Very Poor	4	4.0
Poor	85	85.0
Below Average	1	1.0

Average	6	6.0
Good	1	1.0
Excellent	3	3.0
Total	100	100.0

Table XIV shows that 85 out of 100 or 85% of the sampled senior high students' coordination is poor. Only 10 out of 100 sampled students have an average, above average, good and excellent in terms of their coordination skills.

A study was conducted in 1976 to explore factors that affected the coordination of programs and services between community colleges and area vocational technical schools in Pennsylvania. Further, an examination of the opinions of administrators from both of these institutional settings was conducted in order to give additional insight to this area. Varying levels and areas of coordination were identified among the community colleges and area vocational technical schools surveyed. Differences of opinion among administrators were identified to possible areas of coordination as well as factors that could affect coordination.

TABLE XV. DISTRIBUTION OF RESPONDENTS' SPEED

Speed	Frequency	Percent
Very Poor	2	2.0
Poor	65	65.0
Below Average	6	6.0
Average	2	2.0
Above Average	5	5.0
Excellent	20	20.0
Total	100	100.0

Table XV shows that 65 out of 100 or 65% of the sampled senior high students' speed is poor. Only 27 out of 100 sampled students has an average, above average, good and excellent in terms of their speed. For many decades it was believed that the speed of an athlete was all about genetics. Genetics clearly play a part in an athlete excelling in speed.

However, through research and experience, it is now known that genetics is considered to be only one factor in determining playing speed potential. Epstein looked at the "sports gene" in exceptional athletes. He traveled worldwide looking at nature versus nurture in extraordinary athletes. He concluded that both genetics and training are equally essential factors of exceptional athletic success.

Sampled Senior High School Students' Significant Relationship between the Dependent and Independent Variables

TABLE XVI. RESULTS OF TEST STATISTICS ON THE SIGNIFICANT RELATIONSHIP BETWEEN THE DEPENDENT VARIABLE, ACADEMIC PERFORMANCE AND INDEPENDENT VARIABLES, DEMOGRAPHIC PROFILE

Dependent Variable	Independent Variables	p-value	Remark

Academic Performance	Age	0.290	No Relationship	Significant
	Sex	0.068	No Relationship	Significant
	Strands	.000	Highly Significant	
	Family Monthly Income	0.059	No Relationship	Significant

*Significant at 0.05 level

H_0 : There is no significant relationship between the Dependent Variable Academic Performance and independent Variable, Students' Profile.

Table XVI shows that there is no significant relationship between the dependent variable, academic performance and the independent variables, Age, Sex and Family Income. On the other hand, there is a significant relationship between the independent variable academic performance and the dependent variable, strands.

During the data gathering, we have observed most of students under the strand of STEM performed well than those who are in the HUMSS, ABM, TVL and Sport Track. Using the sufficient evidence above we can say your academic performance depends on which strands you belong.

TABLE XVII. RESULTS OF TEST STATISTICS ON THE SIGNIFICANT RELATIONSHIP BETWEEN THE DEPENDENT VARIABLE, ACADEMIC PERFORMANCE AND INDEPENDENT VARIABLES, PHYSICAL FITNESS: HEALTH RELATED VARIABLES

Dependent Variable	Independent Variables	p-value	Remark
Academic Performance	Cardiovascular Fitness	0.948	No Relationship
	Muscular Endurance	0.557	No Relationship
	Muscular Strength	0.070	No Relationship
	Flexibility	0.758	No Relationship
	Body Composition	0.910	No Relationship

*Significant at 0.05 level

H_0 : There is no significant relationship between the Dependent Variable Academic Performance and independent Variables, Physical Fitness Sports: HealthRelated.

Table XVII shows that there is no significant relationship between the dependent variable, academic performance and the independent variables, Cardiovascular Fitness, Muscular Endurance, Muscular Strength, Flexibility and Body Composition.

According to the University of Texas at Austin, University Health Service, person's health might affect the person academic performance. However, base of the data gathered from the senior high school students of Iligan City National Highschool, your health will not determine if you are good academically or not. Also, we have seen it during the gathering of the average for the 1st and 2nd quarter of the semester.

Also, research over the last fifty years has discovered little to no relationship between physical performance and academic performance, or the data has been based on shallow evidence.

TABLE XVIII. RESULTS OF TEST STATISTICS ON THE SIGNIFICANT RELATIONSHIP BETWEEN THE DEPENDENT VARIABLE, ACADEMIC PERFORMANCE AND INDEPENDENT VARIABLES, PHYSICAL FITNESS: SKILL RELATED COMPONENTS

Dependent Variable	Independent Variables	p-value	Remark
Academic Performance	Agility	.691	No Relationship
	Balance	.157	No Relationship
	Power	.323	No Relationship
	Reaction Time	.007	Significant
	Coordination	.000	Highly Significant
	Speed	0.685	No Relationship

*Significant at 0.05 level

H_0 : There is no significant relationship between the Dependent Variable Academic Performance and independent Variables, Physical Fitness Sports: Skill related component.

Table XVIII shows that there is no significant relationship between the dependent variable, academic performance and the independent variables, Agility, Balance, Power and Speed. On the other hand, the academic performance of the students has a relation with the independent variable Reaction Time and Coordination.

Reaction Time is the amount of time it takes to respond to a stimulus. According to Dr. V. Christopher Amalraj Vallabadosh, reaction time of male has a significant difference with the reaction time of female, but it has a significant relationship to their academic performance.

Also, according [4] they concluded that coordination has a significant relationship with the academic achievement of the student. The better your coordination is the higher might be your performance is, which satisfy the data gathered.

During the experiment the research observed that students with high coordination and reaction time have higher grades compared to those with low coordination and reaction.

IV. CONCLUSION

After the data gathering, the researchers concluded that Sport Track students have higher Physical Fitness Level compare to other strands. Despite of being the highest in the Physical Fitness Level, they are the lowest in academic performance. The researcher observed that instead of balancing their academic performance, they just prioritize first the tournament than their academic activities. On the other hand, STEM Strand has higher academic performance compared to other strands.

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The Development of Learning Achievement on Refusal Skills in Health Education Subject of Computer Assisted Instruction for Matthayom II Students in Health Education Course Wathuaichorakhe Witthayakom School

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Abstract— The purposes of this research were 1) To build and find the efficiency of computer-assisted instruction for students of Mathayomsuksa 2 students, 2) To compare learning achievement for students of Mathayom 2 before and after class Using computer assisted instruction, 3) To study the satisfaction of Mathayomsuksa 2 students toward computer assisted instruction. The samples were 41 students in Mathayomsuksa 2 at Wathuaichorakhe Witthayakom School, Muang District, Nakhon Pathom in Spring Semester, Academic Year 2017. This research was a pre-test design, one-group pretest-posttest design. The instruments used for this research were 1) Computer Assisted Instruction (CAI) on Refusal skills. In Health education subject for Matthayom II Students. (2) Achievement measure 10 items on Refusal skills. In Health education subject for Matthayom II Students. This measure 6 levels of cognitive According to Bloom's theory (Knowledge, Comprehend, Application, Analysis, Synthesis, Evaluation). 3) the questionnaire for studying the students' satisfaction.

Keywords— *Innovation Computer Assisted Instruction (CAI), Achievement, Refusal skills*

I. BACKGROUND AND RATIONALE

Sports are the activity of physical education cause good health and joyful like his Majesty King Bhumibol Adulyadej said "Sports are important tool of education because its discipline make patient brave and strong children" Boxing is one of the physical education that popular at this time. Boxing affect growth and development of player. Include boxing is funny sport and everyone can play everywhere. And boxing is subject of The Basic Education Core Curriculum B.E. 2551 in health and physical education. Learning and teaching effectiveness focus on the students learning objectives set by the instructor. Required materials and reinforced by an intermediary organization concept learning accordance with the learning process. The researcher taught Physical Education

2 course in Amateur boxing in second term, Sriwichaiwithaya School. Most importantly, most students practicing boxing hook incorrectly, not targeted and not parallel to the ground. The result hook is not heavy and incorrect. The researcher aims to improve the learning achievement in boxing by organizing learning activities using innovation focus on process skills, practice, fun, cognition. It is a tool to develop the learning of mathayomsuksa 1 (K-7) student, Sriwichaiwithaya School Nakhon Pathom. It is useful for teachers to study ways to develop and improve their teaching and the learning process of the students to be more effective.

II. THE PURPOSE OF THIS RESEARCH

The purpose of this research were to build and find the efficiency of computer-assisted instruction. Refusal Skills For students of Mathayom Suksa 2, to compare learning achievement Refusal Skills in Health Education For students of Mathayom 2 before and after class. Using computer assisted instruction, and to study the satisfaction of Mathayomsuksa 2 students toward computer assisted instruction.

III. HYPOTHESIS

The hypothesis of this research are:

1. Computer Assisted Instruction Lesson Refusal Skills for students Mathayomsuksa 2 performance is 80/80.
2. Achievement Refusal Skills for students Mathayomsuksa 2 Using Computer Assisted Instruction. After learning more than before.
3. Satisfaction of Mathayomsuksa 2 Students toward Computer Assisted Instruction Very high.

IV. RESULT

Research findings were as follows: (1) The efficiency of CAI on refusal skills in Health education subject for Matthayom II Students was (81.5/85.1) which was higher than the standard 80/80 criteria. (2) The findings showed that Achievement measure was better after using CAI ($p \leq .05$). (3) The students' satisfaction toward computer assisted instruction was at a high level ($\bar{x} = 4.22$, S.D. = 0.26).

A. The Statistical Tools Used in this Research were

1. Average
2. Standard Deviation
3. Reliability
4. Objectivity and Dependent Sample T-Test

B. The Analysis of Data

TABLE I. RESULTS COMPARISON OF THE PRE-TEST AND POST-TEST ACHIEVEMENT TESTS USING COMPUTER ASSISTED INSTRUCTION ON REFUSAL SKILLS

Table Head	N	Score	\bar{X}	S.D	T.test	Sig.
(Pre-test)	41	10	5.63	1.26	12.9993	0.000
(Post-test)	41	10	8.51	0.84		

The table shows the students' achievement in Health Education ,refusalskills.after learning with the Computer Assisted Instruction was 8.51 and standard deviation (S.D.)was .84 and pretest was 5.63 and standard deviation (S.D.) was 1.26 The students' achievements after learning with the Computer Assisted Instructionwere significantly higher at the 0.05 level.

TABLE II. TO STUDY STUDENTS' SATISFACTION USING COMPUTER ASSISTED INSTRUCTION

No	List	\bar{X}	S.D	Mean
1.	Characteristics of Computer Assisted Instruction			
1.1	Easy to read characters	4.20	0.87	Excellent
1.2	Attractive style	4.54	0.67	Excellent
1.3	Have appropriate presentation techniques.	4.37	0.73	Excellent
1.4	Beautiful illustrations Fit for content	4.37	0.70	Excellent
1.5	The length of the lesson is appropriate.	4.51	0.68	Excellent
1.6	Helps to improve	4.56	0.59	Excellent

No	List	\bar{X}	S.D	Mean
	the atmosphere in the classroom.			
2.	Content			
2.1	Description of each unit clearly.	4.14	0.77	Excellent
2.2	Content ranking is appropriate.	4.59	0.63	Excellent
2.3	The difficulty of the content is appropriate.	3.88	0.78	Excellent
2.4	Content content is appropriate to content.	3.49	0.78	Excellent
2.6	The test is appropriate for content.	4.51	0.60	Excellent
2.6	The content can be used in lessons.	4.05	0.74	Excellent
3	Learning Activities			
3.1	Learning activities allow learners to interact with the lessons.	3.37	0.80	Excellent
3.2	Learning activities make fun, interesting and enjoyable. Not tired of learning	4.54	0.67	Excellent
Total		4.22	0.26	Excellent

From the table, the average student satisfaction with the computer assisted instruction on refusal skills. At the high level ($\bar{x} = 4.22$, S.D. = 0.26), the most satisfactory aspect was the aspect of computer assisted instruction. The total mean ($\bar{x} = 4.43$, S.D. = 0.71).

V. CONCLUSION

1. Achievement after learning with computer-assisted instruction. There were statistically significant differences at the 0.05 level.
2. The Mathayomsuksa 2 students' Satisfaction Using Computer Assisted Instruction was at highest level

VI. DISCUSSION

In this study, the comparison of learning achievement of computer-assisted instructionMathayomsuksa 2 students. The hypothesis of the research is as follows.

The students' achievements in after learning with the computer-assisted instructionhigher than before learning.

The results of the research were as follows the students' achievements after learning with the computer-assisted instruction were significantly higher at the 0.05 level. The development of computer-assisted instruction has enabled the students to achieve higher academic achievement in Health Education. Because computer assisted instruction on refusal skills Look at the promotion of thinking. Consider the solution. Use the correct refusal skills. Content in Computer Lesson Content is organized from simple to hard to find. To help students have the encouragement to learn. Have a clear understanding. Suitable for ages of learners. And students can access and learn by themselves. This may be because the content in the computer lessons on refusal skills It is relevant and close to the students.

The results of student inquiry on learning activities. Using computer assisted instruction on refusal skills. There are 3 aspects of the model: Computer Assisted Instruction, Content and Learning Activities.

The Mathayomsuksa 2 students' satisfaction from class using Computer Assisted Instruction was at highest level. It helps the students do not get tired of training skills. It also

creates an interesting learning environment. As a result, students are more interested in the practice. It also makes student achievement better as well. How to manage this learning style Make yourself happy. And the learning itself. The teacher is responsible for counseling and guidance. Make the learner the center of learning.

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The Effectiveness of Teaching Games for Understanding to Promote Enjoyment in Teaching Games of Physical Education Lesson

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Abstract— Physical Education (PE) is one of the compulsory subject in primary and secondary schools in Malaysia. Primary goal of physical education is to develop students in the aspects of cognitive, psychomotor and affective. Teaching and learning of PE should provide more opportunities for all students to improve the efficiency of motor skills, movement and maintaining physical fitness. Eighty students from form Vocational College in Setapak, Kuala and one PE teacher agreed to participate in this study. They were divided into two groups in order to compare two instructional approaches. The experimental group (A), 42 students, experienced Teaching Games for Understanding (TGfU), while the control group (B), 38 students, experienced a technical-traditional approach. The study design was a quasi non-equivalent group pre-test and post test design. A pre- and post-test were performed on each group to assess the influence of the methodology used on student's enjoyment in PE. Ancova analysis would be conducted to determine the effectiveness of teaching method toward student enjoyment in PE. Results revealed that group A showed greater enjoyment in PE than group B. Significant differences were found in enjoyment

Keywords— *Teaching Game for Understanding, enjoyment, Physical Education, teaching method, traditional method.*

I. INTRODUCTION

Physical Education (PE) is one of the compulsory subject in primary and secondary schools in Malaysia. Primary goal of physical education is to develop students in the aspects of cognitive, psychomotor and affective [15]. The functions of PE also is to teach student with all the skills and knowledge for them to practice healthy life style in their daily life. Coulter and Ni Chroinin [9], indicate that if PE does not focus on students's learning, it will be difficult to generate understanding, learning and students's satisfaction. Beside that, the failure to attract students toward PE may affect the goals of PE which is to develop physical fitness, skill of movement and sports, and application of health and safety knowledge as a healthy life style. Teaching and learning of PE should provide more opportunities for all

students to improve the efficiency of motor skills, movement and maintaining physical fitness. One of the component in PE syllabus is games and sports. 65 percent of time spent in PE is allocated to games and sports [40]. In Malaysia, 75 percent of PE syllabus in secondary school is about skills which is include gymnastics, rhythm movement, games, and athletics while 25 percent for fitness component. In physical education, students should be exposed to basic skills related to games and sports that enable them to apply in games and sports activities. Therefore, skills is a most important in PE which is need more attention by teachers and students.

A. Problem Statement

Studies revealed that there was decrease of students involvement in PE class especially in the game and sport components due to lack of enjoyment in the lessons [7]. Enjoyment ini teaching and learning process is a important reason for students to involved in PE lesson. If the teacher can't provide a fun learning, the students may not interested in participating PE activities. A lack of fun is one of the critical reasons why the students stop participating in physical activity [11]. Previous studies [11] have demonstrated that enjoyment is a key factor underlying exercise motivation and positive participation in both physical activity and PE. Studies also suggested that the more students enjoy PE, the more they tend to participate in physical activity on a daily basis [43] and students attitude toward PE are likely to be linked with their enjoyment in PE classes [35]. Therefore, to achieve the goals of PE it is very important to create enjoyment in the teaching and learning in PE.

Enjoyment is a positive affect that reflects generalized feelings such as pleasure, liking, and fun [32]. While, Foster [13] founded that enjoyment increased after games among children. This showed that games is a important component to attracts enjoyment in teaching and learning PE. Teachers need to find the best teaching approach to teach

games and sports in PE to ensure the involvement of students in PE at a high level. Carroll and Loumidis [6] reported that girls' lack of enjoyment and engagement in PE and PA could be related to the PE curriculum which focuses on traditional team sports. Studies that have been conducted in Malaysia by Rengasamy [29] and Wee [38], debated about curriculum and how PE should be taught in Malaysia. While, Wee [38], stated new intervention of teaching and learning in PE is needed to make PE is interesting.

Teaching method is important to increase student's interest and encouraging them to be involved in PE activities [18]. However, teaching games in schools has emphasized the traditional approaches [24] which is more focus on teaching specific skills and techniques, and highly structured lessons involving warm-up, skills practices and final game. Wright, Li, and Ding [44] stated that researchers have emphasizes the importance of rethinking and reorganizing the of delivering instruction in PE. The suitable instructional model and pedagogical approaches should be used by PE teachers in providing effective teaching games in PE. Based on the previous studies, the teaching method in PE are related to make PE is more interesting and enjoyable. PE teaching and learning requires an effective pedagogy in order to enable students stay motivate, enjoy, focus, and active through teaching and learning process especially in teaching sports and games. Therefore, it is imperative that teachers should provide games and sports activities that meet the needs of students in order to enhance the participation and enjoyment in PE.

Limited pedagogical practices combined with limited understanding of the concept of enjoyment by educators [20] may be influenced of enjoyment in PE class. Garn and Cothran has suggested that teachers need to use different methods to promote enjoyment in PE by creating a task-involving climate, student-teacher relationship and social opportunities. One pedagogical model should be consider by PE teachers is Teaching Games for Understanding (TGfU). The main objective of TGfU is to promote learning in sport. There are a few studies showed this pedagogical model has been increase students enjoyment in PE. Therefore, this study was conducted to examine the effectiveness of Teaching Game for Understanding (TGFU) to promote student enjoyment in PE class among student form 4 at Vocational College, Setapak, Kuala Lumpur.

B. Literature Review

Enjoyment in Physical Education

Enjoyment was defined as an intrinsic and affective factor linked with motivation to engage in PA and PE [17]. Enjoyment is an intrinsic element associated with exercise motivation to engage in PE [17]. Enjoyment is very important in guiding students motivation in PE [28]. Previous studies have revealed enjoyment as a significant factor underlying exercise motivation for students to maintain their positive engagement in both PA and PE [34]. Students who enjoy their

PE classes will most probably to adopt Physical activity as a life style and appreciate health and fitness benefits [5]. There are two factors that could affect enjoyment which is intrinsic, extrinsic, achievement and non achievement.

Physical Education is one of the subject which emphasize the learning outcomes in psychomotor, cognitive, and affective. This subject is categorized as the main subject and allocated in the students time table in the school. The PE subject is very important in producing a balanced student in various aspects such as physical, emotional, spiritual, and intellectual. This concept involves the development of well rounded students. Therefore, PE should provides effective learning and teaching process to promote interest and motivation toward this subject. The students should experiences enjoyable during activities in PE to promote positive attitudes [35].

Enjoyment in Physical Education plays an important roles in teaching and learning process. Enjoyment in Physical Education also will positively influence health and fitness through participating in the teaching and learning process. Hence, physical education teachers need to play a significant role in influencing the involvement of students in the classroom by diversifying teaching methods. The diversity of teaching methods will enhance the students' enjoyment and thereby avoid the declining of involvement in the physical education class. Teachers are required to engage students in quality learning opportunities to develop learning outcomes and make the experience enjoyable to the students to be physically active.

Teaching Game for Understanding (TGfU)

The TGfU approach developed by Bunker and Thorpe [3]. The approach places a different focus on the teaching of games to traditional, technical approaches to teaching. TGfU is a model that fits to student centred approach that puts the needs and abilities of the students first, and in doing students enjoyment and participation in Physical Education lesson. The approach also providing students with the skills they need to move confidently in a wide range of physical activities. TGfU places the student in a game situation where tactics, decision-making, problem solving and skill is developed at the same time. TGfU provides students with a more substantive base and clearer frame of reference for learning games. The learning process that involves students will be more meaningful. This process gives students the opportunity to make a decision and solve the problem. This approach suggests a game practice which is different to traditional games lesson formats which focus on skill practices.

Butler, Oslin, Mitchell, and Griffin [4], identified six basics of TGfU concepts; teach games through games, break games into simplest format then increase complexity, students are intelligent performer in games, every students is important and is involved, students need to know the subjects matter, and need to match students skill and challenge. TGfU approach a different teaching games rather than teaching sport specific skills (football, badminton, netball), students

gains skill and knowledge to apply the different sport skills by playing a variety of games associated with four game categories which are target games, net/wall games, striking/fielding games, and territory games. These categories represent actual games and activities that are similar in structure. By exposing the students with the fundamental skills, primary rules, and tactical problems associated with each category, they will become more familiar in actual games. This approach will increase the students' understanding and their ability in the games to enhance the enjoyment and involvement in the lesson and teaching activities.

TGfU is a student centered approach where the teacher acts as a facilitator and the students make their own adaptations in order to maximize the level of challenge and enjoyment while performing the activities. When using TGfU, the development of any game follows the model presented in Figure 1. The first phase of the model requires students to understand the form of the games before they can recognize the problem to be solved. The second phase is game appreciation. In this stage time should be given for students to see what the game is all about. Gradually, students will develop an understanding of the main rules, skills that shape the game. Problem solving phase is a critical approach. The students are introduced to tactics through gradual introduction of movement principles, based on simple ideas and time. Students show a much greater understanding of when and how to perform a skill with the increase of game appreciation. Thus, in the decision-making phase, students need to make an appropriate decision in executing skills.

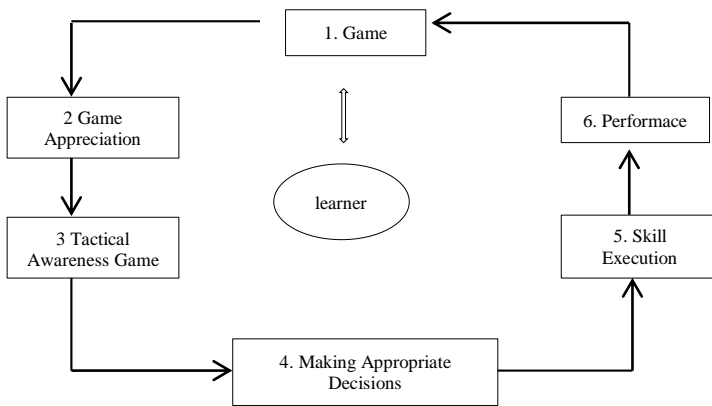


Figure 1. TGfU Model (Adapted from Werner [40])

The model also emphasizes skill execution and game performance, but only after the students recognize a need for a particular kind of skill. Skill execution is used to describe the actual production of the required movements. This will happen when the students are ready for these skills within the context of a game, technical instruction is given, but this is always at the performance level [40]. The last phase is performance. This phase is the observed outcome of the previous process. The performance is measured based on the appropriateness of the response and efficiency of the technique.

Mckeen, Webb, and Pearson [22] states TGfU is aimed at encouraging children to become more tactically aware and to make better decisions during the game and also encourages children to begin thinking strategically about game concepts whilst developing skills within a realistic context and most importantly, having fun. The impact of this approach will increase the enjoyment of playing the games [37]. According to Thomas [37], the TGfU approach was found to encourage a holistic approach to the teaching of games, promote enjoyment for participants, promote player centered learning, cater for varying abilities, and foster efficiency in aspects of implementation.

TGfU has been shown to result in improved learning outcomes for students. Games are a significant component of the physical education curriculum [40]. Key outcomes of successful physical education teaching and learning process are students that have the ability to make successful decisions on the field and have an awareness of both technical and tactical aspects of the game [21]. Previous research revealed that students who are competent in performed skills are more likely to enjoy sports and activities [1]. Enjoyment and active participation in physical education lessons through playing games will attract students to participate in physical education class. Australian Sport Commission [1] reported that children who do not master the FMS are more likely to drop out of physical activity later in life. Therefore it is important that PE teachers used the TGfU approach to attract students to master the skills in the game and thus ensure active participation in PE classes.

Light [19] reported TGfU pedagogical approach increase in enjoyment, understanding and cognitive engagement in the games among students. While Mckeen, K., Webb, P. I. and Pearson, P. J. also revealed that the level of enjoyment was greater in the lesson that followed TGfU model than their level of enjoyment in the technique based lesson. The participants to be more enthusiastic, and the lessons appeared to be more fun and enjoyable in TGfU than technique. Most of the previous research reported that TGfU pedagogical approach increase the level of participation in physical activity within the context of a PE class [30]; [16]. The enhancement in participating of physical activity during Physical Education level showed that students are interested and enjoy the activities in the Physical Education class.

II. METHODOLOGY

A. Research Methodology

The study employed a quasi non-equivalent group pre-test and post test design. This design consists of two groups of respondents in which one group acts as the treatment group and the other as the control group. 80 form 4 students from Setapak Vocational College were selected as respondents in this study. Two physical education classes were randomly selected with 80 students as a sample of study. Random sampling was applied to assign experimental group and control

group. Both experimental group (N=42) and control group (N=38) went through physical education syllabus of form 4 set by Ministry of Education Malaysia. The experimental group underwent the passing and receiving skills in field hockey skills with TGfU method for 4 weeks while the control group went through the same skills using traditional approach for 4 weeks. A Physical Education teacher who participated in the study were male and had over 5 years of teaching experience in Physical Education subject. In this study physical education teacher taught both groups at a separate time.

A pre- and post-test were performed on each group to assess the influence of the teaching approach used on student's enjoyment in Physical Education class by using Physical Activity Enjoyment Questionnaire [25]. Physical Activity Enjoyment Scale (PE version) as a instrument to measure enjoyment in PE consist of 12-items rated on a five-point Likert Sscale ranging from 1 ('dislike a lot') to 5 ('enjoy a lot'). The validity of the questionnaire and the measure of factors influencing enjoyment of PE were tested using confirmatory factor analysis. Structural equation modelling (SEM) was also performed to test the relationships among the measures of enjoyment of PE [25]. While the internal consistency of the questionnaire reported a Cronbach's alpha of 0.87.

In this study, The Physical Activity Enjoyment Scale (PE version) was translated using back translation. The instrument have been translate to Malay language and translate back to English language to make sure the construct and item are valid. The instrument has been refered to 4 expertise (2 expert in language, 2 expert in sport psychology) to examine the content validity. The formula proposed by Sidek Noah and Jamaludin Ahmad [33] is used to determine the content validity. Findings from expert showed the content validity is high ($r = .81$ and $r = .87$) for both language and content. The pilot study have been conducted to examine the realilby of the questionnaire. 60 students form 4 from SMK Danau Kota, Setapak were selected randomly for pilot test. The Cronbach Alpha coefficient is used to determine the reliability of questionnaire. The results of the analysis showed that reliability coefficient was $r = .89$ greater than .70

B. Instructional Intervention

Both groups received passing and receiving skills in field hockey. The main objective of the intervention was to ensure students should be able to pass and receive the ball in field hockey game. The structural design of TGfU group followed the sturcture [26]. A game was modified to promote students' participation and interaction, teacher and students worked on tactical elements, and selecting the technical elements necessary to perform the tasks. Priority was given to understanding tactical aspects, the game itself, reflection on errors and acquired learning. Responsibility during the learning and teaching process was high, but there were no

technical elements that limited practice. The relationships between the students were of great importance, showing that enjoyment outweighed performance. The studets are allowed to modified the rules in the real game situations and contexts. A few elements are involved throughout the teaching and learning process such as decision making, problem solving, modifying rules by the students. At the end of lesson student will conducted the cooling down session.

A formative assessment process was essential to stimulating student's capacity. Each lesson was completed in 40 minutes A control group followed the traditional method that is most widely used in physical education class. It is based on the development of technical skills and teacher-centred decisions [24]. Each lesson includes an initial warm-up, skills, techniques, tactics development, mini game of the sport in the central part, and cooling down at the end of the lessons. The teacher is responsible for every aspect of the lesson. Students only participate, follow the instruction, and perform the skills required by the teacher [42]. The methodology emphasizes the skills acquisition and mastery of tactic and technical aspects. Skill, technique and technical aspects are applied in the mini games. Responsibility of the students in the understanding and development of each game is of great importance. Major corrections are made by the teacher. Each lesson was completed in 40 minutes.

TABLE I. INSTRUCTIONAL PROCEDURE OF TGfU METHOD AND TRADITIONAL METHOD

Stages	TGfU Group	Traditional Group
1	<ul style="list-style-type: none"> • Warm up activities • Students start playing modified games which related to skill 	<ul style="list-style-type: none"> • Warm up activities • Stretching
2	<ul style="list-style-type: none"> • Students play games and emphasize on passng and receiving in field hockey • Teachers observe 	<ul style="list-style-type: none"> • Teacher demostrtrate the skill • Students practice in drill either in partner or alone
3	<ul style="list-style-type: none"> • The students and teacher investigates the tactical problems and potential solutions 	<ul style="list-style-type: none"> • The teacher provided skills feedback or asked a few questions to the students
4	<ul style="list-style-type: none"> • The students play modified games • The students and teacher modified the rules of the games 	<ul style="list-style-type: none"> • The students play mini games which is provide by teacher.
5	<ul style="list-style-type: none"> • Cooling down – free movement • Reflection 	<ul style="list-style-type: none"> • Cooling down • Reflection

C. Data Analysis

All data was analyzed using a SPSS version 22. Ancova test was performed to determine the effectiveness of teaching approach on student's enjoyment in physical education teaching and learning process between the control and experimental group.

III. RESULT AND DISCUSSION

RESULTS

The effectiveness of TGfU to promote enjoyment in teaching games of physical education lesson was measured by ANCOVA analysis. An ANCOVA analysis statistic was conducted after all the assumptions were met to evaluate the

effects of the TGfU approach and traditional approach on student enjoyment in PE session.

TABLE II. ANALYSIS OF COVARIANCE SUMMARY

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3626.776 ^a	2	1813.388	69.441	.000
Intercept	1030.711	1	1030.711	39.470	.000
scorepra	1795.282	1	1795.282	68.748	.000
group	1869.338	1	1869.338	71.584	.000
Error	2010.774	77	26.114		
Total	153042.000	80			
Corrected Total	5637.550	79			

TABLE III. ESTIMATED MARGINAL MEANS ON STUDENTS'S ENJOYMENT

Dependent Variable: scorepost	95% Confidence Interval			
	Mean	Std. Error	Lower Bound	Upper Bound
Control group	37.843 ^a	.829	36.192	39.494
Treatment group	47.523 ^a	.789	45.953	49.093

a. Covariates appearing in the model are evaluated at the following values: scorepra = 39.6250.

The results in table 3 reveal that there was a significant difference between the experimental group and the control group in enjoyment on the post test total score ($F(1, 77) = 71.584, p < .05$). This result indicated that the experimental group with TGfU approach has significant main effects on student enjoyment compared to the traditional approach. Table 4, reported that the overall mean of students with TGfU approach (Adjusted mean $M = 47.52$) was significantly higher than control group which applied traditional (Adjusted mean $M = 37.84$).

DISCUSSION

The study reported there were significant differences in the TGfU approach on the student enjoyment compare to traditional method. The increase in the level of enjoyment is due to different teaching approach which is TGfU. The increase of enjoyment was higher when compared to the traditional or technical teaching method. The greatest increase after the treatment occurred in student's enjoyment to physical education session, which reflected that TGfU was effective approach in teaching games in physical educations. According to Hortiguera, Fernandez-Rio, and Perez-Pueyo, (2016), TGfU approach show open and participatory methodologies in PE lessons such as the attitudinal style which is produce improvements in student's involvement, positive class environment and a better self-concept. This elements element allowed students to be active throughout

the lesson. In addition, the TGfU features itself requires students to make a descision, solve the problem, modified games and rules. O'Leary (2016) considers that one aspect that TGfU has added to PE is the possibility of modifying games to make them more achievable and interesting. PE teachers will be able to provide students with enjoyable PE experiences by involving them in the decision-making process, helping them to feel as if they are active participants in the class (Subramaniam & Silverman, 2007).

The TGfU approach effectively brought about positive changes in students' perceptions of a game-based physical education sessions. This finding supports that decision making and problem solving by the students as in TGfU approach can have a positive effect on student enjoyment outcomes. It is very important to ensure that PE classes meet students need and provide an positive environment in which they feel comfortable, supported, and encouraged to be physically active in teaching and learning process. Thus, TGfU allows students to modified the game according to their abilities may increase their enjoyment in the session. Barr-Anderson, Neumark-Sztainer, Lytle, Schmitz, Ward, Conway, and Pate, (2008) also reported the relationship friendly PE environment with the student enjoyment. Support from teachers and peers in TGfU approach enhnace level of confident among students.

TGfU approach has a uniques learning and teaching process compared to traditional approach. The TGfU on students centred learning compare to traditional method which is more on teacher centred. The student centred required students to work in a small group and task based. According to Anderson (2002), engagement occurs when students feel they can interact with the content. Hence, The TGfU method which is will increase student engagement in the lesson because of the their engagement in the activity. In addition, the modification of the activity required the students to reconsider their prior knowledge, creativity, problem solving, and interaction between peers. The inteaction and engagement of the students will improve the learning environment including enjoyment in the lesson.

IV. CONCLUSION

The findings of the study showed that TGfU approach has increased the enjoyment of students in the PE class. As a result, physical educator need to consider this approach when teaching the PE especially in teaching game. The increase of enjoyment in PE will result a regular in physical activity among the students.

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Attitudes of Physical Education Teachers towards Inclusion of Students with Disabilities in Physical Education Classes

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Abstract— The Malaysian Education Act 1996 has noticed the presentation of inclusive education in The Salamanca Statement on Principles, Policy and Practice in Special Needs Education which was the need to eliminate isolations in education and put all pupils, including those who needed special education under the same roof. The approach taken to conduct this research was a descriptive correlational survey method by using Attitudes towards Teaching Individuals with Physical Disabilities in Physical Education (ATIPDPE) questionnaires. For the purpose of this research, the target population of this study was framed to only postgraduates from Faculty of Educational Studies who are teachers. Only teachers doing their Master & PHD will be selected as subjects. Postgraduates participated in this research were from year 1, 2, 3 and year 4. For the purpose of this research, demographic variables such as gender and courses that they teach will be taken into consideration in the analysis. This research will be focused more on postgraduate's behavior as a group rather than specific groups. Sample chosen through probability purposive sampling technique. In addition teachers generally have a positive attitude and support the inclusion of special education students in physical education classes. Inclusion of children with disabilities and SEN in regular PE classes represents the most important goal of Adapted Physical Activity, because this will lead children with disabilities and SEN into a more active way of life, which is going to affect not only their health, but also the development of their personalities. A successful inclusion needs preparation from teachers, support services for teachers and students, but also the positive attitudes of physical educators is a fundamental factor for successful inclusive PE classes.

Keywords—teacher, students, physical education, disabilities

I. INTRODUCTION (HEADING 1)

Referring to the Salamanca Statement, Malaysia is currently improving its special education field in order to provide inclusive education for all pupils in the country. The Malaysian Education Act 1996 has noticed the presentation of inclusive education in The Salamanca Statement on Principles, Policy and Practice in Special Needs Education which was the need to eliminate isolations in education and put all pupils,

including those who needed special education under the same roof.

This inclusive education model focuses on the children's right, which is to be provided with an equivalent training without any isolation involvement and it is the school's duty to acknowledge them, thus, provide them with suitable facilities and support to overcome any issues that might be raised related to the pupils that need special education. In this sense, this model, which is one of the parts in educational inclusion approach, is recommended for children and young people as it incorporates all students involving those with special needs in general physical education (PE) classes.

On the other hand, inclusive education is an important program in the National Education Blueprint and it is considered as a critical goal of the program in Malaysia. For instance, in 2013, only 6% of pupils with special needs were in inclusive programs. 89% of them attended integrated programs, and the remaining 5% attended special education schools. The Ministry of Education said, they were expecting 30% of the total number of pupils with special needs to be in an inclusive education program by 2015 .

Even though Malaysia has shown a vast development in special education field in recent years, they still need to face challenges to properly introduce inclusive education to all citizens. On the other hand, inclusion still raises doubts and desires within the school community. Haniz Ibrahim's study has found some barriers that impeded the effectiveness of inclusive education in PE and one of them was the negative attitudes shown by primary school teachers towards the implementation of inclusive education in PE subjects.

Marsden and Weston stated that "the role of the educator is to provide the best possible environment and physical learning experiences for the child in order to help him/her explore and learn purposefully" . Thus, it is critical for educators to sustain the enjoyment for children in exploring and moving their bodies to increase their participation as they grow. This early critical exposure fosters the process and enhancement of PE. Teaching fundamental movements at a young age is essential

to establish a foundation to be built upon. Although recent efforts and suggestions influence the development of PE program the importance of a good PE program for all is still vague. Children with disabilities are often excluded from this initiative and a research suggests they may actually have a greater need. PE, however, is not deemed as a priority for kids with special needs. McAllister and Hadri reported that it has become common for students with special needs to be placed in a mainstream school setting. These children participated in the mainstream typical classroom with their peers but required additional support to enable them to successfully participate and be included.

The acceptance of primary school teachers initially to the untrained SENs is positive than their acceptance towards students who have been labeled with a problem. The findings found by Morley, D., Bailey, R., Tan, J., & Cooke, B. [1], Greguol, M., Malagodi, B. M., & Carraro, A. [2] showed that the mainstream teachers did not include special education for students with disabilities in their P&P, causing them to be uncomfortable to the inclusive approach in class. In addition, the findings also showed that the mainstream teacher did not clearly understand their role, which is to handle special pupils. It is observed that many teachers still find themselves surrounded by questions due to the challenges in planning activities and acquiring the knowledge required to group students based on different possibilities and their special conditions. When a teacher who is responsible for the P&P he/she is conducting lacks of knowledge in organizing activities, it could be an issue for him/her because the greater the degree of adaptation required to include a child in a lesson, the greater the challenges perceived by the teacher to deliver knowledge. The teachers who were initially worried and hesitant to participate in the project had given a strong commitment after understanding their true role and the special students involved showed a very positive development [3]. Morley, D., Bailey, R., Tan, J., & Cooke, B. [1] found that the teacher's experience and gender, as well as type of student's disability, were the factors that influence their attitudes, especially those who with students who have intellectual disabilities in their classes. To date, there has been no study conducted to compare inclusive PE based on gender and attitudes in Malaysia. The validation of such claim was done through an extensive search on the search engine or database such as, ScienceDirect, EBSCOhost, Scopus, Eric, even Google Scholar and simple Google search of articles. The thorough exploration also includes the searching on the key terms used in the study such as differed gender and inclusive PE in Malaysia. However, no research has been found that particularly discusses about the topic in our local study. Consequently, previous research mostly focused only on special education for children with disabilities in Malaysia. All these findings give a first view of Malaysian PE teachers' attitudes. Rapid changes of attitudes because of several educational settings, like PE course in schools, and sport events, make the further study on attitudes and the factors that could affect them, necessary.

Therefore, the main aim of the present study are to examine the attitudes of Malaysian PE teachers towards the inclusion of students with disabilities in PE classes and to find out whether different genders result in different attitudes and behaviors. Another objective of the study is to compare whether option and non-options PE teachers differ in their teaching skills in PE classes for the students with special needs. Furthermore, it can solve the problem and confusion raised regarding to this topic that previous studies could not solve.

II. MATERIAL AND METHODS

The approach taken to conduct this research was a descriptive correlational survey method. The tool of measurement for survey methods are usually questionnaires. As such, to measure the attitudes of all teachers towards teaching students with disabilities in PE classes was measured by using Attitudes towards Teaching Individuals with Physical Disabilities in Physical Education (ATIPDPE) questionnaires.

For the purpose of this research, the target population of this study was framed to only postgraduates from Faculty of Educational Studies who are teachers. Only teachers doing their Master & PHD will be selected as subjects. Postgraduates participated in this research were from year 1, 2, 3 and year 4. For the purpose of this research, demographic variables such as gender and courses that they teach will be taken into consideration in the analysis. This research will be focused more on postgraduate's behavior as a group rather than specific groups.

The technique will be used to determine the sample size in this research by referring to the Krejcie and Morgan's table for determining sample size from a given population. For the given population of 839, the most appropriate number of sample, according to the Krejcie and Morgan's table was 265. Since researcher will propose Custom HTML5 Form tool to collect the data, researcher will email the questionnaire to all 839 students, but only 265 will counted into SPSS. Sample chosen through probability purposive sampling technique.

III. RESULTS AND DISCUSSIONS

A. To examine the attitudes of Malaysia PE classes teachers towards the inclusion of students with disabilities in PE classes

Based on total mean scores and ANOVA analysis, there were no significant differences in gender ($p > .05$). Also, there was not any statistically significant difference between option and non-option PE teacher. The results of this study showed positive attitudes of physical educators toward inclusion of children with disabilities and SEN in PE classes. However, they might have doubts about inclusion, because either major PE teachers or non-major PE teachers had positive attitudes but not as positive as they could.

B. To compare the differences in attitudes towards the inclusion of students with disabilities in PE classes between male or female teacher

The finding showing, all participants had the same attitude about positive outcomes for students and about negative outcomes for teachers and students among between male and females teacher that means there were no significant gender differences is consistent with same studies [4]; but it isn't with others, which found women's attitudes more positive and explain this because of societal expectations of women as caregivers. It is shown similar to the current studies female teachers tend to have more favorable attitude about positive outcomes for students.

C. To compare the differences in attitudes towards the inclusion of students with disabilities in PE classes between option and non-option PE teachers

In addition, another objective of the present study was to compare the attitudes between major PE and non-major PE teachers. The results didn't reveal any differences. This is explained because the PE teachers had lack of exposure and training in special education. Most of them have knowledge of Physical Education but they lack of exposure and training in special education classes. The changes of PE teachers' attitude based on heterogeneous group of students with mild retardation, students with autistic tendencies and students with multiple disabilities. Such students have been placed in special classes or in special schools. Placement into special needs programmes is decided based on the special needs categorizations, namely visual, hearing and/or learning disabilities. For students with visual or hearing impairments, they are either placed in special schools or in the integration programme in the mainstream schools. Students with learning disabilities are regularly placed in the integration programme in the mainstream schools. The initiatives to implement inclusive education in Malaysia by the Ministry of Education were conducted through seminars [5], workshops and field works [6]. The inclusive programme in Malaysia has been conducted in regular classes as a part of a service continuum for students with special needs.

IV. CONCLUSIONS AND SUGGESTION

This study has attempted to compare the attitudes towards literacy held by PE teacher in Malaysia. Based on the findings teachers generally have a positive attitude and support the inclusion of special education students in physical education classes. Inclusion of children with disabilities and SEN in

regular PE classes represents the most important goal of Adapted Physical Activity, because this will lead children with disabilities and SEN into a more active way of life, which is going to affect not only their health, but also the development of their personalities. A successful inclusion needs preparation from teachers, support services for teachers and students, but also the positive attitudes of physical educators is a fundamental factor for successful inclusive PE classes.

Therefore, studies could be contributed to the physical educators, the PE universities, even and the ministries that develop the PE policies. Better academic preparation should be developed to give our future PE teacher the skills to teach the children with disabilities in inclusive classes..

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Learning Aquatic Games through Auditory Sandwich Approach on Deaf Students of Dena Upakara Wonosobo

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Abstract— The purpose of this research using Research and Development Method (R&D) is to know the effectiveness of water games using an auditory sandwich for deaf students in SLB/B Dena Upakara Wonosobo.. Auditory sandwiches is a way of delivering information to be clearer and more effective. Based on the student satisfaction of the water game using the auditory sandwich has a value of 1431 intervals including the "very agreed" category, and the test data before applying auditory sandwich is 48.60% and after used auditory sandwich is 77.80%. It is concluded that auditory sandwich approach is effective and can be used for aquatic activities in physical learning

Keywords: Deaf Students, Auditory Sandwich, Aquatic, Visualisation, Games

I. INTRODUCTION

The role of physical education has contributed to directing student's movements to have learning experiences through physical activity. Physical education has a variety of important scopes, every aspect taught as a purpose for formulating and planning programs to help systematic learning and in accordance with the intended real of physical education, one aspect given is water activity. Teachers and students start to interest in aquatic programs because they foster a sense of pleasure, create a social atmosphere that is good for child development, build confidence, and produce physical and health freshness in the statement [1]. The ability to know how to properly capture information effectively has a purpose for material delivery to run optimally. In students who have the normal ability, to review the information about the pool movements of the various things taught by the teacher can be well understood. For students who have special needs, such as deaf children who have difficulties in hearing, it is difficult to understand the teacher in providing information to them. Deaf children are seen in development as normal children, especially in physical development, but have limitations in verbal communication (Wasito, *et al*)¹ in the statement. The program

or model of aquatic games for deaf students is expected to be an interesting experience to build the spirit, motivation and understanding of students in improving student learning outcomes, and facilitate communication between teachers and students. It can show good potential to learn quickly and understand each command. Getting good feedback from students, the Physical Education teachers must use teaching methods that are varied because hearing greatly affects the student's motivation to the learning given in the statement [2]. The function of learning in the Physical Education, there are five types of aquatic learning plan that is important to give, namely: (1) developmental aquatic Motor Sequence, (2) water Competence, (3) Drill and Practice, (4) Wetgames, and (5) Self Assessment [1]. For deaf students who are still on the level of education equivalent to elementary school and junior high school still have a passion and great participation in play. So teachers as educators are expected to provide a wetgames/game approach in water activities that support the Deaf student development of cognitive, affective and psychomotor aspects. The approach that will be applied to aquatic games for deaf students is introduced in the auditory sandwich approach. In a auditory sandwich approach that will be introduced in a structured fashion and become a good reference in capturing a command with the means of visualization on the learning model through the aquatic game. The focus of the present paper is on one set of experiments in which the method of measuring memory is likely to have militated against a strong sandwich effect [3]. If using a auditory sandwich, at least have three exposure opportunities on the sound and message in communicating from both sides. When the information is presented through a child individually, the child has the opportunity to focus on listening. Pause after listening, will be done by examining the understanding of deaf children. If not already understood, the repetition of information uses supporting media that can clarify meaning. The third repetition, using listening by itself, thus giving the child another opportunity to focus on listening. Teachers and students of the deaf should be made in a small environment, because the behavior of deaf children is more comfortable and more focused in understanding the commandments.

II. MATERIALS AND METHODS *B.*

The method used is a research & development that aims to produce a product in the form of learning model of aquatic games through auditory sandwich approach for elementary school students of Dena Upakara in Wonosobo. The main procedure in this study is (1) knowing potential or problems; (2) collecting information; (3) Create product design; (4) Product trials in the field; (5) Product revisions. The subject of development research involves elementary school students of the SLB Dena Upakara Wonosobo and Physical Education teachers of SLB/B Dena Upakara Wonosobo. This development research instrument is used in the evaluation form of observation sheets compiled by researchers, awarding the questionnaire to students about the comparison of effectiveness of aquatic game learning before using auditory sandwich approach and after using a auditory sandwich, an observation sheet and an interview sheet for physical education teacher and disabilities school teacher.

III. RESULTS AND DISCUSSION *C.*

A. Aquatic Game Draft

Aquatic games implemented for students of SLB/B Dena Upakara Wonosobo have been modified with games applied on land, so that students can understand quickly about the game and useful to add knowledge about the word and Applied method in Table 1.

TABLE 1. NAME OF GAMES

Number	Name of games
1.	Chase numbers
2.	Green-Black
3.	Stacking letters

Students of the school SLB/B Dena Upakara Wonosobo amounted to 18 students.

TABLE 2. STUDENTS DATA

Student age	Gender	Amount
6- 8	-	-
9 – 11	Female	13
12 – 14	Female	5
15 – 17	-	-
Amount		18

B. Validate Expert Initial Product Draft

The introduction of aquatic games for students of SLB/B Dena Upakara Wonosobo before being tested on the students, performed validation by experts, researchers involve 1 physical education teacher and 1 school teacher of disabilities school. Validation is done by giving draft aquatic game product, evaluation width, observation sheet and questionnaire for students. The evaluation sheet is a questionnaire on student’s understanding, student life, participation and timeliness in play, as well as criticism and advice from a physical education teacher and disabilities school teacher. The evaluation results in a *Rating Scale* calculation to measure the satisfaction of students in aquatic games using auditory sandwich approaches and *Pretest-Posttest Design One-Group experimental design* to compare efficacy before being given Auditory sandwich approach and after given the auditory sandwich approach.

C. Validity Test

- *Rating-scale calculation*

Rating-scales are used to process raw data from numbers interpreted in a qualitative sense.

Total score of criterion = $5 \times 18 \times 18 = 1620$

Description:

- Highest score per item = 5
- Number of questions = 18
- Number of respondents = 18

Number of data collection results score = 1431

Thus the data quality according to the perception of 18 respondents is $1431:1620 = 88.3\%$

It is continuously able to create the following categories =

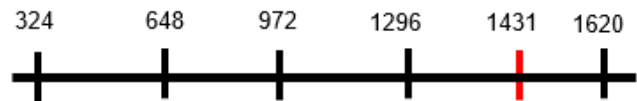


Fig. 1 Calculation of One group Pretest-Posttest Design

The value 1431 belongs to the interval category: very agreed. This calculation can compare before being given Auditory Sandwich and after being given the Auditory Sandwich approach.

Number (random)	Measure of success	
	Old Method (without Sandwich)	New Method (Auditory Sandwich)
5	success	Success
10	success	Success
15	success	Success
20	success	Success
25	success	Success
30	success	Success
35	success	Success
40	Success	Success
45	Success	Success
50	Success	Success

D. Aquatic Games Lists

TABLE 3. CHASE NUMBERS GAMES

This data result represent score of Green and Black Team using Old Method and New Method

Observation results

- Old method
 - a. The sensitivity of each group is less good, only a few students in the front row understand the teacher's lip motion to perform the commandment, the student lining up in the back row only follows what is done from the front row students without focusing on the Command.
 - b. Student participation is very good in implementing this game.
 - c. Timeliness has not been carried out well, because the team to be pursued running outside the pool area.
- New method
 - a. The sensitivity of each group is good because the teacher provides picture assistance to understand the command, so that in the 3rd count, the team is pursued or chasing directly the game.
 - b. Student participation is great in implementing this game
 - c. Timeliness has been carried out well, because the teacher asked the students before the game to not run in the pool area.

This data result represent how student using old method and New Method.

Observation results from Table 3.

- Old method

Many students who only follow students who are already running to catch the student whose number tag is mentioned, without knowing the lip motion of the teacher when the order is pronounced. Only a few children can understand the lip motion of the teacher when the tag number is pronounced. The time provided 10 seconds, most students have been responsive and directly arrested students whose tag number is mentioned before the time runs out.
- New method

The student is more focused with the command using the auditory sandwich after the word recurrence stage is performed. Each student has understood the number of the tag said and immediately executes the order. Students are too rushed to execute orders when still entering the second stage (visual display stage/image)

TABLE 4. GREEN – BLACK GAMES

Number of Attempt	Old Method (Without Sandwich)		New Method (Auditory Sandwich)	
	Green Team	Black Team	Green Team	Black Team
1	-	1	-	1
2	-	1	1	-
3	-	1	1	-
Score	0	3	2	1
Amount	3		3	

TABLE 5. STACKING LETTERS GAMES

Number of Attempt	Letters (random)	Old Method (Without Auditory Sandwich)		New Method (Auditory Sandwich)	
		First Group	Second Group	First Group	Second Group
1	R-A-M-A-I	1	1	1	1
2	W-A-R-N-A	-	-	1	1
3	M-A-W-A-R	-	-	-	1
4	S-I-N-G-A	-	1	-	1
5	N-A-N-A-S	1	-	1	1
Score		2	2	3	5
Amount		4		8	

This data result of stacking games using old method and new method.

Observation results

- Old method
 - a. The student sees the lip motion and immediately compiles the word, some students there are confused with the spoken word and do not precisely pick up the letters, so that many mistakes in the word stringing.
 - b. Students run out of time to compose letters because the letters are taken incorrectly.
- New method

- a. Students see lip motion, see visuals and understand lip motion back then compose the word, most students can compose the letters correctly.
- b. The student is immediately sprightly in picking up the letters when understanding what word to be compiled, so it does not run out of time.

TABLE 6. INSTRUMENTS TO MEASURE THE EFFECTIVENESS OF AUDITORY SANDWICH APPROACHES

Old (without Sandwich)		Method Auditory		aspects of performance	system	New (Auditory Sandwich)		Method	
1	2	3	4	focus on command		1	2	3	4
1	2	3	4	Student Participation		1	2	3	4
1	2	3	4	Understanding of games rules		1	2	3	4
1	2	3	4	Timing		1	2	3	4

This is the instrument to measure the effectiveness of Auditory Sandwich Approaches

The score range against the indicator is as follows,

- The focus on the command: (4) Very high, (3) high, (2) slightly high, (1) Low
- Student Participation: (4) Very high, (3) high, (2) slightly high, (1) Low
- Speed of Understanding: (4) very fast, (3) Fast, (2) rather fast, (1) Slow
- Timeliness: (4) very fast, (3) Fast, (2) rather fast, (1) Slow

Ideal Score:

- 4 Highest Scores
- 4 Instruments
- 18 Number of respondents

Ideal score: $4 \times 4 \times 10 = 288$

TABLE 7. OLD METHOD (WITHOUT AUDITORY SANDWICH)

No. Respondents	Score for number				Amount
	focus on command	Student Participation	Understanding of games rules	Timing	
1	2	3	2	1	8
2	2	2	1	2	7
3	1	2	1	2	6
4	1	3	2	2	8
5	2	3	3	1	9
6	1	1	2	1	5
7	1	3	2	2	8
8	1	3	2	1	7
9	1	2	3	1	7

10	3	2	2	2	9
11	2	3	2	1	8
12	2	2	1	2	7
13	3	2	1	3	9
14	2	1	1	3	7
15	2	3	2	2	9
16	2	3	3	3	11
17	1	2	3	3	9
18	1	2	2	1	6
Amount	30	42	35	33	140

The result using Old Method

Calculation

- Focus on commands
 $30:288 = 0.10141/10.4\%$
- Student participation
 $42:288 = 0.1458/14.6\%$
- Speed of understanding
 $35:288 = 0.1215/11.5\%$
- Timeliness
 $33:288 = 0.1145/11.5\%$

Effectiveness of the method of teaching the old/without Auditory Sandwich as a whole = $140:288 = 0.048/48.6\%$ of the expected criteria. So the effectiveness of the teaching method without Auditory Sandwich is lowest on the aspect of focus on orders, just reaching 10.4% than expected.

TABLE 8. NEW METHOD (AUDITORY SANDWICH)

No. Respondents	Score for number				Amount
	focus on command	Student Participation	Understanding of games rules	Timing	
1	4	4	3	4	15
2	3	2	3	2	10
3	3	4	3	4	14
4	3	3	3	3	12
5	3	4	4	3	14
6	4	3	4	4	15
7	2	3	2	3	10
8	4	4	2	4	14
9	2	2	2	4	10
10	3	3	3	3	12
11	4	4	3	4	15
12	3	3	2	3	11
13	3	3	2	3	11
14	4	4	4	3	15
15	3	3	4	2	12
16	3	4	2	3	12
17	4	3	2	2	11

18	3	3	2	3	11
Amount	58	59	50	57	224

This is the result when Auditory Sandwich applied

Calculation

- Focus on commands
 - 58:288 = 0.2013/20.1%
- Student participation
 - 59:288 = 0.2048/20.5%
- Speed of understanding
 - 50:288 = 0.1736/17.4%
- Timeliness
 - 57:288 = 0.1979/19.8%

Effectiveness of the method of teaching the old/without Auditory Sandwich as a whole = 224:288 = 0.7777/77.8% of the expected criteria. So the effectiveness of teaching methods with the lowest Auditory Sandwich on the aspect of speed of understanding, only reached 10.4% of the expected.

TABLE 9. COMPARISON BETWEEN OLD AND NEW METHODS

Without Sandwich	Auditory	aspects of system performance	Auditory Sandwich
10,40%		focus on command	20,10%
14,60%		Student Participation	20,50%
12,10%		Understanding of games rules	17,40%
11,50%		Timing	19,80%
48,60%		Avarage	77,80%

The results of the questionnaire for students, in the calculation of Scale Rating to measure the satisfaction of students in doing the aquatic game shows the value of 1431 included in the interval category "very agreed", while in the calculation of the experiment design One Group Pretest-Posttest Design that the effectiveness of the auditory sandwich approach is much higher than the game without using a auditory sandwich approach. The average effectiveness of the old model was 48.60% with a weakness in the focus aspect to the 10.40% order, while the average effectiveness of the new model/use auditory sandwich approach 77.80% with weakness in the aspect of speed of understanding Game rules. There are 3 aquatic game rules:

Chase Numbers

- Water Game Name: Chase numbers

- Objectives: Train sensitivity, focus and shrewdness move in water
- Equipment: Tag numbers with Rafia
- Number of participants: 10 people
- Time allocation: 10 seconds per number

Experiment A (without A auditory sandwich approach):

- 10 students are located in a swimming pool with a depth of 50 m
- Each student is shared with 1 number of tags hung around his neck
- Students are required to stand in the pool with a random formation and should not be too close to the other students (spread)
- The testers stood outside the pool and the views of the students should focus forward/testers.
- test 1 digit with mouth-only pronunciation (example: 10)
- in the third count, students must be faced with another student and start looking for 1 figure that is shown by the examiner and chase it until it is caught.
- students who have 10 numbers should avoid students who will catch them for 10 seconds.
- if one of the students can catch a student who has the number 10 mentioned less than 10 seconds, then the student who has the number 10 out of the game.
- If there is one student who catches another student but does not arrest the student Number 10, then the student loses.

Experiment B (using the auditory sandwich approach):

- 10 students are located in a swimming pool with a depth of 50 m
- Each student is shared masing1 the number of tags hung around his neck
- students are required to stand in the pool with a random formation and should not be too close to the other students (spread)
- The testers stood outside the pool and the views of the students should focus forward/testers.
- test 1 digit with mouth-only pronunciation (example: 10)
- If the student still can not understand what the testers say, then the testers provide repetition with the help of images, symbols or words.
- then repeat the spelling of the number.
- If the student can understand what the testers are saying, in the third count, the student must be faced with another student and start looking for 1 figure that is shown by the examiner and chase it until it is caught.
- students who have 10 numbers should avoid students who will catch them for 10 seconds.

- if one of the students can catch a student who has the number 10 mentioned less than 10 seconds, then the student who has the number 10 out of the game.
- if one of the students can not catch a student who has the number 10 within 10 seconds, then the game is repeated again.

A. Green-Black

- Objectives: Train sensitivity, focus and shrewdness move in water
- Equipment: Black-green rafia strap tied to the wrist
- Number of participants: 18 people (divided by 2 groups)
- Time allocation: 5 minutes
- How to Play:

Experiment A (without A auditory sandwich approach):

- 18 students were divided into 2 groups. The Green Group amounted to 9 people and the black group amounted to 9 people.
- The Green Group must deal with the black group.
- give the instruction to say the sentence said to be running (example: black)
- on the third count, the Green Group must chase black enough to pat the back shoulder of the black group.
- If you can pat the black group shoulder, then the two groups should still be in place (testers must know the group that win-lose)

Experiment B (using the auditory sandwich approach):

- 18 students were divided into 2 groups. The Green Group amounted to 9 people and the black group amounted to 9 people.
- The Green Group must deal with the black group.
- give the instruction to say the sentence said to be running (example: black)
- students are required to observe the test mouth gestures in order to understand the issued word.
- If the student has not understood the sentence that the testers say, then the testers should show the help of the image or symbol of the letter being said.
- after that, the tester said "black" once again.
- on the third count, the Green Group must chase black enough to pat the back shoulder of the black group

- If you can pat the black group shoulder, then the two groups must be silent in place (testers must know the group that win-lose)

B. Stacking Letters

- Water Game Name: sort words
- Objectives: Train sensitivity, focus and shrewdness move in water
- Equipment: letter Cards
- Number of participants: 10 people (divided by 2 groups)
- Time allocation: 10 seconds per word
- How to Play:

Experiment A (without A auditory sandwich approach):

- 10 students divided into 2 groups.
- Guru has prepared letter cards by the pond. Distance between letter cards with students in swimming pool \pm 5 m.
- teachers say 1 word and group 1 should pay attention carefully.
- on the third count, students must run to the pool lips to take the letters.
- Each student must have 1 letter card.
- after that, students must compile the word of what the testers say while returning to the initial position of standing.
- the time to compose the word is 10 seconds long, if group A correctly draft the word then get point 1 and continue the next quiz.

Experiment B (using the auditory sandwich approach):

- 10 students were divided into 2 groups.
- The examiner has set up a letter card by the pond. Distance between letter cards with students in swimming pool \pm 5 m.
- say 1 Word and group 1 should pay attention carefully.
- If the student has not understood the word what is being said from the tester, the tester can repeat the word by indicating an image or symbol.
- after that, students should reconsider the words said by the testers back.
- on the third count, students must run to the pool lips to take the letters.
- Each student must have 1 letter card.
- after that, students must compile the word of what the testers say while returning to the initial position of standing.

- the time to compose the word is 10 seconds long, if group A correctly draft the word then get point 1 and continue the next word quiz. '

students, so an aquatic game implementing the Auditory Sandwich approach can be applied in inclusion schools.

Advantages And Disadvantages Of Produced Products:

- Media/Game tools must be simplify and made even more interesting.
- Can be used by the Physical Education teacher at the school of Inclusion as an activitic learning
- Must set the best possible time for the implementation of the game to be more effective and efficient
- The children can understand easily when the media/visuals are given.
- This games increase the affective, cognitive and psychomotor aspects of students.
- Easy to Toys for school students

IV. CONCLUSION

Based on the results of the research and discussion above, it can be concluded that aquatic games using the Auditory Sandwich approach provide a categorized "highly agreed" satisfaction to apply, and provide the effectiveness of In playing using the Auditory Sandwich approach for deaf

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The Influence of Explosive Power of Leg and Motivation of Sprint 100 Meters for Athlete PPLP

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Abstract—The explosive power of the leg muscles is the ability of a person to move the body or parts of it in a strong and high speed. Psychological factors are also needed by runners when doing exercises and matches. The psychological factors are motivation. Motivation is the basic impulse that moves a person to behave. On this basis, the authors are interested in conducting research, hoping to provide answers to the problems that often arise in these problems, namely the influence of explosive limb muscle power and motivation towards short distances of 100 meters. Purpose of this study is to determine whether or not there is a relationship between two or more variables and how far the relationship exists between two or more variables that can be measured. The population studied was PPLP athletic athletes with sprint 100 meters of 12 people. Sampling is done by total sampling technique. The research method used in this study is a quantitative approach, a survey method with measurement and test techniques, while the analysis technique uses a correlation analysis approach that is a way to find out whether or not there is a relationship between variables. The assessment of leg muscle explosive power was carried out using a landing jump test and motivation assessment was carried out using a questionnaire with a Likert scale while a short distance running assessment used a 100 meter run test instrument that had been validated by experts in the field of athletics. This study resulted in: 1) the effect of limb muscle explosive power on Short-distance Running at 0.659. 2) the effect of motivation on Short-distance Running at 0.764. so that there is a significant influence between the explosive power of the leg muscles and the motivation for short-distance running.

Keywords— *Sprint 100 Meters, Explosive Power of Leg and Pplp Athlete*

I. INTRODUCTION

Running is a forward motion to move the body as fast as possible, both feet are present when floating and not attached to the ground or floor [1]. Running short sprinting is a run that really requires explosive limb muscle power, coordination and acceleration as well as motivation that is inside and outside. Sprint Including an explosive number, therefore a runner must warm up enough before conducting a training session [2]. Short distance running is one of the numbers running fast, a short distance run is also called a sprint. [3] A sprinter must get high speed in the shortest possible time in order to succeed in the race. Sprinter must have a good start, be able to increase speed and maintain

maximum speed for the remaining distance [4].

Start is resistance, that is when the running movement starts. At the start it is marked with a starting line for the starting position before the run starts. Start based on its use is divided into three types, namely standing start / standing start, start floating / flying start, and start squatting / crouching start. Start stand is used for long distance running, floating start is used for running / relay, especially second, third and fourth runners, while squat start is used for sprints. Running a 100 meter sprint is an ability that is characterized by the process of moving body position from one place to another quickly. Thus to produce a quick run, the things that need to be considered are: the posture is leaning forward, the footsteps must be longer, the hand swings must be in accordance with the foot movements and the arm movements where the fingers are clenched or opened tightly and relaxed. This is so that the maximum speed can be reached up to the finish line. In a series of 100 meter sprints divided in several parts including at the start, when running and there at the finish. To make a good start as a series of movements the initial runner in carrying out his running is inseparable from the role of the body's anthropometric conditions which are supported by physical and technical components. Body anthropometry is an anatomical condition of the body that can describe a person's height, several factors that can support the start, especially the most dominant limbs are legs, where all the movements in the start start from the feet, the stronger and faster the legs resist, the easier it is to do the movement sequence starts well, so that the resulting start is maximal. Judging from anatomical and physiological, the legs have a muscle structure that is larger and longer when compared to the other muscles. The foot is the body organ that has the most muscle and is a barrier to body weight and is one of the organs that functions as a balance. Based on this, the repulsion function or the very strong foot push is needed at the start, not only strong leg repulsion is needed at the start, but other things that affect the foot speed in doing repulsion are based on leg extension or in other words the muscle explosive power.

The explosive power of the leg muscles is the ability of a person to move the body or parts of it in a strong and high speed [5]. Regarding the position when carrying out explosive movements of power that is starting to stand in a relaxed and ready position [6]. Use the excessive swing arm back and then quickly advance and explode with the foot at the same time.

Jump and push yourself forward as far as possible. Soil with a stable base and absorbs the impact by allowing the body to return to its ready position and trying to maintain balance. [7] in the text book about muscle organizations. It can be seen that the connective tissue found in the muscle is what allows for the elastic component of the muscle. Just like stretching the rubber band and then backing off, so that it can also stretch connective tissue and backward, adding greater strength to muscle contraction. This is part of the stretch shortening the muscle cycle, which consists of eccentric extension followed by short concentric shortening of the muscle. Psychological factors are also needed by runners when doing exercises and matches. The psychological factors are motivation. Motivation is the basic impulse that moves a person to behave. This encouragement is in someone who moves to do something in accordance with the encouragement in him. Therefore, one's actions based on certain motivations contain themes according to the underlying motivation [8].

Motivation is an impulse that comes from within or from outside the individual, to carry out an activity that can guarantee the continuity of the activity, and can determine the direction, direction and magnitude of efforts that are mobilized to carry out activities so that they can be achieved. Motivation is a driving force that converts energy in a person into a form of real activity to find a specific goal [9]. Motivation is the energy of psychology that is abstract, its form can only be observed in the form of behavioral manifestations it displays. Motivation is seen as a mental impulse that moves and directs human behavior. With motivation contained by directing the attitudes and behavior of individuals. According to Britton W. Brewer Motivation can be defined as the direction and intensity of one's efforts. Business direction refers to whether someone is trying to approach or be interested in a particular situation. On this basis, the authors are interested in conducting research, hoping to provide answers to the problems that often arise in these problems, namely the influence of explosive limb muscle power and motivation towards short distances of 100 meters.

II. MATERIALS AND METHODS

In this study the method used was a quantitative approach, a survey method with test and measurement techniques, while the analysis technique using a correlation analysis approach was a way to find out whether or not there was a relationship between variables.

The population studied was pplp athletic athletes with short distance runs of 12 athletes. sampling is done by total sampling technique. to get the data processed in this study, the instruments or types of tests used are (1) instruments with a speed of a short distance of 100 meters using a 100 meter running speed test, where athletes run as fast as possible from start to finish with distance of 100 meters. performed 2 times and taken the best time. (2) the instrument of limb muscle explosive power uses a test of leg muscle explosive power with *standing broad jump* [10]. namely long jump without prefix. where the athlete will jump

to the jump beam without beginning with the start of three jumps and the best jump is taken. (3) motivation instruments using motivational tests with questionnaires, questionnaire tests arranged according to *the likert scale* [11].

Data collection techniques using test and measurement techniques. the data obtained in this study are the results of measurements of limb muscle explosive and motivation as well as the speed of a 100 meter short distance run. The pattern of interrelationships between research variables can be explained as in figure 1:

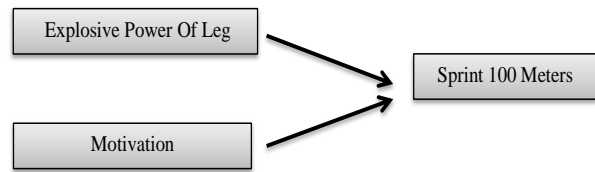


Fig. 1 Design patterns of the relationship between research variables of

III. RESULTS AND DISCUSSION

Leg muscle explosive power contributes to the speed sprinting 100 meters

Individual test is shown by the table coefficients, that resultspath coefficient $p_{yx} = 0.020$

TABLE I. COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.860	4.923		-.175	.865
Explosif Power	6.285	2.271	.659	2.767	.020

Dependent Variable: Lari 100 Meter

From Table I. Coefficients, obtained sig. 0.020. Apparently the value of sig. 0.020 is smaller than the probability value of 0.05 or the value of $0.05 > 0.020$, then H_a is accepted and H_o is rejected, meaning the path analysis coefficient is *significant*.

The contribution of leg muscle explosive power to the speed of a short distance of 100 meters produces a higher value of t count (0.659) compared to t table (0.576) at the level of significance 5%, then it can be concluded that there is a significant relationship between leg muscle explosive power with a speed of running a short distance of 100 meters, thus the

explosive power of the leg muscles greatly contributes to the speed of a short distance of 100 meters. The findings from other studies state that observing the presence of limbs stretching between the pelvic and toes bracelets, if examined carefully the limb muscles have a very important role in the implementation of lower limb movements, where the better the muscle explosive power of one's limbs, the better the results achieved, and vice versa. A student has good explosive limb strength which will automatically be able to jump well also [12]. then the explosive power of the limbs plays an important role, namely the occurrence of a combination of speed and strength in running with an indicator of rhythm and a fast

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-7.389	5.382		-1.373	.200
Motivation	.103	.027	.764	3.744	.004

Dependent Variable: Lari 100 Meter
 frequency of steps and the strength of the swinging foot in step.

Motivation contributes to the speed of a short run of 100 meters.

Individual tests are shown by the table Coefficients, that the path coefficient results $p_{yx2} = 0.004$.

TABLE II. COEFFICIENTS

From Table II. Coefficients, the value of sig is obtained. 0.004. Apparently the value of sig. 0.004 is smaller than the probability value of 0.05 or the value of $0.05 > 0.004$, then H_a is accepted and H_o is rejected, meaning the path analysis coefficient is *significant*. The contribution of leg muscle explosive power variable (X_1) to the speed of a distance short of 100 meters (Y) directly is equal to $0.659^2 \times 100\% = 43.42\%$. While the motivation variable (X_2) has a direct contribution of $0.764^2 \times 100\% = 58.37\%$.

Based on table 3 the contribution of motivation to the speed of the short distance of 100 meters produces a higher value of t count (0.764) compared to t table (0.576) at the level of significance 5%, then it can be concluded that there is a significant influence between motivation and running speed a short distance of 100 meters, thus motivation greatly contributes to the speed of a short run of 100 meters. Previous research has studied the cognitive aspects of running including anxiety, adjustment goals, temperament, and motivation. The findings from other studies say that individuals who have internal motivation will try hard without being influenced by the external environment to achieve an

expected goal [14]. Whereas [10]. In the model of the approach *Self Regulated Learning* students are required to be able to have and foster motivation in the students themselves to be able to carry out learning activities and to achieve predetermined learning goals. Then the results of other studies indicate that there are significant differences between the orientation of achievement of goals and perceived motivation of the runner groups.

Thus based on the results of the above research, the researchers stated that there is a relationship between the explosive power of the leg muscles with the speed of a short distance of 100 meters. In accordance with the results of the report [6]. that *power* legor leg muscle explosive power needs to be considered in the development of increased speed of acceleration *sprint*. So, it should be noted that in the technique, *sprint* especially in acceleration requires explosive limb muscle power that is good at learning the technique, thus facilitating the achievement of training, thus the *power* legor explosive muscle leg power is a necessary support in training the speed of acceleration *sprint*. It can be noted that, at present, the role of orientation and motivation in improving athletic performance is well proven and research on champions shows high motivation and orientation. Therefore, it is recommended for athletic trainers to adjust environmental variables so that they can motivate athletes to exercise and achieve achievements in accordance with the training targets.

IV. CONCLUSION

The results of research and data processing using statistical research procedures, conclusions can be obtained, namely 1). there is a significant relationship between leg muscle explosive power and speed of a short distance of 100 meters 2). there is a relationship

Significant between motivation with the speed of a 100-meter short distance run at Pekanbaru Athletics PPLP athletes. Thus the speed of running a short distance of 100 meters can be increased through increasing the explosive strength of leg muscles and motivation.

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Improved Learning Outcomes in Dribbling Soccer Games through the Elementary School Students Playing Approach

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Abstract The aim of this action research is to improve the learning outcomes of football games through an approach playing for physical education. In addition, this program is about learning about: application with the patterns approach to grade VI elementary school, and the results of dribble for physical education for grade VI elementary school. the methods of this action research was using approach qualitative research methods. There are 30 student grade VI elementary school appointments on North Sumatra. In testing the effectiveness of the patterns approach, playing with the psycho data and the official dribble football games. The result of previos teaching (learning test) learning was 30% of the expected criteria. While the effectiveness of the level of cycle I approach playing football was 70% of the expected criteria. The next, continued approach playing of football games, the effectiveness level of cycle II was 86% of the expected criteria, it meant that there was an increase of 66%. Based on the results of this study it can be concluded that through the play approach in the physical education learning process can increase the effectiveness and efficiency in learning outcomes of dribbling on football games

Keywords—*The pattern approach playing , improved learning results dribble.*

I. INTRODUCTION

School is an educational institution that has the task to deliver students to develop all the potential they have. Schools are also believed to be the only way that humans in today's age can live better in the future. The success of education in schools is very dependent on the teaching and learning

process in the classroom. Teaching and learning activities aim to bring students to desired behavioral changes.

This notion seems simple and modest, but when it explored deeper understanding, it will look more complicated and the complexity of the process required to manage the lesson it self. This can be understood because it brings students towards the desired change. In the learning process in school there are many interrelated elements that determine the teaching and learning process. These elements are educators (teachers), students, teaching curriculum, tests and the environment. Students as subjects in the learning process also play an important role in the success of teaching and learning. Physical education has a very important role in the development of students. Physical education acts as a means of fostering and developing individuals and groups in supporting the growth and development of physical, health, mental, social, and emotional harmony, harmony and balance.

Physical education is an educational process carried out consciously and systematically through various physical activities in order to obtain physical abilities and skills, physical growth, intelligence and character growth. As a sub-system of national education, physical activities in schools must be followed by all students. Learning Physical Education in schools still tends to be carried out using a technical approach in teaching a sport. That is, it focuses on mastering basic techniques of obscurity and less concerned with the ability of students to understand the nature of the game it self. The application of a technical approach will make it

difficult for students to understand the meaning of the game in a sport, the impact is that students are not interested in the learning process. This unpleasant and joyful atmosphere will make students less motivated in attending physical education lessons at school or outside school.

One of the popular sports in the education curriculum at the elementary, junior high, high school and vocational level is the soccer game. Soccer is a game played by two teams, each team consisting of 11 players, playing to enter a round ball into the opponent's goal (scoring). The team that makes more goals than the other is the winner. Usually within 90 minutes, but there are other ways to determine the winner if the result is a series. There will be an additional time of 2 x 15 minutes and if in the added time the result is still a draw then a penalty shoot out will be held. The most important rule in playing football is that players must not touch the ball during the game except the goalkeeper.

Therefore, to be able to play soccer, players or students must master the basic techniques of good football. The basic technique of playing soccer is how to process the ball as well as processing body movements in playing soccer. To be able to play football well, players or students must master the basic techniques of football well. The basic techniques in playing soccer consist of several types, namely, stop ball, shooting (kicking the ball into the goal), passing (feed), heading, and dribbling. Especially in dribbling techniques, players must master the techniques that have been well studied, because dribbling techniques is one of the most influential techniques against the game of soccer players.

From observation and information made known that students' during the learning process of physical education in the matter of football, where the students are still many do not understand the basic techniques of football, especially in the dribble. Student participation and active role in the learning process are still low. This is due to the teaching and learning process carried out by monotonous physical education teachers. In the process of learning physical education in schools, especially in soccer material namely dribbling, teachers tend to carry out learning using a technical approach in teaching a sport. That is, the teacher still focuses on mastering the technique of obstruction which gives rise to a monotonous learning process for students and less concerned with the ability of students to understand the nature of physical education itself. The application of a technical approach will make it difficult for students to understand the meaning of the game in a branch of sport whose impact students are not interested in the learning process. This unpleasant and joyful atmosphere will make students less motivated in attending physical education lessons at school or outside school.

Physical education teachers need to pay attention or respond to these symptoms, not regard this as a normal thing. Moreover, this matter is allowed to drag on it is feared will reduce student learning outcomes in general. It is necessary to find the right solution in this problem, so that

students are more interested in the process of learning physical education, especially in soccer material. In this case one alternative that is done in solving the problem is by trying to apply the method of playing approach teaching dribbling material to the game of soccer.

It is hoped that by incorporating the elements of play and excitement in each learning process, accompanied by meeting the psychological needs of children at the same age as Elementary School levels that are more selfish and want to show people that they have more abilities, then the ability to herd the ball will increase rapidly.

II. CONCEPT OF ACTION RESEARCH

Research is the knowledge and skills needed to overcome problems and face the challenges of the surrounding environment in making decisions. As is Indrianto and Supomo states that research is a reflection of the desire to know something in the form of facts or natural phenomena, with the presence of attention or initial observations of facts or phenomena is the beginning of research activities that cause a question or problem. Which is basically a systematic research with the aim of obtaining useful knowledge to answer questions or solve problems in daily life.

Action research is research on things that happen in the community or target group, and the results can be directly applied to the community concerned. The main characteristic or characteristic of action research is the participation and collaboration between researchers and members of the target group. Action research is one problem solving strategy that utilizes concrete actions in the form of innovative development processes that are "tried on the fly" in detecting and solving problems. In the process, the parties involved in the activity can support each other.

According to Greenwood and Levin action research combines three related elements, namely research, action and participation. As such there will be found an understanding of the practice and the environment in which the practice is carried out. There are two essence of action research namely improvement and involvement. This directs the objectives of action research into three areas: (1) To improve practice; (2) For professional development in the sense of increasing the ability of practitioners to practice it; (3) To improve the situation or situation in which the practice is implemented.

III. LEARNING OUTCOMES

Various kinds of opinions and views expressed by education experts about the notion of "learning" and "learning outcomes" basically have similarities as follows: (1) learning is the occurrence of changes in individuals who do learning, (2) learning outcomes are individual abilities after going through the process learning, including cognitive, effective, and psychomotor learning.

According to Slameto "student learning outcomes are abilities achieved by students after the teaching and learning

process". So, the level of achievement of student learning outcomes is obtained after following the learning process. Learning is a change in behavior that is relatively steady thanks to practice and experience. Learning done by humans is part of his life, lasts a lifetime, anytime, anywhere, whether at school, in class, on the streets, in a time that cannot be determined in advance. Viewing learning outcomes as the output of a processing system from various inputs. Various input systems are in the form of actions or performance. Distinguish two types of learning outcomes, namely knowledge and skills.

IV. DRIBBLE

According to Danny Mielke Dribbling is a basic skill of motion in football games because all must be able to master the ball while moving, standing, or preparing to make passes or shots. When the game has mastered the ability to carry out effectively, their contribution in the competition will be enormous. Dribbling is an effort made by a soccer player to carry the ball in a narrow area of motion, where players are among the opposing players. Herding is one of the basic techniques of football that is very important for a player to have, because herding it self is often used by players in carrying out attacks on the opponent's goal area.

V. PLAY APPROACH

The approach to playing in the teaching and learning process is an effort made by the teacher in dealing with the learning process so that the teaching goals that have been set in the teaching program can be absorbed effectively by the students. The approach to playing is one form of activity in the process of teaching physical education. This is because playing in physical education is a part of learning, this is based on: Playing and games are educational tools through physical activity, that by playing there will be stimuli that develop thinking power and physical or physical abilities. If children get the chance to play in accordance with their choices, there will never be things like fish, there will even be added value for them regarding the material needs of self-development and emotional development.

VI. RESEARCH METHODOLOGY

This research was carried out at North Sumatra, conducting research with a sample of 30 students of class VI students taken using total sampling technique. Method research used is method Action Research, with Kemmis and taggart design Action research is one form design research, where in design research action researcher describe, interpret and explain something situation time with do change or intervention Objective repair or participation. Implementation research involving colleague as collaborators and classroom teachers as implementers of the action. The final result of action research activities is to improve learning outcomes, especially

physical education learning in dribbling material for students in class V.

VII. RESEARCH RESULTS AND DISCUSSION

Based on the results of the research and evaluation that the researcher did, it can be concluded that through play closeness can improve the learning process of dribbling on the Football game so that it is expected that student learning outcomes are better than before. From the results of research conducted, it appears that in cycle I there are still many students who have not achieved classical mastery learning. This is because there are difficulties experienced by students during learning, in the second cycle the researcher adds a variety of learning so that in the second cycle of learning can increase.

From the research conducted, it appears that the first cycle of classical has I percentage of 70%, then increased to 86% in II. Dari cycle data analysis also showed that the results of student learning achievement test before using the approach is very low that is 63. Then the application of the approach to play is carried out in the dribbling learning process. It can be seen that student learning outcomes from the learning cycle test I using the application of the play approach has met the criteria of completeness, namely 71.3 but the classical learning outcomes have not been completed, namely 70%. This is because there are difficulties experienced by students during the learning process, including the following:

1. There are still many students who have not been able to dribble, these results can be seen from the number of attitudes of the legs when dribbling balls that number 110 with an average of 3, 4
2. There are still many students who have not been able to dribble the ball, these results can be seen from the number of attitudes of the head when leading a ball pointing to the lowest number with 44 with an average of 2, 2.
3. There are still many students who have not been able to dribble, these results can be seen from the number of hand attitude values when dribbling a number of 81 with an average of 2.7.

Based on the results of the research conducted, it was seen that in the first cycle the percentage of classics was 70%, then increased in the second cycle to 86%. The learning outcomes of dribbling students in the first cycle reached 71, 3%. Dribbling learning completes classically after cycle II, this is because giving motivation triggers student enthusiasm for learning and adding variety and models of learning approaches. While in the first cycle, students are not familiar with the teaching method given by the researcher, so students need to adapt to the learning methods provided by the researcher. One of the causes of unsuccessful achievement of the objectives of the planned teaching program is a lack of

knowledge or inability to choose the method used so that students cannot achieve the learning goals .

Constraints faced by students in the learning process because they are less familiar with the teaching methods given by the teacher. Because so far the teaching methods received by students have never varied. This is in line with the opinion of Soeitoe (1990: 52) "One of the causes of failure to achieve the objectives of the planned teaching program is a lack of knowledge or inability to choose the teaching style used so that students cannot reach the teacher's goals".

In the sense that the instructor must be able to choose and apply learning methods that are predicted to be more effective to facilitate students in learning in the classroom and outside the classroom or independent learning. The success of a person in his lesson is as a result of the ability and ability that is in students, partly because of the right method of teaching and learning and partly because of the environment.

VIII. CONCLUSION

Based on student learning outcomes in the first cycle after the learning outcomes test I can be seen that the students' initial ability to perform basic techniques in dribbling in a football game is still low. Of the 30 male and female students there were 9 students (30%) who had achieved mastery learning, while 21 students (70%) had not achieved mastery learning. With the student average value is 63 . In the first cycle, it can be seen that students' ability to carry out classical learning outcomes tests has increased. Of the 30 students there were 21 students (70%) who had achieved mastery learning while 9 students (30%) had not achieved mastery learning. With the student average value is 71.3 . Whereas in the second cycle, it can be seen that students' ability to carry out classical learning outcomes tests has increased. Of the 30 students there were 26 students (86%) who had achieved mastery learning while 4 students (14%) had not achieved mastery learning. Based on this, it can be concluded that learning through the application of dribbling learning through a play approach to improve learning outcomes dribbling on football games for elementary school students .

IX. IMPLICATIONS

Based on the findings and conclusions from the results of the study, it can be stated the following implications :

1. Application of the play approach method in the learning process of dribbling is an alternative in solving several problems faced by teachers in an effort to activate students in learning and in an effort to transform the values contained in sports and health physical education, one of which is the value of discipline, because physical education teachers acting as student leaders, managers who

manage learning and teaching activities , facilitators who strive to create a learning environment that streamlines student learning.

2. In each application the teacher method must be able to create conducive classes so that the interactive relationship between students and teachers, students and students can be realized so that the classroom atmosphere becomes active and interesting. In this case the teacher must be able to be an example and example of his students, not only in words but also in daily actions.
3. By applying the method of approach play in the learning process is the student dribble more challenged, more motivated and be more serious, because teachers and students have agreed on the rules created in conjunction .The lessons that are not really in the development of taking lessons and committing violations will be punished.

X. SUGGESTION

As suggestions can be given by the researcher as follows:

1. Advised to Promise Physical Education Teacher for use method or by using an approach to play a style of teaching that can be used to improve the learning process dribble the football game.
2. The teacher must better understand learning and the whole set of learning processes so that when implementing it, it is in accordance with what we hope for.
3. This research can be used as reference material for researchers who want to raise the title of this research .
4. To the friend postgraduate students to be able to try to do research Actions Research (AR) with using approach play.

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Using Game Performance Assessment Instrument (GPAI) to Assess Game Play in Physical Education (PE)

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Abstract The purpose of this study is to investigate how Game Performance Assessment Instrument (GPAI) can play an important role in assessing teaching and learning of Physical Education (PE). Based on traditional assessment methods and past research, assessment is conducted via isolated skills in drill-like situation. On the other hand, GPAI is an assessment tool based on game play situation via small-sided games. It assesses crucial components of tactical play (game sense, support play and decision-making) and technical application (skill execution). It is always a challenge to assess learner's competencies during a dynamic game play. Hence, we conduct qualitative investigation of how our subjects have meaningfully adopted and adapted the tool to enhance the effective intervention in teaching learning and develop meaningful process of assessment.

Key Words – assessment, decision-making skills, strategies

I. INTRODUCTION

Assessment is an integral component in teaching and learning; in Physical Education (PE) context, it is cognitive retention and/or psychomotor application. In addition, the assessment process serves as significant feedback for teachers and learner. The largest single content area in most physical education curriculum is the teaching and learning of sport-related games (Metzler, 2011). With the Singapore MOE PE Teaching and Learning Syllabus 2014 (MOE, 2014), there has been more explicit learning outcomes for primary, secondary and pre-university schools. While there is an inclined towards a more Direct Instruction model approach from primary one to four because of the specific learning outcomes, the primary five and secondary level onwards take a stronger shift towards Games Concept Approach (GCA) because of the learning concepts. GCA (McNeill et al, 2004) is a 'reconstructed' version of Teaching Games for Understanding (TGfU), (Bunker & Thorpe, 1982) and there are similar publications of conceptual or tactical-based approaches to games teaching in physical education literature over the

past few decades.

With the pedagogical drive of GCA, the role of assessment has to evolve to capture and document teaching and learning. How do we shift from assessing isolated skills (product) via drill-like situation to a more game sense context, assessing cognitive knowledge (process) and skill application (combination of skills) via authentic game situation?

Game Performance Assessment Instrument (GPAI) (Griffin, Oslin, & Mitchell, 1995) is one of the many assessment tools which has been validated in providing analysis of learner's performance during a game play. The GPAI was developed as a comprehensive tool for teachers to use and adapt for a variety of games. (Griffin et al, 1997, Mitchell and Oslin, 199a). GPAI has a structured system and tool to observe and code performance behaviours (Oslin et

al., 1998). The data acquired are both quantitative and qualitative and it reflects the ability of a player to solve tactical problems in games by demonstrating the ability to make decisions, effective movement within the playing area and executing of skills.

II. LITERATURE REVIEW

GPAI has a complexed nature and often is categorised as a research tool. However, it is also a method for authentic assessment (Oslin et al., 1998). There are several research literature that have highlighted that GPAI is an effective assessment tool (Harvey, Cushion, Wegis, & Massa-Gonzalez, 2010; Memmert & Harvey, 2008; Oslin et al., 1998). However, Memmert & Harvey (2008) also highlighted key issues pertaining to the use of GPAI.

III. PURPOSE

The purpose of this paper is to investigate how Game Performance Assessment Instrument (GPAI) can play an important role in formative and/or summative assessment in teaching and learning of PE. Based on traditional assessment practices, teachers conduct assessment via isolated skills and in drill-like situations. The conventional method is teacher- centric, time-consuming and not authentic. On the other hand, GPAI (Oslin, Mitchell, & Griffin, 1998) is based on game play situation, via small-sided games. It assesses crucial components of tactical play (game sense and decision-making) and technical application (skill execution).

It is always a challenge to assess learner's competencies during a dynamic game play. We investigate the practices of how our subjects have meaningfully adopted and adapted the tool to assess their students during PE lessons. Since there are seven components of Game Performance defined in GPAI, we will focus mainly on one key component, which is decision- making (DM). It is to make learning visible via analysis of learner's appropriate decision- making in selecting which movement (dynamic positioning) and skill (psychomotor application) to execute in response to a tactical problem.

IV. METHOD

Ethical clearance, permission and access were gained from NIE and the participants. The participants are four male Singaporean QPETs (aged 30 to 40 years old) who have graduated from Physical Education and Sports Science. All of them are very experienced practitioners who have been teaching in schools for more than 10 years. They have varying experiences in using GPAI with their students' age ranges from 11 to 13 years old.

TABLE 1: PROFILE OF RESPONDENTS

Teacher	Teaching Experience	Years Using GPAI	Hold key position In school
Teacher F	21 years	6 years	Yes
Teacher A	6 years	1 year	Yes
Teacher I	15 years	5 years	Yes
Teacher N	10 years	1 year	No

V. DESIGN AND PROCEDURES

Each participant is interviewed independently and questions are categorically based to examine these four main components. The research sites are within their school.

TABLE 2: MAIN COMPONENTS TO INTERVIEW QUESTIONS

Component	Key theme	Typical Question(s)
Component 1	Participants' perceptions of using GPAI.	Why use GPAI? Your perspectives on GPAI
Component 2	The justification behind using GPAI	What assessment tools you have used? Differences in the assessment tools
Component 3	The implications of the GPAI data	How data is collected? Your strategies in using analysed data.
Component 4	Impact of GPAI	What are the limitations and constraints?

Questions are open-ended and interviews are audio recorded. Each interview lasts about 45 minutes. Interview data is transcribed verbatim, and transcripts of recorded interviews is analysed using thematic analysis. We reviewed for recurring themes and the findings are categorically themed to unravel for insights and discussion.

VI. DISCUSSION

The paper aims to highlight three significant systemic strategies in using the GPAI. The three strategies are based on strong recurring themes and significant similarity from the teachers' insights.

Firstly, with the pedagogical approach in using GCA, the focus in assessment should be on process rather than on product. GPAI is a significant assessment tool to evaluate and analyse learner's process metacognition. Having used the traditional assessment methods like checklist and rubrics via drill-like situation, the teachers have taken effort to steer away to try a more purposeful assessment tool. The like-minded teachers refer to Mitchell and Oslin text (1995) in adopting GPAI. They agreed that the best mode of assessment was via small-sided games as it is more viable to observe learner's dynamic responses, especially decision-making abilities and combination of skills application. It is crucial to observe the learners' cognitive and psychomotor engagement in game performance while in the process of playing the game. Since the game play is a continuous process, it is authentic and require different responses. With the focus on assessing the process of game play, it contains many attributes of constructivism, a cognitive learning theory that allow learners to make new learning from previous knowledge. Since the students are always playing in small-sided games, they are always in the process of applying the tactical concepts and execution of motor skills. Teachers concur that their students' increased understanding of the game allows them to be better players and less reliant on the teachers for their participation.

TABLE 3: TEACHERS' RESPONSES TO DATA ANALYSIS OF GPAI ASSESSMENT

Teacher	Personal Response
Teacher F	"...I use 4 levels based on detailed descriptors to know if this student is heavily involved but not making inappropriate decisions during game."
Teacher A	"...the quantitative data that can be generated from GPAI provides specific statistics which can use to improve learning." "It made me see the rich learning that the students can get"
Teacher I	"...gives feedback for teachers to look at student's learning based on what they have taught."
Teacher N	"...my students will be able to give quantity feedback and the quality of the feedback is important. They have improved by leaps and bound. I'm so amazed by how it has worked; I am encouraging my colleagues to use GPAI for other game modules"

The participants agreed that the decision-making (DM) skills are transferrable when applied to sports of the same category. Teacher F said, "I thought the DM can be transferred on to similar modified games within the same category but not across other category". Hence there is a need to adapt to specific team sport as each have their own characteristics (Macías Romero, González-Jurado, & Otero-Saborido, 2017). Some of the hindering factors would be teachers' expertise in some of the games and subjectivity of peer assessment. The descriptor is very important as each component will give you the visual on what is actually happening on the field." Thus, ensuring some form of test reliability.

(ii) Secondly, the teachers concur that assessing the decision-making ability, e.g. where to take appropriate position in a game, how to move with the ball, and when to send the ball, is meaningful data to provide augmented feedback. GPAI provides purposeful data to enhance learner's tactical decision-making. Blomqvist et al (2005) stated that assessment of games performance need to consist of tools to measure skill, application of concepts and knowledge in order to generate a holistic feedback and gauge of the overall ability of the student. GPAI facilitates this by coding the behaviours exhibited during game play (Oslin et al., 1998). It is debatable that this makes for a more authentic and better representation of a student's ability. Decision-making is considered a complexed task as it is multi-dimensional in that a player is affected from internal concerns such as perceived competence as well as external factors such as opponents and environment they are playing in (Cotterill & Discombe, 2016). The concept of decision making and developing of it is based on the principles of ecology dynamics (González-Víllora, García-López, & Contreras-

Jordán, 2015). This theory explained that decision-making revolves around the interaction of three main factors, which are task, individual and context.

Oslin.et.al (2003) have defined decision-making as reacting to a tactical problem by choosing a movement or skill. The objective of making a decision is to achieve a desired outcome such as completing a pass to a team mate or scoring a goal (Mitchell, Oslin, & Griffin, 2003). One of the strengths of GPAI to assess decision-making is that it assesses both on the ball player as well as off the ball support player. The players are interacting among a smaller group of players within a smaller playing area. This enables higher opportunities for decision-making situations and thus as an observer, there would be ample instances to record and identify the strengths and weakness of the players. The observer can also set an assessment criterion that is to observe the off-ball players and identify decisions made by these players. This encourages greater engagement during lessons. Students who may not be as skilful can still display tactical understanding and games sense in the form of support play and making good supporting decisions (Arias & Castejon, 2012).

(iii) Thirdly, the quantitative and qualitative data analysis provided by GPAI are significant for assessment for learning (formative) rather than assessment of learning (summative). The teachers debated on the clarity of intent in using the data for formative and summative assessment. Recurring themes indicated they are more inclined in using the data for formative assessment, as it is an opportunity for teachers to empower the students to be 'assessor'. Peer observation and feedback via reciprocal teaching style allows the lessons to be more

student-centric and teachers play a key facilitative role. The feedback given is timely and over time, with more practice on developing the ‘coaching eye’, using GPAI can be less subjective. Subsequently, the peer observer also learn to be aware of self and others. There is value- driven opportunities for respect and responsibility. With empowerment to assess peer, inherently observers are learners as well. With augmented feedback, learners receive timely intervention to enhance their game performance. For the teachers, empowering students enriches the learning experience for their students even though it compromises the validity of the results. Some research have mentioned that it would be too difficult for young learners (Light & Georgakis, 2007). However, by pitching the assessment to make it age appropriate, it would greatly benefit the students (Butler & Hodge, 2001). This would add a new dimension to their learning experience as they get to reiterate key points to decision making.

This would also allow teachers to rank their students based on the quantifiable data and make meaningful intervention. Teachers have suggested that they can move into banding the students based on lower, middle and high-ability, and they can purposefully plan differentiated instructions to cater to the diverse learning needs. Teachers would have data to educate their students and raise awareness to the expectations of desired learning outcomes. Teachers can also explore other mediums to administer the test such as using an online platform, which is also accessible to his students. This could increase the level of engagement of his students by enabling them to identify their own errors when compared to their peers. Lastly, teachers can review the descriptors that they have set for the assessment. In doing so, they are able to alter the degree of difficulty and construct a more age appropriate assessment tool.

VII. CONCLUSION

GPAI serves as both a pedagogical approach linking to authentic assessment tool. It links how a teacher teach and how learning can be assessed. Research have shown that students develop greater sense of tactical awareness and games sense as they are able connect the concepts taught during their lessons and apply in a game (Gutiérrez et al., 2014). This, in essence, is the main draw of GPAI. From video recordings, teachers can identify any issues more accurately and plan a more effective intervention for their students. In conclusion, the purpose of this paper has highlighted the systemic strategies of effective use of GPAI, however, there is a need for further study the effectiveness of learner’s cognitive knowledge based on the quantitative and qualitative feedback via GPAI.

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Physical Education Teacher Education in Singapore

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Abstract - Recent initiatives by the Ministry of Education have afforded new opportunities and challenges to physical education teacher education in Singapore. Physical education teacher education programs are offered by the National Institute of Education's Physical Education & Sports Science Academic Group, and the Academic Group has to continuously improve the programs to meet the new opportunities and challenges. To describe the improvements made to the physical education teacher education programs, program documents for the academic year of 2018-2019 were analyzed using document analysis [1]. Results from this study indicates that the improvements made to the physical education teacher education programs will enable pre-service teachers to deliver the greater emphasis in fundamental movement skills and sports skills, apply the pedagogical practices in their teaching and learning process, and teach in both primary and secondary levels.

Keywords— *Physical Education Teacher Education, Physical Education, Teacher Education and Singapore.*

I. INTRODUCTION

Recent initiatives by the Ministry of Education have imposed new opportunities and challenges to physical education teacher education in Singapore. These recent initiatives included the revised physical education syllabus [2], the launch of the Singapore Teaching Practice [3], and the dual level training of physical education teachers [4]. Firstly, the revised physical education syllabus was progressively implemented from 2014 to 2016 [2]. For the revised physical education syllabus, there was a greater emphasis on fundamental movement skills for primary school students and on sports skills for secondary and pre-university students. The goal for this greater emphasis on skills was to enable primary school students to enjoy a range of physical activities such as athletics, dance, games, and gymnastics, and to enable secondary and pre-university students to participate in recreational games and physical activities beyond school.

Secondly, the Singapore Teaching Practice was launched by Director-General of Education, Mr. Wong Siew Hoong, during the Redesigning Pedagogy International Conference on 31 May 2017 [3]. Co-developed by the Ministry of Education and the National Institute of Education, the Singapore Teaching Practice comprises the Singapore Curriculum Philosophy and Pedagogical Practices [5]. The Singapore

Curriculum Philosophy places the student in the heart of all education decisions and describes a teacher's beliefs and roles in the teaching and learning process. The teaching and learning process is made explicit by the Pedagogical Practices that enable teachers to plan, practice and reflect upon the teacher-student interactions in any learning contexts. Seen as the professional language and a common reference point for all teachers, the Pedagogical Practices comprises four teaching processes, i.e., Lesson Preparation, Lesson Enactment, Assessment and Feedback, and Positive Classroom Culture, where 24 teaching areas are further categorized within the four processes (see Figure 1). Lastly, dual level training for physical education teachers was implemented for the Post-Graduate Diploma in Education (Physical Education) and the Diploma in Physical Education (Primary) programs in 2017 and 2018 respectively [4]. In these programs, physical education teachers will be trained to teach in both primary and secondary levels so that they understand the growth and development of students across their schooling years and the implications on teaching and learning.

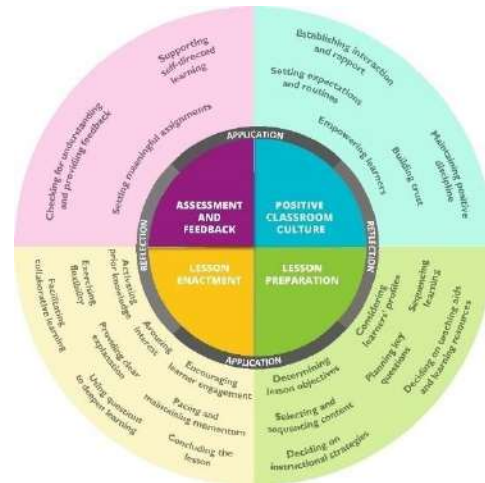


Fig. 1: Pedagogical Practices [5].

The National Institute of Education is Singapore's only teacher-training institute [6]. Within the institute, the Physical Education & Sports Science Academic Group offers three physical education teacher education programs, i.e., Diploma in Physical Education (Primary) program, Bachelor of Science

(Education) program, and Post-Graduate Diploma in Education (Physical Education) program [7]. At her inaugural director's address on 27 Aug 2018, Professor Christine Goh emphasized that the National Institute of Education needs to be future-ready and encouraged the institute to strive for continuous improvement and be ready to take on new opportunities and challenges [8]. Being an integral part of the National Institute of Education, the Physical Education & Sports Science Academic Group has to take on the new opportunities and challenges in the physical education field by continuously improve the physical education teacher education programs it offers. Thus, the aim of this paper is to describe the improvements made to the physical education teacher education programs in meeting the recent opportunities and challenges.

II. MATERIALS AND METHOD

The qualitative research method of document analysis is adopted for this study. Document analysis is a systematic procedure for reviewing or evaluating documents to elicit meaning, gain understanding, and develop empirical knowledge [1]. Document analysis involved skimming, reading and interpreting the documents. Documents are first skimmed (superficially examined) and then read (thoroughly examined). The data gathered from the documents are then categorized and analyzed to address the research questions. Examples of documents include books, printed event programs and outlines, newspapers, press releases, and institutional reports. Commonly used in combination with other qualitative research methods to triangulate findings, Bowen highlighted that document analysis can be and has been used as a stand-alone method. For example, Gao and Wu [9] compared graduate physical education teacher preparation programs of Mainland China, Hong Kong and Taiwan by examining university websites and documents.

For this study, the documents analyzed were physical education teacher education program handbooks, and course outlines pertaining to the physical education teacher education programs offered in the academic year of 2018-2019. All the documents analyzed are freely accessible from the National Institute of Education's website.

III. RESULT & DISCUSSIONS

The aim of this paper is to describe the improvements made to the physical education teacher education programs in meeting the recent opportunities and challenges, i.e., greater emphasis on fundamental movement skills and sports skills, professional language for all teachers in Singapore, and teaching in both Primary and Secondary levels. As all the physical education teacher education programs are based on coursework, improvements are generally made by introducing new courses or revising existing courses. In separate sections

below, each challenge is elaborated further and the newly introduced courses and the revisions made to existing courses to meet each challenge is described.

A. Greater Emphasis on Fundamental Movement Skills and Sports Skills

The first challenge is to prepare pre-service teachers on the greater emphasis on fundamental movement skills and sports skills in the revised physical education syllabus [10]. In the revised syllabus, there are seven learning areas specified for primary school students, three learning areas for secondary school students and two learning areas for pre-university students (see Table I). Learning outcomes related to fundamental movement skills are categorized in the primary level's learning area of Games & Sports. For the secondary level, the learning area of Physical Activities comprise games such as Badminton, Basketball, Floorball, Football (Soccer), Softball and Volleyball, and learning outcomes related to sports skills are game-specific. For example, a primary level learning outcome is "throw using the overhand movement pattern, a variety of objects at or into a target, increasing the distance from the target and maintaining accuracy" (p. 48), and a secondary level learning outcome specified to Badminton is "Hit the shuttle into open space or at opponent to prevent opponent from returning the shuttle" (p. 157). To enable pre-service teachers to teach fundamental movement skills and sports skills in the primary and secondary levels respectively, the Fundamental Movement Skills course is a new compulsory course in the physical education teacher education programs [11]. For this course, pre-service teachers are taught how to perform the skills, observe and analyze student's skill performances, and design appropriate learning activities for students to learn and practice the skills. See Table II for the content covered in the Fundamental Movement Skills course.

TABLE I. LEARNING AREAS FOR PRIMARY, SECONDARY & PRE-UNIVERSITY LEVELS [10].

Level	Learning Areas
Primary	<ul style="list-style-type: none"> • Athletics • Dance • Games & Sports • Gymnastics • Outdoor Education • Physical Health & Fitness • Swimming
Secondary	<ul style="list-style-type: none"> • Outdoor Education • Physical Activities • Physical Health & Fitness
Pre-University	<ul style="list-style-type: none"> • Physical Activities • Physical Health & Fitness

TABLE II. FUNDAMENTAL MOVEMENT SKILLS AND GAMES COVERED IN THE FUNDAMENTAL MOVEMENT SKILL COURSE [11].

Category	Content Covered
Fundamental Movement Skills	<ul style="list-style-type: none"> • Dribbling using feet • Dribbling using hands • Dribbling using long-handed implements • Kicking & punting • Rolling (bowling) • Striking (volleying) using body parts • Striking using Long-handed Implements • Striking using rackets and paddles • Throwing & catching • Trapping (with feet) • Trapping using long-handed implements
Games	<ul style="list-style-type: none"> • Badminton • Basketball • Floorball • Football • Softball • Volleyball

B. Equipping Pre-Service Teachers with the Professional Language of Teachers

The Singapore Teaching Practice was introduced by Mr. Wong Siew Hoong, Director-General of Education, in his opening address for the Redesigning Pedagogy International Conference [12]. Co-developed by the Ministry of Education and the National Institute of Education, the Singapore Teaching Practice articulates teachers' core beliefs in teaching and learning, examines educational theories and educational research conducted locally, and describes the pedagogical practices in the classrooms to provide teachers a common language and reference point to examine and improve their professional work. Addressing the second challenge, the new Pedagogical Practices course [13] aims to equip pre-service teachers with the professional language of all teachers in Singapore. For this course, pre-service teachers are introduced to the four teaching processes and the 24 teaching areas (see Figure 1). For example, the teaching process of Positive Classroom Culture comprises the teaching areas of (1) Establishing interaction and rapport, (2) Maintaining positive discipline, (3) Setting expectations and routines, (4) Building trust and (5) Empowering learners. The use of information and communication technology is a key feature of the Pedagogical Practices course as pre-service teachers not only read about the teaching processes and teaching areas during the course, but also watch video-clips of how each teaching area is enacted in schools. Most importantly, the knowledge pre-service teachers gained from the Pedagogical Practices course

are applied in subsequent courses. Specifically, the pre-service teachers are assessed on their enactment of Pedagogical Practices, i.e., the teaching processes and teaching areas, during the practicum courses [14].

C. Teaching in Both Primary and Secondary Levels

The third challenge is to prepare pre-service teachers to teach physical education in both primary and secondary levels. In terms of content knowledge and pedagogical knowledge, the physical education teacher education programs have prepared the pre-service teachers adequately for both primary and secondary levels. For example, pre-service teachers read courses in the area of Academic Subjects to learn about the fundamental concepts and principles of physical education, and courses in the area of Curriculum Studies to acquire the teaching skills for physical education (See Table 3 for the courses offered in the respective areas of study). The only shortcoming was in terms of teaching experience. Specifically, the practicum courses had pre-service teachers teach only in their designated level and not the other. Thus, the instructional courses were recently revised to include cross-level teaching opportunities for the pre-service teachers, i.e., primary level pre-service teachers to teach at the secondary level, and vice versa. For example, a pre-service teacher designated to teach in the primary level will, under the supervision of the course instructor, plan and conduct physical education lessons in a secondary school.

TABLE III. COURSES OFFERED IN THE RESPECTIVE AREAS OF STUDY [16-18].

Course Type	Course Title
Academic Subjects	<ul style="list-style-type: none"> • Anatomical and Biomechanical Foundations of Physical Activity • Foundations of Psychology and Motor Learning in Physical Activity • Growth and Motor Development • Introduction to Physical Education and Sport • Physiology of Exercise
Curriculum Studies	<ul style="list-style-type: none"> • Badminton • Basketball • Curriculum Gymnastics • Dance • Fitness and Health • Floorball • Fundamental Movement Skills • Instructional Methods in Physical Education • Instructional Strategies in Teaching of Physical Education • Principles of Games • Soccer

	<ul style="list-style-type: none"> • Softball • Sports Injury Prevention and Management in PE and Youth Sport • Theory and Practice in Outdoor Education • Track and Field • Volleyball
Practicum	<ul style="list-style-type: none"> • Teaching Practice 1 • Teaching Practice 2

IV. CONCLUSIONS AND SUGGESTION

The Physical Education & Sports Science Academic Group was able to meet new opportunities and challenges in the physical education field by introducing new courses and revising existing ones in the physical education teacher education programs. Through the new and revised courses, pre-service teachers should be able to deliver the greater emphasis in fundamental movement skills and sports skills, apply the pedagogical practices in their teaching and learning process, and teach in both primary and secondary levels. The present study is limited to describing how the programs were improved to meet the opportunities and challenges found in the local physical education context. Possible areas of future study are the comparison of physical education teacher education programs offered by other institutions [e.g., 15], and pre-service teachers' perceptions of physical education teacher education programs [15].

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Effects on Aerobics Dance Exercise on Physical Fitness of Elderly Individuals: Current Research Finding

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Abstract—

Keywords—

KJ, et al “it has been shown that exercise programs with rhythmic motion have a greater effect on improving physical fitness than general muscle strength-aerobic exercise”

I. INTRODUCTION

Aerobics dance exercise or workout has growth rapidly with highly demand and it evolves with modern freestyle that embrace logical in choreography. At present, aerobics dance exercise is associated using special composed aerobics music song of fully phasing and combination of dance forms of movement and styles with choreographic based using teaching methodologies. The types of movement change from classical forms of movement or so called traditional hi-lo into new arm and foot pattern as well as kind of basic movements and body posture in modified trend. Aerobics music itself also changes with accordance to new era with attention to fascinate and motivate to the participants. There are two different school of taught in teaching aerobic dance exercise, freestyle and pre-choreographed. The earlier is similar as described as the above present allowing the aerobic dance instructor to have freedom in creating own choreography accordance to the needs and demands of the participants. Whilst the latter is the concept of pre-formatted and pre-choreographed that giving standard outline of choreography and set to music, with each beat planned and written from the head choreographer of companies or body to the pre-choreographed instructors. Usually called track released and used until the next release. Both are tremendously high demand and have same objective to most who enjoy choosing aerobics dance as a health and fit promotion way of keeping fit and healthy lifestyle.

Anyone who participates in a regular exercise program effectively to reduce or prevent functional decline and the burdens of many chronic diseases associated with aging. The aerobic dance exercise has been proven to improve the aerobic capabilities of individuals. Aging is associated with elderly person. According to Kwon, I.H et al [4] and Kang,

II. MATERIALS AND METHODS

A search of Google Scholar was conducted using the keywords aerobics dance exercise, older adults, elder and all of their derivatives. In addition, the process searching included using the “Related Articles” of from reference in original articles research. The studies come in any form of aerobics dance exercise variation including latin, step aerobics, aqua exercise, zumba, kickboxing, circuit training, interval training, belly-dancing and any form of using rhythmic in associated with fitness and any form of dance as long as for cardiovascular purpose. But most studies used such as more traditional folkloric dance, line dancing, ballroom dancing were included.

III. RESULTS AND DISCUSSION

One research, Kwon, I.H et al [4] used randomized control trial of nineteen older subject were randomly divided into 2 groups for rhythmic and non-rhythmic aerobic exercises and result of both groups showed significant improvement in BDI, BBS, and FES ($p<0.05$). The Beck depression inventory (BDI) was used to measure the degree of depression. Having said, the rhythmic aerobic exercise was more effective for dynamic balance ability. The Berg balance scale (BBS) was used to measure static and dynamic balance ability and also used fall efficacy scale (FES) for balance.

Result findings from Mierzwa, K.F. et al [5] showed a significant improvement of balancing skills in older women as seen by an increase in the values of the LOS (Limit of stability) test after 3 month program of dance therapy. Another test battery were Postural Stability Test (PST) and Fall Risk Test (FRT) but both were found no significant between the pre - and postdance therapy. However, it was contradict to previous studies showed that examination was

reliable method by using a balance platform and provides highly reproducible results to assess static and dynamic balance in people of various ages. Having said, the studies also has limitation as such lack of a control group and small sample size.

According to Shim, Y.J., Choi, H.S., & Shin, W.S. [7], aerobic exercise, which is composed of rhythmic functional movement, helped improve functional movement and quality of life for the elderly women. By comparing both experimental group and the control group, the improvement of the experimental group with music and rhythm was more positive than the exercise using the same functional movement. The parameters were forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and maximal voluntary ventilation (MVV) while Functional movements were assessed using FMS (Functional Movement Screen). Quality of life (QOL) were assessed using SF-36. Douk, S. et al [1] demonstrated there is a significant effects of traditional Greek dance as means of exercise to investigate physical fitness of elderly. The parameters were strength, flexibility coordination and endurance. Intervention of The Lebed Method (TLM™) as previous study, Krampe, J. [3] was chosen to explore the effects of dance therapy on balance and mobility in older adult. Although TLM™ is used internationally for clinical improvement of chronic disorder patients, recovery of acute illness/postsurgical, emotional and the psychosocial improvement of its participants (Molinaro, Kleinfeld, & Lebed, 1986) but research on the therapeutic effect for older adults has been limited to one pilot study (Krampe et al., 2010). Therefore, further research need to be done.

The results from Hallage, T [2], demonstrated that 12 weeks of Step Aerobics training reduced waist circumference and increased the strength, balance, agility, flexibility, and cardiorespiratory fitness of older women. According to Rodacki, A. L. F [6], the result showed improvement on static and dynamic balance in the older adults using dance-based program.

On the other hand, only one study has proven that Tai Chi exercise may be better for elderly women to control balance, increase the height of leg clearance during obstacle-crossing to prevent falling. Tai Chi exercise was a more suitable way for the elderly women to practice. The study also proved to evaluate the long-term exercise had a positive effect on muscle strength on the obstacle-crossing ability of elderly women. This study was supported by previous study where Tai Chi exercise may increase the flexibility of the lower limbs

IV. CONCLUSION

Aerobic dance exercise has developed as an aerobic exercise to reduce body compositions, improve physical fitness performance and cardiorespiratory demand.

The results of these literature review demonstrate the effect on aerobics dance exercise form or variation has

improving the physical fitness of older adults. The limitation on the studies is the literature are relatively little studies has been done. Previous studies were from the old research before 2010. The future studies should be exploring on purely research of how aerobic dance exercise (low impact or high impact or variation form of aerobic dance exercise) can assist the elder people or even any sedentary people to increase physical fitness. Why aerobic dance exercise need to consider due to aerobic dance exercise is becoming popular in term of fun way to get fit and it is first step to initiate and promote wellness among all people regardless any age. Elderly people may benefit from joining aerobic dance exercise to improve physiological and psychological state.

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Development of a 50-Meter Sprint Practice among Grade 8 Students at Sophon Siriraj School

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Abstract—The purposes of this classroom research were: 1) to develop a practice of 50-meter sprint skills for Grade 8 Students and 2) to compare the 50-meter sprint test results of the Grade 8 Students before and after using the practice. The sample group used in classroom research was composed of Grade 8 Students, class 3 which was derived by a cluster random sampling from Sophon Siriraj School. The tools used for collecting data consisted of 1) the practice of the 50-meter sprint skills 2) a test of the 50-meter sprint skills. The data were statistically analyzed by using arithmetic mean, standard deviation and t-test.

The results of this research revealed that using the practice for 50-meter sprint skills could make the 50 meter sprint results of Grade 8 Students, class 3 at \bar{X} at = 8.35 together with S.D. = 1.159 significantly ($p < .05$) higher than that at \bar{X} = 6.74 together with S.D. = 1.109 before the practice using.

In conclusion, the practice of the 50-meter sprint skills was effective to improve the students' muscle power, speed, agility and coordination

Keywords—50-Meter Sprint, Practice

I. INTRODUCTION

Nowadays, most of people recognize the importance of food and exercise for good health. If they eat too much but exercise less, then they will become overweight and develop non-communicable diseases such as obesity, diabetes mellitus, high cholesterol, stroke cardiovascular diseases and hypertension [11]. Exercise can help us to be healthy, to maintain a healthy weight, to protect us from or to decrease risks of the non-communicable diseases, to increase our blood circulation and to strengthen our lungs, keep our bones and joints strong and healthy, and to help improve our mental functions. Which exercise is the best and easily done

for health, then? The answer is walking and running because they are so simple and easily done everywhere with no cost.

Running is a kind of athletics included in physical education at school. According to Thailand's Core Curriculum in Basic Education 2008, the physical education which focuses on movement, exercise, games and sports is regarded as a tool for physical, mental, emotional, social improvement, health – related and skill-related physical fitnesses and intelligence among students. Typically, middle school students are prescribed to study athletics including walking, running, jump, putting, and throwing. Especially the running, they have to learn 3 kinds of running with various distances: 50, 100, 200 meter.

At Sophon Siriraj School is training school for teaching internship that the researcher was assigned to teach athletics for Grade 8 Students. Having been informed by a previous teacher of the athletics, the researcher found that, however, the students still have some problems about the 50-meter sprint skills in terms of speed, agility, and muscle strength.

In response to the above-mentioned reasons and related literature review, therefore, the practice of the 50-meter sprint skills including 5 running exercises: Single - Leg Run – Through, 30-meter T – Drill, Cone Drill, Start using a flag signal, and Acceleration should be developed for the students to correct their errors from skills practice, to develop their muscle strength, stepping speed and agility, and bodily coordination and to effectively improve their 50-meter running skills.

After the results from this study, benefits are expected as follows:

1. They can be used as a guideline for developing further practices of the 50-meter sprint to encourage more effective learning.
2. They can be used as a guideline for other teachers to use the practice of the 50-meter sprint developed by this

study for other classrooms of Mathayom-Suksa-2 students and even other levels of students.

II. MATERIALS AND METHODS

A. Scope of population

The population in this research was defined as 3 classrooms of Grade 8 students, at Sophon Siriraj School, Ratchaburi province in academic year 2018 and then the sample group selected by the Cluster Random Sampling was the classroom of Grade 8 students, Classroom 3 consisting of 34 students.

The practice of the 50-meter sprint of Grade 8 students, Classroom 3 was composed of the running exercises as follows:

1. Exercise 1: "Single - Leg Run – Through"
(Sitisuk Bunhan, 2014) [9]
2. Exercise 2: "30 meters T – Drill"
(Sitisuk Bunhan, 2014) [9]
3. Exercise 3: "Cone Drill"
(Sitisuk Bunhan, 2014) [9]
4. Exercise 4: "Starting by the flag signal"
(Anunchai Anujun, 2008) [1]
5. Exercise 5: "Acceleration"
(Harald Muller Wolfgang Ritzdort,2001) [6]

B. Data collection

The data were respectively collected as follows:

1. Pre-test of the 50-meter sprint of Grade8 Students, class3 was taken before using the practice.
2. The practice of the 50-meter sprint of Grade8 Students, class3 was done together with the researcher’s teaching for 6 weeks and 3 days (on Monday, Wednesday, and Friday) per week.
3. Post-test of the 50-meter sprint of Grade8 Students, class3 was taken after using the practice.

C. Data Analyses

The results of the pre-test and post-test were analyzed in terms of average mean and standard deviation and then in comparison the dependent t-test was used to determine the significance of the difference.

III. RESULTS AND DISCUSSION

Test	N	Full score	\bar{X}	S.D.	t	Sig
Pre-test	34	10	6.74	1.109	10.235	0.000
Post-test	34	10	8.35	1.159		

The results from the data analyses are shown in the table below:

TABLE I. RESULT FROM DATA ANALYSES

* Sig < 0.5

From the table, the average score of the 50-meter sprint test of Mathayom-Suksa-2/3 students after using the practice is $\bar{X} = 8.35$ and S.D.=1.159 and significantly ($p<.05$) higher than the other average score of $\bar{X} = 6.74$ and S.D. = 1.109 resulting from the test taken before using the practice.

From this study, the t-test indicated that the average of the test scores after using the practice was significantly ($p<.05$) higher than before using the practice. This is in accordance with the set hypothesis.

In the practice in this study, it should start from warming up the body because the warmth helps the body to work more efficiently. It also helps to prepare various organs of the body, to be alert and ready to work; thus, the heart beats stronger and makes the circulation system better, consistent with Thanomwong Kritphet (2012) [12], who suggested that a warm - up is a pre-exercise to enable body temperature and muscle ready for practice. It also helps prevent blood insufficiency to the heart due to heavy exercise immediately and it is both physical and mental readiness at the same time.

Warm-up is an important step to prepare an athlete’s mind and body. Moreover, a warm-up prevents the athlete from injuries. Also, a warm-up is a part of the practice and competition. A warm up can get started with jogging. According to Sonthaya Srilamat [10] and Charoen Krabuanrat [5], a warm up by jogging and jumping rope for 5-8 minute is stimulating the blood circulation to the muscle. It also increases an athlete’s flexibility and reduces muscle and joint injuries. Besides, it helps improve his/her nerve impulses to work more efficiently.

Stretching helps arouse muscle and its flexibility. Furthermore, it helps prevent athletes from injuries so that they can practice in full capacity. According to Beedle et al, [2], stretching is a routine that needs to do before playing sport in order to increase the athlete’s ability to control and increase the movement of various joints.This is also consistent with Bradey et al, [3] who believed that stretching reduces muscle injury and pain, and increases the flexibility.

Muscle coordination can be developed through exercising by high knees run and alternating leg run. According to Sonthaya Srilamat [10] and Charoen Krabuanrat [5], using the basic skills of each type of sport in training is to prepare the athlete’s body, mind, neuromuscular system and central nervous system. The practice activity is based on the type of sport and the athlete’s body temperature should be allowed to increase by 1-2° Celsius. It helps increase the athlete’s coordination of

neuromuscular system, movement, balance, strength and response time before the competition.

In order to improve the running skills, apart from the running, muscle strength, agility, and proper running posture and foot stepping also need to be developed and this is according to (Sitisuk Bunhan, 2014) [9] suggesting that general features of short-distance runners consists of 1) basic speed, 2) muscle strength, 3) agility, 4) long step and fast step, and 5) good mental health.

This is also in accordance with Boonchua Sinboonma and Wuthichai Prabhakittirat [4] suggesting that a runner's speed development needs increased capacities such as muscle strength, muscle power, flexibility, and coordination of muscle system and nervous system and this recommended that principles of speed practice should aim: 1) to correct postural practice and to practice repeatedly, 2) to increase the speed from minimum to maximum, 3) to practice for increased muscle power, 4) to practice for muscle endurance, 5) to practice for agility of motion system and 6) to practice after a proper warm-up.

Therefore, leg's muscular strength, agility, foot stepping distance and the bodily coordination and response are required to be improved by using the practice of the 50-meter Sprint.

Each time after the practice in this study these skills, the student participants' muscle needs to get relaxed because it helps their bodies to cool down faster. According cool down is turning the body to normal condition because the exercise stimulates metabolism and it create the body waste. A cool down is turning the body back to the normal or we can call it as a physical recovery to reduce the fatigue caused by practicing and to prevent aches and pains from using joints muscles and having lactic or carbon occurring during the movement.

Moreover, practicing time is also important and in this study, the practice of the 50-meter sprint took three times per week for 6 weeks. This is according to Issavat Pinthong [7] which suggested that normally the practicing should be 3 days per week. If we increase the practicing time to 4 days per week, it could be wasted. The timing for the normal program should be 3 days per week for 4-6 weeks. This can help improve strength.

It is also consistent with Piriya Chonruksa [8] who suggested that a supplementary practice by running in various directions 3 days per week for 6 weeks can improve a runner's health – related physical fitness. Furthermore, learning movement patterns and repetitive drills could contribute to the development of the knowledge of situations which is an essential factor in developing agility.

In conclusion, therefore, the practice in this study, 3 days a week for 6 weeks can help the students improve their 50-meter running skills.

IV. CONCLUSION

From this study, the t-test indicated that the average of the test scores after using the practice was significantly ($p < .05$) higher than that before using the practice. It was because of the practice of the 50-meter sprint skills was composed of the Exercise 1: "Single - Leg Run – Through" (Sitisuk Bunhan, 2014) [9] which helps develop the speeds of knee movement, foot stepping and hand movement; Exercise 2: "30-meters T – Drill" and Exercise 3 Cone Drill (Sitisuk Bunhan, 2014) [9] which help develop the agility and muscle co-ordination and strength; Exercise 4 : "Starting by the flag signal" (Anunchai Anujun, 2008) [1] which helps develop the ability to change the direction and position of the body and the Exercise 4 : "Acceleration" (Harald Muller Wolfgang Ritzdort, 2001) [6] which helps develop the highest speed used in running.

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Research and Development of Application Instruction Media on Smart Phone Android Operation System: A Case Study of Skills and Techniques of Teaching Swimming

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Abstract—A mobile application on Android for Skills and Techniques of Teaching Swimming subject of Management is required to provide the information access, sharing, sending and distributing messages at a faster rate to all users. To fulfil the above necessities, the researcher has developed mobile application to provide a more convenience accesses for students and users. **Objective:** 1) studied and developed elements of application Instruction Media on Smart Phone Android Operation System 2) studied the opinion regarding application Instruction Media on Smart Phone Android Operation System: A Case Study of Skills and Techniques of Teaching Swimming Subject for Study in Physical Education and Health Education, Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus. **Methods:** 1) Scope of population: 95 junior students of Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus are being studied in this research. 2) Scope of content: Content of the subject Skills and Techniques of Teaching Swimming. **Results:** The application opens up a much quicker communication channel to access the information such as: knowledge of history of swimming, basic skills, swimming lessons, swimming tests et al. The satisfactory for evaluation of the application from the users is at a much value of 4.45.

Keywords—*application instruction media, skills and techniques of teaching, swimming subject.*

I. INTRODUCTION

To provide the education for the future contributing the wellness of the country, the necessity of using technology for educational purposes is undeniable. Every sectors including government should provide and contribute to producing and developing of textbooks, reference books, articles, materials

and technologies for education by accelerating the development procedure and providing funds to develop production competency and urge the developers to create educational technologies regarding the National Education Act B.E. 1999 which the third policy of the act indicates the usage of information technologies and communications to reform the way of learning. The standard of teaching and learning using mobile computer is created which requires the development of contents, teachers, measurements and assessments to be standardized. Also, this method of learning is aimed to be a tool contributing the lifelong learning skill of Thai people which will improve Thai education's ability to be competitive in international level [1].

In 2003, over 500 million smart phones and laptops were used by people around the world leading to the new method of developing digital lessons via smart phones and laptops using wireless technologies as the medium of learning which was called M-Learning. [2] Furthermore, there are developers applying smart phones for educational purposes in various different ways. It is noticeable that Mobile Learning or M-Learning is the innovation tending to be popular in 21st century. Many foreign universities have conducted researches about M-learning as a learning management method and a learning facilitator. [3] After the developmental procedure, mobile learning computer lessons can be used efficiently for instructional purposes. [4] Accordingly, the research of Thongchai also found that the knowledge level of the students who studied via M-Learning system was significantly higher than the students who studied in normal class at .05 and had the overall satisfaction in M-Learning system at "good" level. This instruction method can meet the individual differences and needs of students and this is consistent with the 21st century learning framework which is determined by the Partnership for 21st century skills that students have to acquire

digital literacy skills including communications, information, media computing and ICT literacy [5].

Therefore, this study is intended to research and develop the Application Instruction Media on Smart Phone Android Operation System: A Case Study of Skills and Techniques of Teaching Swimming Subject for Study in Physical Education and Health Education, Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus to contribute teaching and learning by using information technologies and communications which students can develop their knowledge and abilities according to their potentials, needs, aptitudes and interests without the limitations of learning such as time, place or expenses. [6] Also, the method is intended to make the learning procedure to be more interesting which encourage students to be more enthusiastic and improve their academic results, to alleviate teachers' loads and to contribute the meaningful learning to students.

II. METHOD

A. Scope of population

95 junior students of Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus are being studied in this research.

B. Scope of content

Content of the subject Skills and Techniques of Teaching Swimming. This study is conducted as follows:

- Survey the need of using the application

The online questionnaires were being created to survey the need of using the application of the students who had enrolled in Skills and Techniques of Teaching Swimming. The data was collected and analyzed for the application development.

- Design the application

The surveyed data was analyzed and categorized in 6 main parts: 1. Introduction 2. History of swimming 3. Basic skills 4. Swimming lessons 5. Swimming tests and 6. Read more

- Application Development

The development followed these processes: Created the application database. Developed main menu user interface, sub menu user interface and the connection with exam online, Google Drive and other webpages.

- Application Testing

The testing was divided in to these processes: 1) Unit Testing: Testing each of the application's function. 2) Sub Function Testing: Testing of the main function of the application. 3) Integration Testing: Testing of the

connection function with exam online, Google Drive and other webpages. 4) System Testing: Testing of the overall application system. 5) User Acceptance: Testing of the application by the testers.

- Application Setup

The tested application was added to Google Play for downloading.

- Evaluation

Evaluated the application implementation by students.

III. RESULTS AND DISCUSSION

The survey of the application users on smart phone Android operation system: A Case Study of Skills and Techniques of Teaching Swimming Subject for Study in Physical Education and Health Education was divided into 3 parts: Part 1 Personal information, Part 2 Satisfaction survey and Part 3 Suggestion.

Part 1 Personal information:

A. General information of the participants

TABLE I. AMOUNT OF THE PARTICIPANTS BEING SURVEYED BY GENDER

Gender	Amount	Percentage)%(
Male	64	67.37
Female	31	32.63
Total	95	100

According to Table I, there were 79 participants being surveyed, 64 male and 31 female. Male participants were surveyed the most.

B. Mobile phone operating system of the participants (Smart Phone, Tablet, Computer)

TABLE II. AMOUNT OF SMART PHONE OPERATING SYSTEM OF THE PARTICIPANTS

Operating system	Amount	Percentage (%)
Android	65	68.42
IOS	20	21.05
Window phone	4	4.21
Windows 8	5	5.26
Others	1	1.05
Total	79	100.00

According to Table II., there were 95 participants being surveyed, 65 using Android (68.42 %), 20 using IOS (21.05 %), 4 using Window phone (4.21 %), 5 using Window 8 (5.26 %) and 1 using others operating system (1.05 %), respectively.

Part 2 Satisfaction survey:

There were 79 participants being surveyed about the satisfaction in using application on smart phone Android operation system: A Case Study of Skills and Techniques of Teaching Swimming Subject for Study in Physical Education and Health Education. The survey was a 5-point rating scale. The scale was consisted of highly satisfied (5), Satisfied (4), Neutral (3), Dissatisfied (2), Highly dissatisfied (1).

A. Installation process and understandability of the application usage

TABLE III. THE PARTICIPANTS' OPINIONS ABOUT INSTALLATION PROCESS AND UNDERSTANDABILITY OF THE APPLICATION USAGE

Installation process and understandability of the application usage	μ	Satisfaction level
1. Installation process of the application is simple and appropriate.	4.34	Satisfied
2. The application is understandable and easy to use.	4.42	Satisfied
3. General users are able to understand and use the application easily.	4.61	Satisfied
Overall satisfaction	4.46	Satisfied

According to Table III., the opinions of the participants about the installation process and understandability of the application usage were as follows: Installation process of the application is simple and appropriate was 4.34 (Satisfied), The application is understandable and easy to use was 4.42 (Satisfied), General users are able to understand and use the application easily was 4.61 (Satisfied) and overall satisfaction in installation process and understandability of the application usage was 4.46 (Satisfied).

B. Overall performance of the application

TABLE IV. THE PARTICIPANTS' OPINIONS ABOUT THE OVERALL PERFORMANCE OF THE APPLICATION

Overall performance of the application	μ	Satisfaction level
1. The application is interesting.	4.35	Satisfied
2. The application is easy to be used and understood.	4.23	Satisfied

Overall performance of the application	μ	Satisfaction level
3. The application's format is up-to-date.	4.48	Satisfied
4. The application displays correctly.	4.36	Satisfied
Overall satisfaction	4.36	Satisfied

According to Table IV., the opinions of the participants about the overall performance of the application were as follows: The application is interesting was 4.35 (Satisfied), The application is easy to be used and understood was 4.23 (Satisfied), The application's format is up-to-date was 4.48 (Satisfied), The application's format is up-to-date was 4.36 (Satisfied) and the overall satisfaction in overall performance of the application was 4.36 (Satisfied).

C. User interface (UI) of the application

TABLE V. THE PARTICIPANTS' OPINIONS ABOUT THE USER INTERFACE OF THE APPLICATION

User interface (UI) of the application	μ	Satisfaction level
1. The size of the texts in the application is appropriate.	4.32	Satisfied
2. The font of the texts in the application is appropriate.	4.56	Satisfied
3. The color of the texts in the application is appropriate.	4.39	Satisfied
Overall satisfaction	4.42	Satisfied

According to Table V., the opinions of the participants about user interface (UI) of the application were as follows: The size of the texts in the application is appropriate was 4.32 (Satisfied), The font of the texts in the application is appropriate was 4.56 (Satisfied), The color of the texts in the application is appropriate was 4.39 (Satisfied) and the overall satisfaction in user interface of the application was 4.42 (Satisfied).

D. Usage of the application

TABLE VI. THE PARTICIPANTS' OPINION ABOUT THE USAGE OF THE APPLICATION

Usage of the application	μ	Satisfaction level
1. The application works properly.	4.53	Satisfied
2. The accessibility to the online data via the application.	4.52	Satisfied

3.The responsiveness of the application.	4.48	Satisfied
4. The application is beneficial.	4.63	Satisfied
5. The overall satisfaction in the application.	4.67	Satisfied
Overall satisfaction	4.57	Satisfied

According to Table VI., the opinions of the participants about the usage of the application were as follows: The application works properly was 4.53 (Satisfied), The accessibility to the online data via the application was 4.52 (Satisfied), The responsiveness of the application was 4.48 (Satisfied), The application is beneficial was 4.63 (Satisfied), The overall satisfaction in the application was 4.67 (Satisfied) and the overall satisfaction in usage of the application was 4.57 (Satisfied).

Part 3 Suggestion

- The connection of data display is not available enough.
- The overall of the application is interesting.
- More functions and special effects should be added to the application to be more interesting.

IV. CONCLUSION

The elements of the application instruction media on smart phone Android operation system: A Case Study of Skills and Techniques of Teaching Swimming subject for study in Physical Education and Health Education, Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus is consisted of 6 menus are illustrated as follows: 1. Introduction 2. History of swimming 3. Basic skills 4. Swimming lessons 5. Swimming tests 6. Read more.

Application Instruction Media on Smart Phone Android Operation System: A Case Study of Skills and Techniques of Teaching Swimming Subject for Study in Physical Education and Health Education, Faculty of Education and Development Science, Kasetsart University Kamphaengsaen Campus have the validity of 1.00 and the reliability of 1.00.

Regarding the trial usage in 79 students, the overall satisfaction in the application was 4.46 (Satisfied). For the individual aspects of the application, the satisfaction in installation and understandability of the application usage was 4.36 (Satisfied), the overall satisfaction in performance of the application was 4.42 (Satisfied), the satisfaction in user interface (UI) was 4.57 (Satisfied) and the satisfaction in usage of the application was 4.45 (Satisfied).

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An Innovation on Elastic Ball to Develop Basketball Dribbling Skills of Mathayomsuksa 1 Students

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Abstract—The purposes of this research were to: 1) To create an elastic ball innovation and the basketball dribbling drills for developing the basketball dribbling skills of mathayomsuksa 1 students 2) To compare the basketball dribbling skills of mathayomsuksa 1 students by using the basketball dribbling drills with elastic ball before and after training and 3) To study the satisfaction of mathayomsuksa 1 students on the basketball training drills with elastic ball. The sample group that used in this research were 20 mathayomsuksa 1 students with low basketball dribbling skills from purposive sampling. The tools used for collecting data consisted of an elastic ball innovation, the basketball dribbling drills with elastic ball, the basketball dribbling skills test and students' satisfaction questionnaire on basketball dribbling drills with elastic ball. The results of research: (1) The elastic ball innovation and basketball dribbling drills, which for developing the basketball dribbling skills of mathayomsuksa 1 students were efficient at 74.50/75. (2) The basketball dribbling skills of mathayomsuksa 1 students by using basketball dribbling drills with elastic ball after training was higher than before training with statistical significance at .05 level. (3) The satisfaction of mathayomsuksa 1 students by using basketball dribbling drills with elastic ball was high.

Keywords—*elastic ball, basketball dribbling skills.*

I. INTRODUCTION

Nowadays, playing sports is an important thing in everyday life that helps to strengthen the human body, encourage the growth of the cognitive, psychological, and social. Moreover, it also makes you know how to forgive people when you win or lose, have fun under the game sport that adheres to the rules together and encourages people to be perfect. There are many types of sports to play, however it depends on the preferences, needs, budget and suitability of the body, society, tradition, and beliefs. The basketball is another sport that encourages strength of the body and growth the cognitive, psychological, and social. In addition, the basketball is a sport that requires the operation of various body systems because the players need to use their high strength,

furthermore, it improves the players to practice in teamwork and harmony.

Basketball is a team sport game that encourages the players' excitement all the time because they need to shoot the ball into basketball hoop to make score all the time. To make score in basketball game, the players require their precision and dexterity to be able to shoot the ball into the basketball hoop properly and each players will have different skills. The accuracy of shooting the basketball can be achieved by requiring the training of individual players, the more they practice basketball shooting skills, the more accurate they will get. The basketball is a sport that has gained widespread popularity both in Thailand and abroad, moreover this sport can be played in every seasons with a small amount of playing space and no equipment waste, so there are extensive competitions in the country. There are the competition within the school, competition between schools and universities, the basketball tournament of the Basketball Association of Thailand under the Royal Patronage, international competition, SEA Games competition, Asian Games, Asian Basketball Championship, Olympic competition and World Basketball Championship, etc. Basketball is a team sport that requires various skills and techniques, in addition, there 3 important fundamentals for playing [1] 1. Basketball pick-up 2. Basketball dribbling and 3. Basketball shooting.

These 3 skills are very important skills for playing basketball [2] stated that the most important is the shooting skills. Basketball shooting is very important skills in playing basketball because basketball is a sport which measure losing and winning by scores in which the players who scored the most will win. Thus, basketball shooting is considered an important skill in playing with scoring in shooting into the basketball hoop 2 and 3 points, respectively depending on the distance of the shooting and 1 point is the score obtained from the penalty shootout only. It is consistent with Pimphan [2] claimed that, shooting is the heart of basketball and the team

that scored with more accuracy even if their other skills are weak, there is still a chance to win. Therefore, all players must practice different shooting methods to be skillful and precise.

From the observation of students' behavior in physical education class in the 1st semester, the researchers found that; students are very enthusiastic in learning, there are many students with low basketball skills, they are still lack of accuracy in sending and receiving the ball during training and they are lack of fluency and flexibility in dribbling basketball. Therefore, the students who have low skills in playing basketball are trained to develop their basic skills for dribbling basketball and lead mathayomsuksa 1 students from Thammachotsuksalai School, academic year 2019 to play basketball.

II. MATERIALS AND METHODS

A. Population and sample in research

The population in this research was mathayomsuksa 1 students from Thammachotsuksalai School, Suphanburi province, academic year 2018, from 10 classroom total 390 people. The sample group in this research was 20 mathayomsuksa 1 students, from purposive sampling of students with low basketball dribbling skills.

B. Research tools

- An elastic ball innovation.
- Basketball dribbling drills with elastic ball, physical education (basketball) about basketball dribbling of mathayomsuksa 1 students.
- Two tests of the basketball dribbling skills are: Fast basketball dribbling test [5]; Zigzag dribbling test.
- The students' satisfaction questionnaire on learning management by physical education satisfaction questionnaires about basketball dribbling of mathayomsuksa 1 students.

C. Data collection

The researchers had conducted teaching with the basketball dribbling drills with an elastic ball on basketball dribbling skills. It took 6 hours to teach and the course was organized for 2 classes per week for 3 weeks.

In the second semester of the academic year 2018, while students were training and learning, the researchers observed and recorded students' behaviors, checked and rated students' activities and tested students about the basketball dribbling skills after studying in each learning management plan which consists of 2 tests.

The researchers measured students' basketball dribbling skills with the basketball dribbling skill measurement form.

The researchers surveyed students' satisfaction on learning management with basketball training drills with an elastic ball.

D. Data analysis

The researcher analyzed data by dividing into 3 parts as follows: The effectiveness of basketball training drills on shooting skills. The researchers found the effectiveness of the basketball training drills with an elastic ball according to the criteria 75/75 by:

- Finding the percentage of the average score of the whole group of students from participation in activities and students who did the skill tests correctly calculated as a percentage to compare with the first 75 criteria
- Finding the percentage of the average score of the whole group of students who did each test correctly calculated as a percentage to compare with the last 75 criteria and finding the efficiency of the basketball dribbling drills with the elastic ball as a whole according to 75/75 criteria, by finding the percentage of the average score of the whole group of students from participating in the test activity correctly calculated as a percentage to compare with the first 75 criteria
- Finding the percentage of the average score of the whole group of students who did the basketball dribbling skill test correctly calculated as a percentage to compare with the last 75 criteria.

Basketball dribbling skills of students who trained by basketball dribbling drills with an elastic ball before training and after training. From the result of basketball dribbling test of the sample group students before and after training by the basketball training drills with an elastic ball, the researchers used the data to analyze in order to present the mean and standard deviation. Furthermore, researchers used data to compare students' skills after training by analyzing the program from the computer.

Students' satisfaction on learning and training with basketball dribbling drills with an elastic ball. The researchers used the data obtained from the satisfaction questionnaires according to the rating scale form to compare the average according to the following criteria:

- 5 means strongly agree
- 4 means quite agree
- 3 means neutral
- 2 means disagree
- 1 means strongly disagree

Then the researchers used the data to analyze to find mean and standard deviation by analyzing each item and overview

after that, the mean value has been interpreted according to the following criteria:

- The average 4.50-5.00 means the highest level of satisfaction.
- The average 3.50-4.49 means high level of satisfaction.
- The average 2.50-3.49 means medium level of satisfaction.
- The average 1.50-2.49 means low level of satisfaction.
- The average 0.50-1.49 means the lowest level of satisfaction.

III. RESULTS AND DISCUSSION

Table I. to create an elastic ball innovation and the basketball dribbling drills for developing the basketball dribbling skills of mathayomsuksa 1 students.

From the table I., the efficiency of basketball dribbling drills by using an elastic ball of Matthatomsuksa 1 students consisted of scores from doing exercises and post-test. The students' average score from doing exercises was 7.45 ($\bar{x} = 7.45$) or 74.50% and S.D. = 0.605. Similarly, the students' average score from the post-test was 7.5 ($\bar{x} = 7.5$) or 75% and S.D. = 0.761. From the analysis, it was found that the elastic ball innovation for Matthatomsuksa 1 students was efficient at 74.50/75 (E1/E2) which was higher than the set criteria of 75/75.

TABLE I. THE ANALYSIS RESULT ON THE EFFICIENCY OF BASKETBALL DRIBBLING DRILLS BY USING AN ELASTIC BALL

Items	N	Full marks	\bar{X}	S.D.	Efficiency
The scores from doing exercises class)E ₁ (20	10	7.45	0.605	74.5
The scores from the post-test (E ₂)	20	10	7.5	0.761	75

Table II. is to compare the basketball dribbling skills of mathayomsuksa 1 students by using the basketball dribbling drills with elastic ball before and after training

TABLE II. THE ANALYSIS RESULT OF BEFORE AND AFTER TRAINING

Scores	N	Results			sig
		\bar{X}	S.D.	t	
Pre-test	20	5	0.795	14.694	0.000
Post-test	20	7.50	0.761		

*sig < 0.05

From the Table II. the average score of Matthatomsuksa 1 students' basketball dribbling skills by using basketball dribbling drills with elastic ball after training was 7.5 ($\bar{x} = 7.5$) and S.D. = 0.795. The average score after training was higher than before training which was 5 ($\bar{x} = 5$) and S.D. = 0.761.

From the analysis, it was discovered that students' basketball dribbling skills by using basketball dribbling drills with elastic ball after training was higher than before training ($t = 14.694$) with statistical significance at .05 level.

Table III. is to study the satisfaction of mathayomsuksa 1 students on the basketball training drills with elastic ball. From the table III. the average score of students' satisfactions about the convenience of the innovation, the training pattern and materials was in the highest level which $\bar{x} = 4.50$ and S.D. = 0.61.

- The average score of students' satisfactions about doing activities by themselves or participating in group was secondary which $\bar{x} = 4.40$ and S.D. = 0.68.
- The average score of students' satisfactions about suitability of time for the drills was the last which $\bar{x} = 4.10$ and S.D. = 0.75.
- The total average of Matthatomsuksa 1 students' satisfaction on basketball dribbling drills with elastic ball was high which $\bar{x} = 4.27$ and S.D. = 0.39.

TABLE III. THE SATISFACTION ON BASKETBALL DRIBBLING DRILLS WITH ELASTIC BALL

Evaluation items	\bar{X}	S.D.	Meaning
1. The presentation of drills and contents is clear.	4.20	0.62	high
2. The drills are suitable to the training time.	4.10	0.75	high
3. The drills are appropriate.	4.15	0.67	high
4. Activities in each drill are interesting and attractive.	4.30	0.57	high
5. Activities are appropriate, and respond with the purposes.	4.30	0.66	high
6. Every student does the activities by themselves or participates in group.	4.40	0.68	high
7. The innovation and the training pattern are related to the contents.	4.20	0.70	high
8. The innovation and the training pattern attract students' attention.	4.35	0.67	high
9 The innovation and the training pattern are easy to understand.	4.15	0.85	high
10. The innovation, the training pattern and materials are convenient for using.	4.50	0.61	highest
Total average	4.27	0.39	high

IV. CONCLUSION

An elastic ball innovation and basketball dribbling drills for improving basketball dribbling skills of Matthatomsuksa 1 students were efficient at 74.50/75; Students' basketball dribbling skills by using basketball dribbling drills with elastic ball after training ($\bar{x} = 7.5$) was higher than before training ($\bar{x} = 5$) with statistical significance at .05 level. The satisfaction of mathayomsuksa 1 students by using basketball dribbling drills with elastic ball was high.

Firstly, from the study, it was found that an elastic ball innovation for developing basketball dribbling skills was efficient at 74.50/75, and helped students to develop their basketball dribbling skills. It may result from analyzing students' problems in basketball dribbling. Some students did not understand about the goal of basketball dribbling. However, this innovation could support students to set the correct goal of basketball dribbling, and related to [3] which studied and compared effects of using supplementary plyometric training on basketball dribbling agility. It was shown that basketball dribbling agility, explosive power of leg's massive, reaction ability and moving flexibility in the experimental group were significantly better than before training at the .05 level. In addition, this innovation also related to [4] who stated that setting the goal is one way of training. It drove trainees trying to do something in the near future, and the goal should be practical.

Secondly, students' basketball dribbling skills by using basketball dribbling drills with elastic ball after training ($\bar{x} = 7.5$, S.D. = 0.795) was higher than before training ($\bar{x} = 5$, S.D. = 0.761). It may arise from students' interests in the innovation and the new learning materials, so they can practice their skills continuously. This study related to Billamas (1987) that claimed how the skills emerge depended on quantity of works, repetition and concentration. Similarly, [5] said that students will learn better if they can practice skills and others. Therefore, the construct of elastic ball innovation and basketball dribbling drills should allow students to

repeatedly practice the skills. This principle was followed in this learning management, and students were able to develop their basketball dribbling skills.

Lastly, Matthayomsuksa 1 students' satisfaction on basketball dribbling drills with elastic ball was high due to the enjoyable and interesting drills. The drills allowed students to participate in group, activities and assessment, and support students to be assertive, construct their own knowledge, and also create the good learning environment. This study also related to [6] that studied Matthayomsuksa 4 students' satisfaction on the video assisted to measure basketball skills. It was discovered that students' satisfaction was high.

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Influence of Reciprocal Method on the Squat Long-Jump Learning

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Abstract—This research aims at discovering the influence of reciprocal teaching method on the squat long-jump learning and its significance in improving the outcomes. It involved 40 male students and employed the experimental method in testing the hypothesis. The data processing procedure in deciding the hypothesis was conducted by: (1) determining the average, (2) determining standard deviation, (3) conducting Lilliefors test for normality, and (4) conducting pre- and post-test. It was found that t_{count} of the squat long-jump (9.45) was higher than t_{table} at the level of confidence or significance level $\alpha = 0.05$ with $df (n-1) = 39$ of 1.703. Therefore, it can be concluded that reciprocal teaching method significantly influenced the squat long-jump learning.

Keywords— *Reciprocal method, squat long-jump learning*

I. INTRODUCTION

Education is the primary medium of human development in determining the future of the nation. It also determines its quality attentive to their rights and obligations as citizens and communities. Through education, Indonesia will be freed from backwardness and ignorance. Thus, education can be considered as the main indicator of Indonesia's human development index.

Various approaches have been adjusted including providing additional hours of physical education. However, the outcomes are still not as expected. Based on the initial observation, the problem was caused by the students' mindset regarding physical education. They believe great energy, sufficient body strength, and special skill are required in physical education causing them to be less motivated and as a result, affecting their learning outcomes. In reality, physical education can contribute to the growth and development of students as stated by [1] explaining that it can improve their psychomotor, cognitive, and social development. However, to meet these outcomes requires the use of multiple teaching methods. As stated by [2] explaining that teaching style may also affect self-regulated learning outcomes, which is an important aspect of learner activity that has drawn a lot of attention.

Athletic learning, particularly long jump, is a less popular subject. It can be seen from their enthusiasm in participating

the physical education, especially squat long-jump exercise. However, their enthusiasm in the exercise is not a guarantee that they can do it properly and correctly. Moreover, they also tended to be crude in performing squat long-jump. Their movement was clumsy when attempting to take-off and they seemed to be afraid when attempting to land on the board. This is a problem because gravitational force is formed when the body is high and therefore, a take-off has to be done quickly, strongly, and accurately [3] stated that the influence of leg stiffness is comparable to that of the angle of attack. A stiffer leg leads to faster repulsion and thus at a lower angle of attack to a loss in horizontal velocity and jumping distance. In contrast, a softer leg cannot produce the necessary vertical impact. This certainly indicates their poor ability to do long jump, especially the squat technique, is caused by lack of exercise duration in schools, inadequate facilities and infrastructures with a lack of students. The results can be seen when the teacher demonstrates the technique and students are asked to re-demonstrate it. Their movements are careless and less satisfying, which can affect their learning outcomes.

Reciprocal method provides the opportunity to practice repeatedly with an observer providing an immediate feedback. Giving and receiving feedback by observing their friend demonstrations, correcting, growing patience, and tolerating create a positive atmosphere during the class due to students' enjoyment. In the end, they can evaluate each other alternately. The reciprocal style of teaching, also known as teaching style c, which is a commonly used peer-tutoring structure in a physical education. Physical educators from around the world are reporting to use style c in their instructional practices as extensively as other more teacher-centered styles like the practice and command styles of teaching [4]. This is supported by [5] stating that reciprocal is a teaching method in which the students are responsible to observe their friends or partners' performance and give them feedback as soon as possible after the movement was performed. Motivation is the foundation to establish a good learning environment. In addition, [6] argued that interest, challenge, enjoyment, and choice are the central constructs in designing effective and motivating learning environments.

By establishing such environment, students are expected to be responsible for their own learning and have to find an

answer for the question given to them. The purpose of reciprocal method is to improve students learning outcomes so they can receive various insights from their friends. It is also establishing social interaction between students that could development their social skills. In this technique, students are practicing in pairs, alternating the roles of performer, performing the task, the and observer, providing immediate and ongoing feedback to the performer. The advantage of using this method is that all students can receive increased and immediate feedback during practice [7]

This method is expected to greatly motivate students' interest in learning because it establishes a pleasant atmosphere during a learning activity such as being able to interact with each other, cooperate, and help friends who cannot perform the long jump yet. It is found that most students feel shy asking for their teachers help when they cannot perform the basic techniques. By forming small groups to learn it together, it is expected that students are more active in learning because they could ask their friends for help if they feel too shy to ask their teacher. Therefore, by taking the pervious phenomenon into account, this research entitled "Influence of Reciprocal Method on the Squat Long Jump Learning" was conducted.

II. MATERIALS AND METHODS

Method is an effort to achieve the research objectives. In this case, after various considerations, an experimental method was employed in this research. According to [8], experiment is an observation under artificial condition where it was made and arranged by the authors.

Based on the description, experimental method is a direct attempt to investigate a causality. Therefore, in this research, a direct experimentation was conducted in order to investigate the causality of reciprocal method and its influence on the squat long-jump learning.

III. RESULT AND DISCUSSION

The data obtained from pre- and post-test were still raw, which requires statistical processing to generate meaning from the data. To reveal the result of squat long-jump learning, an experiment on 40 male students had been conducted. The data was summarized in the following table.

TABLE I. CALCULATION RESULT OF SQUAT LONG JUMP PRE-TEST AND POST-TEST AVERAGE SCORE

Treatment	Pre-test			Post-test		
	Total Score	n	\bar{X} (Score)	Total Score	n	\bar{X} (Score)
Squat long-jump learning	6,830	40	40.02	6,961	40	42.51

Squat long-jump learning	6,830	40	243.92	6,961	40	248.60
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TABLE II. CALCULATION RESULTS OF SQUAT-LONG JUMP PRE-TEST AND POST-TEST STANDARD DEVIATION

Treatment	Pre-test			Post-test		
	Total Score	n	S	Total Score	n	S
Squat long-jump learning	6,830	40	40.02	6,961	40	42.51

After obtaining the average and standard deviation scores, a normality test was conducted as one of the requirements to test the hypothesis. In this case, the test was conducted using Lilliefors normality test in which the result was used in the data analysis. Furthermore, parametric statistical approach was used to process the data. The result of normality test of the pre-test and post-test were presented in the following table.

TABLE III. CALCULATION RESULTS OF SQUAT-LONG JUMP PRE-TEST AND POST-TEST NORMALITY TEST

Treatment	Pre-test			Post-test		
	L ₀	L _{table}	Conclusion	L ₀	L _{table}	Conclusion
Squat long-jump learning	0.1509	0.167	Normal	0.1373	0.167	Normal

Based on Table 3, the L_{count} (L_0) value of pre-test was 0.1509. At $(\alpha) = 0.05$ and $n = 40$, the critical value of L was 0.167 indicating L_{count} (L_0) was lower than L_{table} , so that the hypothesis was accepted. Therefore, it can be concluded that the sample of the population was normally distributed

In addition, the L_{count} (L_0) value of the post-test was 0.1373. At $(\alpha) = 0.05$ and $n = 40$, the critical value of L was 0.167, indicating L_{count} (L_0) was lower than L_{table} , so that the hypothesis was accepted. Therefore, it can be concluded that the sample of the population was normally distributed

The next step was to calculate the significance of the average difference using t-test in which the result was presented in the following table.

TABLE IV. SIGNIFICANCE TEST RESULT

Treatment	t_{count}	t_{table}	Conclusion
Squat long jump learning	9.34	1.703	Significant

Based on Table 4, the value of t_{count} was 9.34. The value of t at the real level (α) = 0.05 with degree of freedom (df) = n-1 (39) was 1.703. Therefore, t_{count} (9.34) was greater than t_{table} (1.703), so that the hypothesis was rejected because it was outside the acceptance area. Therefore, it indicated that there was a significant improvement on the influence of the reciprocal method on long squat-jump learning.

Based on the discussion above, it can be seen that reciprocal method positively influenced the squat long jump learning. It was successful because method was capable to encourage students to conduct problem-solving strategy through discussion. Reciprocal teaching was developed consisting of content and method. The content involved four reading comprehension strategies, namely predicting, clarifying, questioning and summarising while the method consisted of a dialogue, initially between the teacher and students, and then (through giving students the role of teacher in turn) between students so that they practiced comprehension strategies through discussion. It was also interesting that students' motivation and interest in learning were also improved. This was in accordance with explaining

that reciprocal method could improve students' motivation and self-efficacy, leading to better performance. Both the reciprocal and monitor groups reported to have significantly greater enjoyment than the student group.

IV. CONCLUSION

Based on the research, the following conclusion can be drawn: the value of $t_{\text{count}} = 9.34$ indicates that the reciprocal method significantly influenced the squat long-jump learning.

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Developing Quality Physical Education Delivery System in Myanmar

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Abstract—In this paper, we aim to introduce the physical education textbook development process for primary school (5-year system) in Myanmar. The Project for Curriculum Reform at Primary Level of Basic education in Myanmar (CREATE) is the project which promotes curriculum reform in Myanmar in cooperating between Ministry of Education in Myanmar and JICA in Japan. It started in May 2014 and will continue till March 2021. The CREATE develops textbook for all 9 subjects including Physical Education and their teacher’s guides at primary level. Grade 1 children in school are using these textbooks from June 2017. Objectives in physical education were developed in 4 domains (psychomotor, cognitive, affective and social). We have also developed teaching and learning steps and introduced alternative assessment system. Throughout tryout lessons in schools, we enhance our knowledge and skills to develop the appropriate textbook in Myanmar education reform context. Specialist from Japan side also had the good opportunity to reflect and revise Japanese physical education system in the process of revision of the Course of Study for physical education in elementary school. In this sense, this project produces mutual benefit for both Myanmar and Japan.

Keywords—Physical Education, Myanmar, Textbook Development, Elementary School

I. INTRODUCTION

In this paper, we aim to introduce the physical education textbook development process for primary school (5-year system) in Myanmar. The Project for Curriculum Reform at Primary Level of Basic education in Myanmar (CREATE) is the project which promotes curriculum reform in Myanmar in cooperating between Ministry of Education in Myanmar and JICA in Japan. It started in May 2014 and will continue till March 2021. The CREATE develops textbook for all 9 subjects (Myanmar language, English, mathematics, science, social studies, physical education, morality and civics, life skills, performing arts and visual arts) and their teacher’s guides at primary level for those subjects. Physical Education is one of these 9 subjects. The content on health education is included in life Skills and dance is taught in performing art, not in physical education.

These documents would be also used in pre- and in-service teacher education program. Grade 1 children in school are using these textbooks from June 2017, but because of the

financial problem, textbooks of Physical Education from 1st grader to 3rd grader have not offered, but from 2020, the textbook for 4th grader will be delivered. The new curriculum aims to enhance student ability to learn from their experiences, think by themselves and utilize obtained skills for their daily life. In this sense, the new curriculum should be developed based on standards-based curriculum concept. For this aim, the Create structures project members shown in the table 1.

Responsible person for developing curriculum are organized in 10 section, CDT(curriculum development) in performing art and visual art are organized separately. Also, in teacher education section, we also have responsible person who is also in charge with curriculum development. At the beginning of the project, we don’t have any responsible person for physical education in teacher education. In the process of the project, we have one member for Physical Education in teacher education, It makes easy to cooperate CDT with teacher education members to develop appropriate document for teacher education.

In this project, assessment expert covers all subject. So, through his participation in each working, CDT in all subject share common in formation in each subject context. For example, in Physical Education, performance tasks and self - assessment are used and item bank is not used in the textbook and teachers guide. Both assessment tools are more meaningful for both teacher and children to assess outcomes in authentic context. CDT and expert in Physical Education have gotten the advice from the assessment expert. Also, one project member is now supporting not only Physical Education, but other subject. It means, CDT develop their knowledge and skills for developing the documents through communicating with multiple human resource.

TABLE I. CURRICULUM DEVELOPMENT (CDT) MEMBERS AND TEACHER EDUCATION MEMBER STRUCTURE IN CREATE

Myanmar	Assessment and Evaluation
English	Teacher Education
Mathematics	Computer Operators
Social Studies	
Science	

Morality and Civics	
Physical Education	
Life Skills, Performing Arts and Visual Arts	

II. MATERIAL AND METHODS

In Myanmar context, characteristic of physical education is described followings;

“Physical education enhances physical literacy (motivation, confidence, physical competency, knowledge and understanding) developmentally appropriate to maintain physical activity throughout their daily life.”

Also, primary objectives are described followings;

- 1) To enjoy the physical activities, be self-confident, and have positive attitudes in physical activities
- 2) To acquire the basic skills and improve health related fitness to participate in daily life physical activities.
- 3) To understand the basic knowledge and apply it to solve problems they face in physical activities.
- 4) To develop the basic social skills for cooperative participating & paying respect each other in physical activities.

Primary objectives include affective domain, motor domain, cognitive domain and social domain objectives as described in Quality Physical Education in UNESCO [1]. Among these 4 objectives, there are no priority.

Content area is set in 2 stages. 1st stage is from 1st to 3rd and 2 stage is from 4th to 5th. In the 2nd stage, singing and dancing game is not set. Also, in the time allocation, reserved time is described. Yearly plan should be developed based on Subject wise curriculum.

TABLE II. OUTLINE OF SUBJECT CONTENTS

Content Area		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Singing and dancing game		10	10	8	/	/
Fitness Exercise	Gymnastic	4	2	2	12	
	Locomotor	10	10	6	4	
	Non locomotor	4	4	4	2	
	Manipulation	18	16	16	14	
Group Game		10	10	8	22	
Competitive Game		16	12	20	34	

Content Area		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Singing and dancing game		10	10	8	/	/
Fitness Exercise	Gymnastic	4	2	2	12	
	Locomotor	10	10	6	4	
	Non locomotor	4	4	4	2	
	Manipulation	18	16	16	14	
Reserved time		-	8	8	8	
Revision		/	/	/	12	
Total period		72	72	72	108	

*: time allocation for grade 5 is not decided at this moment.

III. RESULT AND DISCUSSION

Process of developing the text and Expected students Learning Outcomes. At the beginning of the project, following 3 tasks have existed.

- 1) Standard based curriculum development
- 2) Providing with document to link developed curriculum with curriculum and lesson in school level
- 3) Developing physical education community to realize quality physical education.

Before this project, there was no standards for textbooks for all subjects in Myanmar. There were textbooks for some subject, but no textbook for physical education existed. Instead of textbook for children, there was teacher’s manuals for teachers. This teacher’s manuals are only the documents which show content in physical education, but it explains only how to implement several activities.

In this situation, for developing the new physical education curriculum, we had to change our procedure to standards-based curriculum development. “a standards-based curriculum requires to those developing the curriculum to look first at what they are trying to accomplish before identifying activities that will help students attain those standards [2]

In considering with this situation, at the beginning of this project, we had discussed and set the objectives and expected outcomes based on the basic concepts of this educational reform, expectation to physical education from Myanmar physical educators and international context on quality physical education proposal. As the result, objectives in

physical education were developed in 4 domains (psychomotor, cognitive, affective and social).

On the hands, only describing expected outcomes in the new curriculum would be no be enough to achieve quality physical education. We have to provide with sample activities aligned with expected outcomes, time allocation for each unit, general instructional design, expected teaching skills and assessment tool.

For developing requested documents, one had to consider “no “one best way” to teach physical education” [2] because of expected multiple outcomes in physical education. On the other hand, no general information on instructional design would be so hard to implement physical education lesson align with developed curriculum. So, for developing the instructional model, we refereed to tactical approach [3] and cooperative learning [4, 5, 6]. As stated in Berlin Agenda [7] clearly, time allocation and teacher education would be critical for quality physical education.

Also based on instructional theory, authentic assessment in sport pedagogy and expected outcomes in Physical Education Teacher Education (PETE), we have developed teaching and learning steps and introduced alternative assessment system such as self-assessment in considering with Myanmar context. For example, activities were selected and developed in both these expected outcomes in the curriculum outline and Myanmar context. That means activities would be familiar with primary school teachers in Myanmar and develop mental of children appropriately in Myanmar. In the process of this project, we also had close collaboration with members who are working for teacher education, experts responsible for other subjects and assessment. Even though we have developed the textbook throughout tryout lessons in schools, it makes us easier to enhance our knowledge and skills to develop the appropriate textbook in Myanmar education reform context and get feedback on the developed textbook and teachers guide directly from primary schools.

How do CDT develop their competency to develop QPE. Teachers have to have pedagogical content knowing (PCKg) (Cochran et al.,1993,p.263) to implement quality lesson. So, PETE standard in USE(Shape,2017) are showing multiple expected outcomes teacher have to acquire such as to design instruction, implement it and assess it. Usually, novice teacher has to acquire them in certain time, but CDT have to acquire such knowledge and skills on the job training, but in this project, CDT have to show competency to develop curriculum, unit and lesson plan and also assessment tool and plan.

At the beginning, most important task to be solved in this stage is to develop standards-based curriculum, but it was quite difficult tasks to be achieved because before the project, teacher’s manual is described content based. On the other hand, CDT should imagen learning process in each lesson

because in teacher’s guide, they have to describe lesson process. Also keeping alignment between expected outcome and instruction, they need also appropriate assessment tool.

On the other hand, to check the developmentally appropriateness of the content, they have to assess outcomes in tryout lesson. So, CDT have to implement physical education lesson based on developed subject wise curriculum and lesson plan they have developed for teacher’s guide. For effective implementing it, they have to make effective instruction design and how effective teaching skills because they don’t ask classroom teacher to implement it.

Through implemented lesson assessment based on expected outcomes and lesson plan, we improve several teaching skills and strategies to implement physical education lesson effectively. Also, in this process, CDT develop appropriate equipment for their lesson, Through cooperation in each other in CDT and also with other project members, CDT enhance their knowledge and skills and motivation to be engaging in the project even though we have faced with several problems.

Personal reflection on the process of the project. In this project, CDT develops their knowledge and skills, motivation and social capital in their community. Such process would be seen in the next self-assessment how he enhances his responsibility and ability on his work to develop curriculum/textbook/ teacher guides by one of CDT. He described his experience in the following lines.

I started working in this project for curriculum reform at primary level of basic education in Myanmar in September, 2013. At that time, the project hasn’t started yet and the project started in May 2014. During these eight months, a Japanese expert trained for teachers who would be the curriculum developers for this project and taught us to improve knowledge of and skills on curriculum development in order to work effectively and efficiently and to set up the common understanding of developing new primary textbooks and teacher’s guides among curriculum developers.

I felt that the curriculum development process is very important but I didn’t know anything about curriculum and curriculum development. At that time, I was youngest among teachers and only have 5 years teaching experience. I was questioning to myself “Am I able to do this task?”. However, I expected that I could learn from senior teachers and range of knowledge from teachers who came from different departments and different regions around the country. The Japanese expert is also very supportive and I could learn need for curriculum materials and curriculum development for the country. The expert shared international curriculum models from different countries such as Japan, New Zealand, United Kingdom, Canada and Australia and he let the team to consider the curriculum model for Myanmar. The project organized many trainings such as basic principles and

practices in curriculum development, child centered approach, inclusive education, IT training, gender equality training and so on. These trainings helped me to enhance my knowledge and acquire important factors in curriculum development for all children.

The project systematically organizes curriculum development team for each subject. There are four members in each subject curriculum development team. Those four members came from different departments such as assistant lecturer from education college, deputy staff officer from department of education research, planning and training, a junior teacher for middle school level and I was a primary teacher for primary school level.

We read Comprehensive Education Sector Review report draft which was produced in 2012 and analyzed the feedback from the report related to physical education. The team also read primary level physical education teacher guides from old curriculum. The old curriculum was written only written contents and described only one objective for one learning area among five learning areas such as health and body exercises, fitness exercises, singing and dancing, group games and competitive games. At the mid-year of 2014, Physical Education expert, Professor Yoshinori Okade arrived and explained how to design objectives and scope and sequence of physical education. The team discussed objectives for primary level students based on national curriculum framework which is produced first draft in 2014 and the students' stage of development in age (6 years to 11 years old). With the support of Professor Okade, the team identified four learning areas for physical education such as singing and dancing, fitness exercises, group games and competitive games. And then we identified scope and sequence for new curriculum Grade -1 to Grade -5. I am interested in developing curriculum but I was worried that I would make mistake. The project gave guideline and we developed curriculum outline for each subject which includes objectives and learning areas. It is very useful and very good guideline for curriculum developers.

In old curriculum, we didn't have textbooks for physical education. In new curriculum, the textbook for physical education would be developed for primary students. The team reflected what should be characteristics and needs of students for future. The Professor also brought and shared Japanese primary level physical education books to the team. The curriculum development team haven't seen physical education books for primary schools in international standard. Later, each member in the team had to develop textbook design and started practice and develop one unit for new curriculum.

Being curriculum developer has many challenges as this education reform is the first time for the country after 30 years. Nowadays, education visions face challenges in attempting to local and global identities based on the knowledge and values that students need to face in 21st century (Amadio et al., 2014). In this context, the curriculum

reform should be transformed in order to meet the skills for life, learning and working in 21st century. Therefore, the expert explained international physical education context, how to teach physical education and assessment tool for physical education in 21st century. The curriculum development team has to consider local and global identities based on the knowledge that the team has and also making meeting and getting suggestions from subject wise curriculum committee. The national curriculum committee give comments for alignment with national policies and give final approval for curriculum development. See below figure 1.

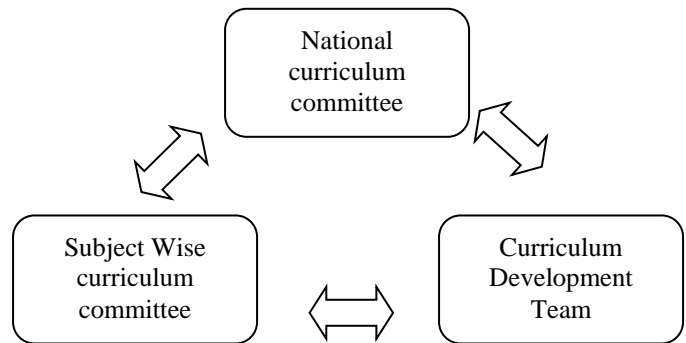


Fig. 1. System to approve the document for developing Physical Education Curriculum in Myanmar

Mutual benefit of cooperation between 2 countries and future tasks left behind For supporting this project, expert from Japan have to understand the current condition for implementing physical education in Myanmar even though he has never been in Myanmar before the project. Discussing with project members directly, visiting schools in different states, having interview with teachers, participating in Subject wise committee and know members, try to understand their background experience, knowledge and skills, checking report in other subjects and sections in the project and so on are really important to check for understating his own knowledge and skills for this project.

Also, we combined our project with other JICA programs in Japan on Physical Education in Basic Education. New counterparts of the project have visited Japan and have experienced workshop for developing quality physical education program in basic education with delegates from different countries. It also enhanced our experience to develop quality physical education in Myanmar.

In the project, expert from Japan also had the good opportunity to reflect and revise Japanese physical education system in the process of revision of the new Course of Study for physical education in elementary school and the guideline for implementing it in Japan. He can also use his experience in supporting schools and teachers to develop quality physical education program. In this sense, this project produces mutual benefit for both Myanmar and Japan.

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Improvement of Service Learning Results for Volley Balls through Modification of *Bola Gebok* Traditional Game

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Abstract— Improved results of Learning to Service on Volleyball through Modification of Traditional Games *Bola Gebok* is an action research study. The study was conducted in class XI MAN 14 Jakarta with 32 research subjects. The minimum completeness criteria is 80 with a success percentage of 85%. Based on the research data, it can be concluded that the modification of the *Bola Gebok* Traditional game can improve the learning outcomes of the volleyball class XI MAN 14 Jakarta students. The study was conducted in two cycles, the number of meetings in cycle I was twice and cycle II was only one meeting. Based on the preliminary data before the action, the acquisition of student scores that fulfilled the KKM was only 8 students with a percentage of 25%. The first cycle of the percentage of graduation has only reached 69% so action is needed in the second cycle. In the second cycle obtained an increase in the value of students with a number of 29 students and a percentage of 91%. Thus the action research is not resumed because it is in accordance with the target set.

Keywords— traditional game, modification of bola gebok, serve on volleyball

I. INTRODUCTION

Physical education has been acknowledged by a lot of people as a component of education. However, the implementation of physical education teaching program is not as effective as expected. The orientation of the learning must be adjusted to the development of the child, the learning materials, and the way to deliver the lessons so that the learning activities would be interesting and fun.

According to Mulyanto, physical education is a process of learning to move and learning through motions. The feature of physical education is learning through motion experiences to achieve the purpose of teaching through implementation, physical activity, games and sports [1]. Basically physical education itself is education through physical activity, which includes the skills and development of motion from various sports, one of which is volleyball.

A sports teacher must be able to put forward the students who are lacking in characters to become someone with strong characters because most teachers only teach non-provoking lessons, the teacher only gives examples without giving a variety of teaching styles, so it would be lacking in teaching

methods and would seem monotonous. Implementing the method to play games is one of teaching methods. A good lesson would apply games as an educational tool, playing games could help to achieve the success in education because playing games has the values to develop harmony between the body and the soul.

According to Mohamad Syarif, playing games is a spontaneous and direct activity carried out by children. Playing for a child is not just about filling time, but a medium for children to learn. Every form of playing activities in children has a positive value towards their development [2].

Game modification can be used as an alternative of learning, through game modification the teacher makes developmental changes in accordance with the characteristics of the school as well as high school students in learning that can be modified.

Modification does not remove the meaning and the purpose of the actual learning, because the principle of modification is simplification. In addition, it can also develop teachers' creativity so that they can carry out lessons with limited tools but would not reduce the values and goals of the learning that must be achieved.

II. MATERIALS AND METHODS

This study aims to improve the learning outcomes of volleyball serve lessons in class XI IPS 2 MAN 14 Jakarta with 32 students as subjek research. The method used classroom action research with research into Kurt Lewin's method, in which there are four main steps in one cycle, namely (1) Planning, (2) Implementation, (3) Observation and (4) Reflection. This research is considered successful if it gets an average score of 80 and a success percentage of 85%. The instrument used in this research is the process of serving the volleyball beyond the net and entering opponent's area correctly. Here is the grid of the instrument.

A. Conceptual Definition

The results of learning volleyball serve are the results obtained from the process of students learning to serve volleyball through the stages of motion learning with the

modified traditional gebok ball games, where there are a series of movement processes starting from the initial attitude, implementation movements, and advanced movements.

B. Definition of Operational

The results of learning volleyball serve are scores obtained after conducting a series of serve processes on volleyball done by students starting from the initial attitude, implementation movements and advanced movements where each element of the movement consists of 3 movement indicators, namely: 1). initial attitude; (a). body, (b). feet, (c). hand, 2). implementation movements; (a). body, (b). hands, (c). elbow. 3). advanced movement; (a). target, (b). body, (c). the final movement, with a total score of 18 on all indicators and with the assessment criteria of: True (B) gets a value of 2 and False (S) gets a value of 1.

III. RESULT AND DISCUSSION

The results of the research are the implementation of class action carried out with two cycles: two meetings in the first cycle and one meeting in the second cycle, in which the results obtained are based on the score of the minimum completeness and the passing percentage of the obtained learning outcomes serving the volleyball in the second cycle is in accordance with the stated goal. Before the research was carried out, the researchers also conducted a preliminary study by observing the results of learning volleyball serve by carrying out tests using instruments that the researchers had arranged. Data obtained from initial observations illustrate how the achievement of students' learning outcomes so that researchers can design the next action step by step. The initial data presentation can be presented as follows:

TABLE I. Distribution of the Preliminary Tests for Volleyball Serve Learning Outcomes

Score	Absolute Frequency	Relative Frequency	Median
55 – 59	13	41	57
60 – 64	5	16	62
65 – 69	3	9	67
70 – 74	3	9	72
75 – 79	8	25	77
Total	32	100%	

The distribution table in the initial test showed the scores achieved by the students in the initial float serve test, most of the students obtained the score of 55-59 (41%) from the total number of the students. In this study, the students with the passing criteria in the aspect of assessing the float serve with a value of 75, and students who did not meet the criteria as many as 24 students (75%) and as many as 8 students (25%) were able to achieve the minimum student criteria.

The Implementation of Cycle Actions.

A. Planning

In this stage, the activities that must be carried out are making a learning plan and preparing the game modifications that you want to use. In addition, this stage also prepares tools from the necessary supporting facilities, prepares instruments for recording and analyzing data regarding the process and the results of the action.

The first cycle was designed as the implementation of a float serve learning program, lessons are related to the form of improved learning outcomes for serve using modified traditional gebok ball game. With the modified traditional gebok ball game which starts with learning to put a burden on the position of the foot, body positioning, the position of the hand when holding the ball, the attitude of focus on the intended target, and when releasing the ball is done repeatedly.

The second cycle is planned from the reflection of the first cycle that focuses on the step of doing serve in the motion implementation and advanced motion.

B. Implementation or Action

This stage carries out the actions that have been formulated, which applies the modified traditional gebok ball game in learning, which includes the initial activities, core activities and closing activities. The game for cycle I which consists of two meetings has 5 games in it which are: the butterfly game, the postbox game, and attacking opponents in the first meeting, the fortress gebok game, and war between groups in the second meeting. Whereas in cycle II there was only one meeting with the game of fortress gebok and war between groups. The following are the final test data in cycle I and cycle II.

TABLE II. Distribution of the Escalated Float Serve Final Test Results in Cycle I

Score	Absolute Frequency	Relative Frequency	Median
67 – 71	4	12	69
72 – 76	6	19	74
77 – 81	7	22	79
82 – 86	11	35	84
87 - 91	4	12	89
Total	32	100%	

From the table above it can be concluded that the largest frequency obtained by students with a range of scores of 84 (35%) and the smallest frequency in 2 ranges of scores, namely with a range of score of 69 (12%) and a range of score of 89 (12%). From the table, it appears that students who have scored below the minimum completeness criteria had reduced but still have not reached the expected target. There are still 10 students who score 69-74 (31%).

TABLE III. Distribution of the Escalated Float Serve Final Test Results in Cycle II

Score	Absolute	Relative	Median
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	Frequency	Frequency	
72 – 76	3	9	74
77 – 81	6	19	79
82 – 86	11	34	84
87 – 91	6	19	89
92 – 96	6	19	94
Total	32	100%	

From the table above, it can be concluded that the frequency obtained by students with a range of scores below the minimum completeness criteria has decreased. Only 3 students obtained a range of 74 with a percentage of 9%.

C. Observation

At this stage, what must be done is to observe the behavior of students in participating in learning activities, especially when doing float serve with the modified method of traditional gebok ball games starting from the initial stage to the final stage of implementation in accordance with the learning method planned by the researcher.

However, only observing the score of the learning results on volleyball serve has not yet been achieved in the expected criteria, it is evident from the achievement of the score of the learning results on volleyball serve by applying modification to the traditional gebok ball game only reached a percentage of 69% because there are still students who do not understand various float serve movement elements appropriate to the implementation indicators and follow-up motion.

It can be concluded that there is an increase in understanding of concepts and the implementation of various motion elements in the score of learning results on volleyball serve conducted by researchers in the second cycle, and proven to have experienced an increase in average value of 84.9 which means that the score has exceeded targets set by researchers and collaborators.

D. Reflection

At this stage the researcher recorded the results of the observations, evaluate the results of observations, analyze the results of learning and take notes of weaknesses to be used as material for drafting the next cycle, until the objectives can be achieved.

Based on the results of observations and analysis of the learning process in cycle I and cycle II, it can be concluded that the results of learning volleyball serve with modified traditional gebok ball games in the XI IPS 2 MAN 14 Jakarta class have increased in the learning process. This can be seen from the overall learning results carried out in the first cycle and second cycle. In the first cycle the understanding of the concept of learning serve reached an average value of 79.7 while in cycle II the understanding of the concept of float serve learning has achieved an increase than in the first cycle, namely 84.9.

Traditional gebok ball game is a group game played by using a round-shaped instrument that can resemble a ball

and played by throwing the ball to the opponent of the other group. This game is a traditional game commonly played by children where the elements of the game are related to speed, agility, and strength when throwing a ball. Ardiwinata states that folk games or traditional sports as national cultural assets need to be preserved, explored, and cultivated, because besides being a sport / game for leisure time, it also has the potential to be further developed as a sport that can help improve physical quality for students [3]. Ahmad nuril stated that the float serve is a serve that does not contain a spin. The ball seems to float, without rotating it at all. The float serve is quite effective, because the direction of the ball is erratic. The ball vibrates and drifts, sometimes changing direction, vertical or horizontal [4].

Based on this theory, the researchers see that it can be implemented with creativity and innovation in P.E. teaching activities especially at the high school level in which through the creativity and innovation the difficulty of learning the movements experienced by children, in this case with volleyball serve, can be solved by applying the playing approach. According to Hyvonen, playing is an important and valuable activity, which is considered as a pleasant and beneficial thing in one's development [5]. Traditional games are one of the methods that can be chosen in order to achieve these goals. Moreover, in the digital age of 4.0, children are more familiar with the modern digital games through access to cyberspace so that traditional games are forgotten. Modified gebok ball game is a form of innovation carried out in order to answer the problems experienced during the physical education process in high school, especially in the lesson of volleyball serve.

The results of research conducted by Pujjillah (2017) by modifying the game also answers the problems that exist in volleyball learning where by modifying the game spoonbot increases the volleyball learning outcomes with very good learning outcomes criteria [6]. Yustal (2017) in his research also sought to improve learning outcomes of passing volleyball through balloon playing models [7]. A similar study was carried out by Kasmirman, where through a chain ball game can improve volleyball learning outcomes [8]. The following is an analysis of the movements obtained from the elements of the ball game itself and the volleyball serve.

TABLE IV. Analysis of the Movements

Gebok Ball Game	Volleyball float serve
Throws	Initial attitude
Accuracy in throwing	Balance
Agility	Focus on the ball
Expertise in catching balls	Throwing the ball
Running	Hitting the ball with a palm
	Position of the footsteps in the final stance

IV. CONCLUSIONS

Each game must have basic techniques that must be mastered in order to play the game well and smoothly. Likewise, in the gebok ball game the basic technique has to be mastered. One of the basic techniques in playing ball games is throwing a ball. As written by Wahyu Hidayat, throwing techniques based on their objectives are divided into two, namely throwing for operants (passing), and throwing towards the body of the runner (target) [9]. The following concept map in this study is based on the modified traditional gebok ball game.

Based on the obtained data, from the results of data collection in the first cycle and second cycle, the implementation of learning volleyball serve which is modified with the gebok ball game for students in Class XI IPS 2 MAN 14 Jakarta can be applied and there is an increase in the learning process. It is also recommended that further research be carried out whether the same problems experienced by other schools can also be applied to learning through the modification of traditional game *Bola Gebok*.

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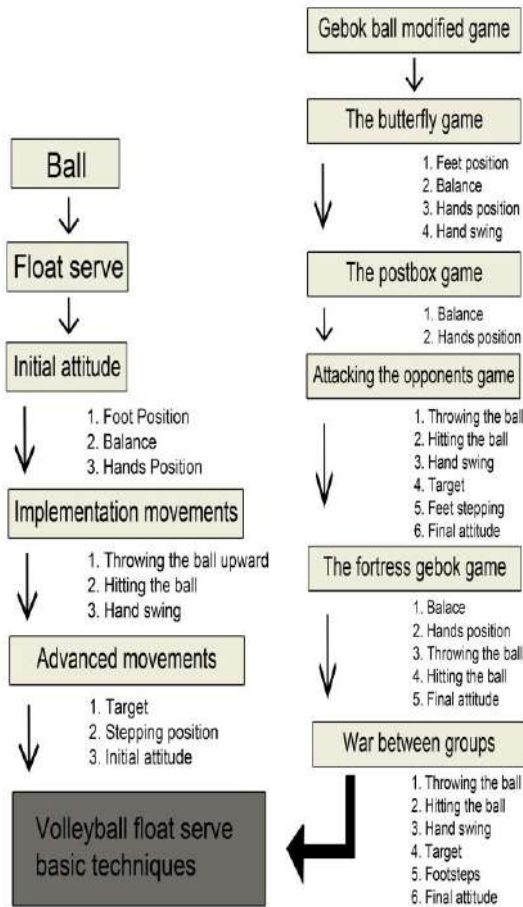


Fig 1. Mindmap of the Modified Gebok Ball Game

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The Influence of Cooperative Learning Model Type STAD (Student Team Achievement Division) on The Students' Self-Esteem

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Abstract- This study aimed to reveal the effect of the STAD type cooperative learning model on student self-esteem. The study used an experimental method with a nonequivalent pretest and posttest controlled group design. There were experimental group and controlled group in this study. The experimental group was treated with the STAD type cooperative learning model, while the controlled group received the traditional learning model namely direct learning model. The populations of this study were all seventh grade students of State Middle School 5 Subang. The samples in this study were classes VII A and VII B chosen by using cluster random sampling technique. The study lasted twelve meetings in twelve weeks. The treatment lasted for ten meetings. Before the treatment, the two groups were given a pretest and after the treatment, the posttest was given in the form of a scale of self-esteem. The data analysis technique used was paired sample t-test and independent sample t test using SPSS 18 software. The results showed that: (1) There was the influence of the STAD type cooperative learning model on the students' self-esteem. (2) STAD type cooperative learning model was better than conventional learning model (direct) towards the development of the students' self-esteem.

Keywords: *Self -Esteem, Cooperative, Physical Education*

I. INTRODUCTION

The aims of physical education learning stated by are (1) physical development, which relates to the ability to the activities involving physical strengths of various parts of body (physical fitness), (2) movement development, which relates to the ability to do activities effectively, efficiently, smoothly, beautifully and perfectly (skill full), and (3) mentality development, which relates to the ability to think and interpret the whole insights of physical education into the environment in order to enrich the students' insights, attitude and responsibility, and (4) the social development, which relates to the students' ability to adapt in a group or in the society[1].

Based on the Bucher's statements, it can be concluded that the physical education does not only focus on the physical activities, but also on psychological activities. The physical education involves movement learning, which covers the

social values such as discipline, cooperation, and respects each other, and helps each other and be friends.

Regarding the aims of physical education (Bucher), the physical education should have increased the quality of human resources. However, the facts found in the school, the physical education only tends to develop the physical and sports skills rather than lead the students to their psychological dimension, including the students' self-esteem development. Moreover, the teachers ignore how to maximize the students' participation in learning physical education. The tendencies may be caused of the implementation of learning model, which is not optimal. This causes the students' cognitive, affective, psychometric, and psychological get less attention.

The 2013 curriculum explains that the attitude competence, skill and knowledge must develop equally. To reach the aims, cooperative learning model was suggested to be implemented in the physical education class. According to Lickona). cooperative learning teaches the moral values and academic knowledge simultaneously[2]. Based on this statement, the researchers were interested to study how deep the influence of the cooperative learning model, type STAD, toward the students' self esteem in learning physical education in junior high school.

Santrock explains that self-esteem is the global evaluative dimension of every human [3]. The self-esteem also refers to the self-value or image. Meanwhile, according to Baron & Byrne self-esteem is a self evaluation made by the individual [4]. Their attitude toward themselves leads to positive and negative dimension. From previous definitions, self-esteem is an evaluation done by individual to respect their competence into their actions.

Baron and Byrne explains that the increasing of self-esteem in the short term is easy enough, as an example the fake feedback which reveals that the result of the individual is good in obtaining the goal which can increase the self-esteem [4]. According to Baron & Byrne, when the parents and the other people reject the individual when he has bad performance [4]. This interpersonal rejection will emerge a

negative effect, which can lead the decreasing of the students' self-esteem. Self-esteem is very necessary for individual. Based on Rogers & Santrock, the children who has high self-respects perhaps not only define himself as a person but also as a good person [3]. The main cause why someone can have low self-respect is he does not get enough emotional supports and social acceptance.

Metzler mentions that while not often identified formally as model based direct instruction, its likely that the vast majority of physical education teacher today use some recognizable version of what is known as direct instruction [5]. Another opinion from Suherman mentions that the direct teaching is a traditional teaching approach [6]. As what had been mentioned by Metzler, the direct approach model is a common teaching model used by physical education teachers [5]. The teaching pattern of this model is a teacher centered; the students only follow the teachers' instructions.

Student Team-Achievement Division (STAD) model is one of the simplest cooperative learning types and a best model for the beginning for new teachers who implement cooperative approach [7].

Isjoni reveals the steps of cooperative learning, STAD type, cover

1. Displaying material step, teachers begin the learning by conveying the indicators that must be achieved and stimulating the students' curiosity about the learning material. Then, they give the students concepts by aiming to remind the students about the material which had learnt. This activity aims to make the students able to connect the material that will be delivered with their prior insights. The time and frequency of the presentation that must be presented depend on the complexity of the material that will be delivered.
2. Teamwork step, every student will get worksheet as the material that will be learned. In the teamwork, the students share task, help each other to find solution in order to all the students can understand the material, and they will collect a piece of worksheet as the team work. The teachers will be facilitators and motivators in this stage.
3. Individual test step, this test aims to find out how successful the learning achievement related to the learning material that the students will learn. The result of the individual task is recorded and achieved. the researchers will use the data to calculate the team score.
4. The score calculation of the individual development, the researchers will calculate the pre-score based on the individual initial score since they have the same opportunities to give high scores to their team based on their scores. This calculation aims to make the students triggered to get best marks based on their abilities.
5. Group awards step, the researchers will sum each individual score and the result will be divided based on

the numbers of the group. The awards will be given based on the average score categorized into good group, great group, and super group [8].

II. MATERIALS AND METHODS

This study was conducted in the second semester of Junior High School 5 Subang academic year 2016-2017. This study used quasi-experimental method by using nonequivalent pretest and posttest control group [9]. Furthermore, Creswell explains that quasi-experimental method divides the participants into two groups [9]. Fraenkel, et.al., reveal that random assignment means that every individual participating in the experiment has the same chance for being placed in experimental class or controlled class [10]. This method was chosen since it was impossible to make new classes (make a new class from the available classes) in the school because it is not relevant to the school system as well as the learning schedules. The researchers measured and observed both objects twice.

The populations of this study were the seventh students of Senior High School 5 Subang, consisted of 4 classes: A, B, C and D. Meanwhile, the samples of this study were only two groups which were chosen randomly using a cluster random sampling.

Having done the cluster sampling, the researchers chose two classes namely class VII B as the experimental class and class VII A as the controlled class. Class VII B consisted of 30 students while class VII A consisted of 29 students. Sudjana mentions that the researchers divided the population into some groups or cluster in a cluster sampling [11].

The researchers gave the students pretest before the treatment; physical education learning using cooperative learning model; STAD type and conventional. This test aimed to obtain the information about the students' self-esteem in the experimental class and controlled class. The researchers used a scale of self-esteem to get the score of the pretest from experimental class and controlled class. This scale forms were given to the students both the experimental and controlled class. Then, they filled the forms. The data obtained from the forms were analyzed to know the students' initial self-esteem competence from both samples.

The treatment, the researchers taught the experimental class by using a cooperative learning model type STAD and the controlled class by using conventional method. Murk's theory reveals that 5 weeks treatment is an optimal time to maximize the meetings in the outpatient setting or education and to know the change of the students' self-esteem [12]. To maximize the change of the students' self-esteem, the researchers did this study for 10 weeks or 10 meetings and every meeting lasted 90 minutes along with the learning time of curriculum standard applied in Junior high school 5 Subang.

Posttest, the researchers did this test after doing the treatment. This test aimed to know how the change of the students' self-esteem after the treatment. The scale of self-esteem forms were given to the students both experimental and controlled class after the treatment.

The instrument used in this study was a rating scale based on the attitude scale. Rating scale used was adopted from the Self-Esteem Rating Scale (SERS) developed by R. Nugent & Thomas [13].

The researchers did not used measurement scale of SERS but Likert-scale since SERS has too many options for the students and it could lead biased answers and did not describe the actual situation of the students. Therefore, the researchers used Likert scale since there were only five options, which can ease the students to select the answer based on their situation.

III. RESULTS AND DISCUSSION

The result of the self-esteem data obtained from the students was used as the variable indicators measured. The data were obtained through a Self-esteem rating scale (SERS) which were valid and reliable. The researchers measured both experimental and controlled classes. The following is the data obtained from the students' self-esteem result.

TABLE 1. SELF-ESTEEM DATA DESCRIPTION

Test	Treatments (model)	N	Average	Deviation standard
Pre test	STAD type	30	78.60	9.79
Post test	STAD type	30	88.60	9.55
Pre test	Direct	29	74.48	11.73
Post test	Direct	29	76.20	11.14

Based on the table 1, the average score of the students' self-esteem in the experimental class showed that the pretest was 78.60 and the posttest was 88.60. Meanwhile, in the controlled class, the pretest was 74.48 and the posttest was 76.20. it showed that there was a significant difference from the pretest and posttest in the experimental class. Meanwhile, the controlled class also experienced an increasing score although it was less significant. It meant that the use of cooperative learning type STAD had better increasing rather than conventional method.

The following is the result of pared sample t-test of the students' self-esteem of the experimental class.

TABLE II. PAIRED SAMPLE T-TEST OF STUDENTS' SELF-ESTEEM

	Paired Differences		Signifikan (2-tailed)
	Mean	Std. Deviation	
Pre-test self-esteem	10,00000	7,75486	.000
Post-test self-			

<i>esteem</i>			
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Regarding the table 2, the score of the Paired Sample t-test on the pre-test and post-test of the students' self-esteem from the experimental class showed a significant score as 0.000. Since the significance of both tests on the cooperative learning type STAD < 0.05, it meant that there was an influence of the treatment by using cooperative learning type STAD in the physical education learning toward the increasing of the students' self-esteem.

To answer the second research question, which one is the better model between cooperative learning type STAD and conventional method toward the development of the self-esteem? Therefore, the following table shows the result of the self-esteem data obtained from the students who got the different treatments.

TABLE III. INDEPENDENT SAMPLE T-TEST POSTTEST SELF-ESTEEM ANALYSIS

Post-test	Equal Variance Assumed	Levene's Test For Equality of Variances		t	df	Sig. (2-tailed)
		F	Sig.			
		1.465	.231	4.590	57	.000

Based on the table 3, it shows the significant score was 0.000 and it was less than $\alpha = 0.05$ which meant that it accepted H_1 . Hence, it can be concluded that there was a gap between the average score of the students in the experimental and controlled classes. In the other word, the result of experimental class students who obtained a STAD cooperative learning as their treatment is better than those who obtained a conventional method in term of self-esteem development.

This study found that there was influence of STAD type toward the students' self-esteem of junior high school 5 Subang. The result of the study showed that this method gave the students more chances to master the movement task given by the teacher. The students directly involved in the learning process where the students work together to gain the learning goal. Furthermore, the students received motivation not only from their teacher but also from their fellow students as well as they could teach each other in the same group to finish the task given by the teacher.

The development of the students' self-esteem can be done through cooperative based learning. Through this model, the students could develop the cooperation that can lead the benefits for themselves and others. They also could predict their own responsibility and involve in every activity which requires social competence such as making decision, establishing trust between the group members [14]. Cooperative learning is a learning method which can create the cooperative condition by aimed to gain insight, concept,

skill, and understanding to help the students gain academic achievement and skill in the social interaction such as tolerance, respect to the diversity and social competence [15]. Thus, from those opinions, cooperative learning has potential to develop the students' social competence and attitude, one of them is self-esteem.

Arjan explain that self-esteem is a self-concept related to the students' academic achievement, social competence, and psychopathology [16]. One of the ground theories of cooperative learning type STAD according to Metzler is social learning theory. He reveals that this theory is shown in the cooperative learning process such as when a group presents their material while the other group witness and listen it [5]. Those aforementioned statements showed that the cooperative learning type STAD has a positive effect toward the development of the students' self-esteem. This was supported by the previous study which found that cooperative learning could develop the social competence such as self-esteem development, group relation, communication, interpersonal relation, attitude toward the school, acceptance and cooperative skill with others [17].

Cooperative learning model type STAD has a concept to empower and motivate the students to work the task independently, students' involvement in the social process to finish the movement task given by the teacher. Furthermore, Branden stated that the essence of the self-esteem is to empower and motivate [18].

Some experts reveal the strengths of cooperative learning model type STAD is not only to help the students to understand the complex concepts, but also to grow the cooperation, willingness to help each other in the group and responsibility. As stated by Gerungan that in the small group like discussion group, it is not only to cooperate to unite idea and opinions, but it also forms the students' social attitude [19]. Related to this statement, Wang stated that the main purposes of cooperative learning are to make the heterogen students understand the material and responsible to learn the material as well as help their friends in the group to understand [20].

Physical education learning by using cooperative learning model type STAD has helped the students take responsibility, increased the students' motor skill, communication skill, cooperation and they are responsible for their group evaluation [21]. Meanwhile, in the conventional learning, the center of learning process in the teacher, the students get less chance to do collaboration and cooperation, the teachers take all the learning responsibility, as well as the right and wrong movement evaluated by the teachers. These statements were strengthened by the study done by Bayraktar who found that the implementation of cooperative learning to the gymnastic material had a significant influence to the successful of the students' academic achievement, attitude, and training skill distinguished with the controlled class [22].

Another study conducted by Joo-Hyug Jung et.al found that experimental group which was given a cooperative learning as the treatment had higher score than the controlled class, which was given a traditional learning model as the treatment, especially on their positive attitude and communication skill [23].

Various studies about the cooperative learning model showed consistent results that the cooperative learning model could increase the students' academic achievement, positive interpersonal relation and higher self-esteem rather than the individual attempts [24]. Wibowo in his study found that the experimental class, which was treated with cooperative learning model was better than the controlled class which was taught with the conventional method [25]. Based on the aforementioned statements, it can be concluded that the cooperative learning model type STAD is believed to be better than the conventional model in developing the students' self-esteem. This might be due to the conventional learning that the process of learning is focused on the teachers' actions, which means that the students got less chance to do social activities, cooperation and collaboration.

IV. CONCLUSION

There was an influence of the cooperative learning model type STAD toward the development of the students' self-esteem. Cooperative learning model type STAD is better than the conventional learning in developing the students' self-esteem.

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The Social and Organizational Resources' Effect on Mental Toughness: Investigating the Role of Personal Psychological Resources in Secondary School Varsity Players

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Abstract—Numerous studies have shown social and organizational resources to influence athletes' mental toughness. However, to the authors knowledge the mediating mechanism of social and organizational resources to mental toughness is yet to be explored. This study investigated the mediating role of personal psychological resources (hope, efficacy, resiliency, and optimism) in the relationship between social and organizational resources and sports mental toughness in secondary student-athletes. A total of 644 players of diverse sports answered a packet of questionnaires answering personal, social and organizational resources and mental toughness. The results show that personal psychological resources (Hope, Efficacy, Resiliency, and Optimism) consistently mediate the relationship between social and organizational resources and sports mental toughness to athletes. The results suggest that high level of hope, efficacy, resiliency, and optimism contribute to the development of athletes' mental toughness. The findings are significant particularly in investigating the significant role of social and organizational resources on personal psychological resources (hope, efficacy, resiliency, optimism), and how it affects mental toughness.

Keywords—organizational resources, social resources, sports mental toughness, personal psychological resources

I. INTRODUCTION

Numerous studies have shown that mentally tough athletes are likely to maintain high level of personal performance in competition, achieve goals despite of adversities and pressures, suppress unwanted memories to enhance focus on new information related to current goals, and sustain high level of optimism [1] [2] [3] [4] [5] [6]. The recognition on the importance of mental toughness in athletes investigated the increase of studies examining its precursors, processes, and mechanisms (i.e., mediation, moderation). However, to the authors knowledge, the role of resources in the development of mental toughness has been scantily studied. Using the lens of conservation of resources theory, we contend that social and organizational resources enhance personal psychological resources, and in turn, increase mental toughness [7].

Conservation of Resources (COR) theory- contends that individuals consistently seek, maintain, and generate resources within their environment [7] [8]. These resources act as mitigation against the challenging environmental demands and

assist individuals in their optimal functioning [9]. However, when individuals experience deficiency, loss, or threat of loss of resources, they likely experience heightened psychological distress [10] [11]. Alternately, when they receive sufficient resources (i.e., support from family, friends, and coaches) they are likely to experience lower emotional distress, higher well being, and strengthened sense of self [10] [12].

In line with this, this study hypothesized that build up of resources provided by athletes' perceived organizations (i.e., organizational resources) and social networks (i.e., social resources) are likely to enhance one's personal resources(i.e., hope, resiliency, efficacy, optimism), and in turn, increase mental toughness.

Mental toughness, considered to be one of important psychological attributes in determining success in sports, is construed as a persons inner focus and commitment to rise above challenges when facing adversity. Mental toughness as consistently remained more determined, focused, confident, and in control under the pressures and demands that top level sport placed upon them [13] [14].

While the role of resources in developing one's mental toughness have not been directly studied, numerous studies suggest that organizational resources such as support from management, and coaches and sufficient provision of equipments and facilities have been vital in the development of mental toughness among athletes. Moreover, social resources, such as social support from family, peers, fellow athletes and fans were also found to instrumental in enhancing mental toughness [5] [12] [14] [15] [17] [18] [19] [20] [21].

Finally, personal attributes(i.e, personal resources) such as Hope, Efficacy, Resiliency, and Optimism have been dully associated with athletes mental toughness [22] [23] [24] [25] [26] [27] [28].

The basic tenet of COR theory purports that individuals strive to retain, protect, and build resources for one's own survival. COR theory has two important assumptions. First, people have to invest their resources in order to deal with stressful conditions and prevent themselves from negative

outcomes [7]. Secondly, people must invest resources in order to protect against future resource loss, recover their resources, and gain new resources. That resource gain (mastery and social support) over a period of nine months predicted decreased emotional distress.

We hypothesized that build-up of resources of athletes provided by school administration, coach, teammates, academic advisers, friends, and parents would express a sense of belonging and mutual obligation that they may be able to withstand stress resulting from role conflict, personal psychological resources (PPRs; i.e., hope, efficacy, resiliency, and optimism) that would develop athletes' mental toughness. PPRs encompasses HERO, that is, four positive psychological components: hope (goal-direction and preparedness to redirect paths to achieve goals), efficacy (making effort to succeed at puzzling tasks), resilience (capability to bounce back after adversity), and optimism (positivity towards now and future to be successful) [12] [24] [29]. The influence of social and organizational resources (i.e., coach, family, friends, and significant others) on athletes' PPRs (i.e., HERO) has been noted in the extant literature [17] [18] [19] [20] [21]. A coach, family, friends, and significant others characterized by safety, concern, love ,and support fosters athletes' psychological resources, such as motivation and power to achieve a particular goal and ability to envisage clear pathways to attain such goals (i.e., Hope), a state of being able to more capably perform tasks and having greater power over the outcome of his/her athletic endeavour (i.e., efficacy), individual's ability to bounce back or recover from stress and allows people to optimistically look at the overwhelming situations (i.e., resiliency), tendency to expect positive events in one's life and makes positive attributions about present and future success (i.e., optimism). [22] [23] [24][25] [26][27] [28] .

In COR theory, athletes who perceive athletic role conflict as challenging rather than hindering may, in spite of resource loss, succeed to overcome those stressors and even expand their resources due to their ability to mobilize resources during highly stressful circumstances [17]. Athlete who receive support from their parents, coach, friends, and significant others, help increase psychological well-being, and enhance training motivation [20] [31] [32] [33].

Existing literature has shown that psychological constructs (i.e., hope, optimism, efficacy, resilience), strengthened mental toughness of an individual to thrive through both positive and negative situations that one has to face, the unshakeable self belief in one's ability to achieve competition goal, optimistic athletes' expect good will happen, these expectancies are relatively stable across time and context, influencing not only one's emotions but also one's decisions about striving on or giving up [4] [5] [14] [34].

That mentally tough athletes were better at coping psychologically with demanding circumstances. These studies suggest that athletes with higher PPRs manifested through

striving positive outcomes (i.e., optimism), expectation of success relative to goals (i.e., hope), optimistically look at the overwhelming situations (i.e., resiliency), and being persistent in attempting new and difficult task (i.e., efficacy) are able to have high level of mental toughness [35] [36].

II. MATERIAL AND METHODS

The sample involved 644 secondary school varsity players from different schools in Northern Mindanao, Philippines. They were secondary varsity athletes with the mean age of 15.22 (SD = 1.770). All of them are actively participated in competitive sports with a mean average of 3.78 (SD=1.624), comprising of 387 males (60.1%) and 257 females (39.9%).

Before data collection, statement of informed consent of all participants was obtained. The questionnaires with all the scales and some demographic information were distributed to the secondary school varsity players of Lanao Del Norte. The athletes completed the questionnaire to assess their . Participants were encouraged to ask questions if they found any items unclear or confusing. After securing permission from Physical Education teachers from different secondary schools, the researchers administered the set of questionnaire for those who are actively involved in competitive sports. They were given verbal instructions and were assured on the confidentiality of their personal data. All of the respondents gave their informed consent before their participation in the study.

The Multidimensional Scale of Perceived Social Support (MPSS) was designed to assess the perceived adequacy of social support from family, friends, and significant. The MPSS comprises 12 items, four items in each of three subscales. Items for each source are rated on a seven-point Likert-type scale ranging from "very strongly disagree" (1) to "very strongly disagree" (7). The reliability coefficients for the three subscales were .85 (family), .84 (friend), .83 (significant others). In this study, the scale has a high cronbach alpha of .920.

Survey of Perceived Organizational Support (SPOS)-measures the athletes perception concerning the extent to which the organization values their contribution and cares about their well-being. We used a short version of the Survey of Perceived Organizational Support. We selected ten high-loading items from this survey rated using a seven-point Likert Scale who responses ranging from 1 (strongly disagree) and 7 (strongly agree). In this sample, the scale demonstrated high reliability ($\alpha = .79$).

Trait Hope scale- The Hope Scale. Four items assess agency and four items assess pathways using an 8-point Likert-type scale ranging from 1 (definitely false) to 8 (definitely true). There are four filler items. Alpha reliabilities in the present study were .83 for the overall Hope Scale, .76 for the agency component, and .72 for pathways component.

The Connor–Davidson Resilience Scale (CD-RISC) is a 25-item scale that measures the ability to cope with adversity. Respondents rate items on a scale from 0 (not true at all) to 4 (true nearly all the time). In this study, Cronbach's α was .88.

Life Orientation Test-Revised (LOT-R) measures dispositional optimism, and comprises two 3-item subscales. Respondents agree with each item on a 5-point scale ranging from 0 = strongly disagree to 4 = strongly agree (e.g., In uncertain times, I usually expect the best.). In this study, Cronbach's α was .80 [34].

General Self-Efficacy Scale (GSES) was created to assess a general sense of perceived self-efficacy. The scale has one dimension, containing 10 items (e.g., I can always manage to solve difficult problems if I try hard enough.). The items are rated from 1 (not at all true) to 4 (exactly true). Higher scores mean stronger sense of perceived self-efficacy. The internal reliability was .83 in the present study.

Psychological Capital (PCQ) - 24-items questionnaire was used to measure the Psychological Capital. Examples of the items include, "I feel confident analyzing a long-term problem to find a solution", "If I should find myself in a jam at work, I could think of many ways to get out of it", "When I have a setback at work, I have trouble recovering from it, moving on", "When things are uncertain for me at work, I usually expect the best". The reliability of Psychological capital measure was $\alpha = .95$ [29].

Sports Mental Toughness Questionnaire (SMTQ)- is a 14-item instrument was established to ascertain athletes' mental toughness level. The participants had to respond to items on a four point Likert-type scale ranging from not at all true (1) to very true (4). The 14-item questionnaire has three sub-dimensions: 6 items for confidence, 4 items for constancy, and 4 items for control. In this study, Cronbach's α was .81 [37].

Prior to the mediation analysis, missing values that appear at random were imputed and replaced using an expectation - maximization by-products of data collection. .

Parallel mediation analyses were conducted in order to test whether social and organizational resources, assigned as the predictors, was related to sports mental toughness through PPRs (i.e., hope, efficacy, resiliency, optimism), which were entered as parallel mediators. Certain demographic information, such as age, gender, level of participation, were entered as covariates. The PROCESS macro for SPSS was used to perform this analyses. The indirect effect of the parallel mediators were analyzed using nonparametric bootstrapping procedure with 10,000 resamples.

III. RESULT AND DISCUSSION

The mean, standard deviations, and bivariate correlations between the variables in Table I. Results of correlation analyses revealed that social and organizational resources (i.e., coach,

family, friends, significant others) was positively associated with sports mental toughness and PPRs (i.e., hope, efficacy, resiliency, optimism). It is also significant to note that PPRs as well as their components were positively correlated with sports mental toughness.

Table II shows the total, direct, and indirect effect of social and organizational resources and sports mental toughness through PPRs. The findings of the study show that PPR significantly mediated the link between social and organizational resources and sports mental toughness. This means that athlete with social and organizational support was associated with increased mental toughness indirectly through psychological resources (i.e., hope, efficacy, resiliency, optimism).

The primary objective of this study was to determine if social and organizational resources and sports mental toughness increased in one's PPRs (i.e., hope, efficacy, resiliency, optimism). Sports mental toughness, in turn, was positively associated with social and organizational support. The results show that higher social and organizational support increases athlete mental toughness through the role of psychological resources (i.e., hope, efficacy, resiliency, optimism).

Several studies have documented that mental toughness athletes possess enduring dispositions, such as optimism, hardiness, and positive affectivity, that allow them to believe that they have an influence over what they are doing and lead them to appraise challenges and obstacles as event that can be overcome [4] [36] [37] [38]. On the other hand, other researchers indicated that strong support of coach, teammates, and parents around athletes can contribute to their developing and maintaining mental toughness [15] [36].

The current findings reveal that more resources the athlete receive from their coach, family, friend, the more they are likely to have high mental toughness and can lead to a variety of positive affective responses. Otherwise, if the resources is insufficient or inadequate, athletes are more likely to reduced focus or attention- control. This study defines social and organizational resources based on the quality of support given by coaches, family, friends, and significant others to the secondary school varsity players. If the athlete receive support and care from their coaches and other resources, they will most likely develop mental toughness by increasing their positive energy when faced with adversity and promote the right attitudes to deal with pressure, mistakes, or competition [2] [36]. Providing emotional, instrumental, material, and informational supports may shape a robust foundation of caravan passageways [39]. These forms of support are usually provided by parents, coaches, friends, and administrators: viewed as salient, influential, and supportive individuals by student-athletes [40] [41] [42].

Another important findings is the significant relationship of social and organizational resources to PPRs. This finding is

supported by COR theory, particularly with the caravan passageways where individuals will actively seek to accumulate resources to build and maintain their resource reservoirs [7]. That individuals will seek to protect, further strengthen and enhance availability of current resources, and as such these resources become valuable assets in the pursuit of heightened performance and increased functioning [43]. Thus, social support and personal traits affect each other such that “lacking one is often tied with lacking the other, and processing one makes the likelihood of processing the other greater”.

This is referred to COR theory as the loss and gain spirals in which individuals with fewer resources are “more vulnerable to resource loss and less capable of resource gain,” whereas “those with greater resources are less vulnerable to resource

loss and more capable of orchestrating resource gain” [39], which would enhance their well-being. On the other hand, athlete who have experience quality care and support from coach, family, friends tend to generate PPRs.

Finally, the results showing the role of personal resources, on athletes’ mental toughness are convincing. The current results find support from numerous studies associating personal resources (i.e., hope, efficacy, resiliency, optimism) as the aspects of self that are linked to resiliency and individuals’ sense of their ability to control and impact upon the environment successfully [44] [45]. This is specifically true among athletes whose higher resources may lead to higher mental toughness [2] [6] [12].

TABLE I. RESULT OF DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1. PSS	64.06	13.61							
2. POS	39.20	8.27	.473**						
3. SMT	42.32	6.28	.148**	.253**					
4. PPR	106.69	18.25	.430**	.421**	.494**				
5. HO	69.55	11.42	.313**	.334**	.352**	.480**			
6. EFF	30.23	4.92	.303**	.261**	.456**	.618**	.387**		
7. RES	28.33	6.62	.343**	.256**	.428**	.611**	.390**	.604**	
8. OPT	26.97	5.60	.229**	.259**	.409**	.507**	.474**	.493**	.534**

*Note: A total of 644 secondary school varsity player participated in this study. PSS= Perceived Social Support; POS= Perceived Organizational Support; SMT= Sports Mental Toughness; PPR= Personal psychological resources; HO= Hope; EFF= Efficacy; RES= Resiliency; OPT= Optimism; **Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level(2-tailed)*

TABLE II. RESULT OF MEDIATION ANALYSIS

IV	MV	DV	Effect of	Effect of	Direct	Total	Total	Indirect	SE	BC 95% CI	
			IV on	MV on						Effect	Effect
Social Resources	PPR	Sports Mental Toughness	.5759**	.1817**	-.0364*	.1046**	.0682**	.1046**	.0148	.0782	.1361
	Hope		.2625**	.0775**	-.0286	.0968**	.0682**	.0204**	.0073	.0078	.0362
	Efficacy		.1097**	.3162**				.0347**	.0086	.0188	.0525
	Resiliency		.1667**	.1588**				.0265**	.0092	.0042	.0285
	Optimism		.0944**	.1625**				.0153**	.0062	.0091	.0459
Organizational Resources	PPR	Sports Mental Toughness	.9290**	.1620**	.0418	.1505**	.1923**	.1505**	.1505	.1152	.1882
	Hope		.4606**	.0599*	.0617*	.1307**	.1923**	.0106**	.0121	.0061	.0536
	Efficacy		.1555**	.2975**				.0194**	.0128	.0227	.0730
	Resiliency		.2053**	.1404**				.0130**	.0106	.0082	.0491
	Optimism		.1756**	.1596**				.0123**	.0113	.0078	.0524

It is significant to note that PPRs (i.e., hope, efficacy, resiliency, optimism) are significantly associated with sports mental toughness. This findings are important in the mediation results showing that PPRs (i.e., hope, efficacy, resiliency, optimism) consistently mediated the effect of social and organizational resources on sports mental toughness. Athletes with high level of personal resources, described as having a self belief in ones ability to achieve goals (i.e., hope), confidence about the ability to successfully execute a specific task (i.e., efficacy), positive adaptation towards risk an adversity (i.e., resiliency), and expectancy that good things will happen (i.e., optimism) [14] [34] [35]. Thus, when athletes have built high level of hope, efficacy, resiliency, and optimism due to adequate support they receive, it is likely to increase mental toughness.

The current findings need to be interpreted in light of its limitations. First, our participants are elite athletes in the secondary school level, thus the findings can only be generalized to this type of population. Second, a study employed a cross sectional design, thus, it implies that causality direction could be made. Third, it could have better if the type of sports (e.q., individual vs. team sports) were also considered to determine if these may have influence on the relationship social and organizational resources on mental toughness of athletes. Finally, the study made use of self-report measures, which make responses to have limitation with regards to social desirability bias. Future studies could use social desirability scales to statistically control for potential bias.

Amidst these limitations, this study makes an important contribution to the existing literature. First, to the authors knowledge, this is one of the very few studies to establish the relationship between social and organizational resources and mental toughness in secondary school varsity players. Second, while the relationship between social and organizational resources and mental toughness has been established in the literature, the mediating role of personal resources is yet to be explored in this relationship. This study addressed the gap and found that social and organizational resources affect the role of PPRs, and in turn, affect athletes mental toughness.

IV. CONCLUSION

Numerous studies have shown social and organizational resources to influence athletes' mental toughness. However, to the authors knowledge the mediating mechanism of social and organizational resources to mental toughness is yet to be explored. This study investigated the mediating role of personal psychological resources (hope, efficacy, resiliency, and optimism) in the relationship between social and organizational resources and sports mental toughness in secondary student-athletes. A total of 644 players of diverse

sports answered a packet of questionnaires answering personal, social and organizational resources and mental toughness. The results show that personal psychological resources (Hope, Efficacy, Resiliency, and Optimism) consistently mediate the relationship between social and organizational resources and sports mental toughness to athletes. The results suggest that high level of hope, efficacy, resiliency, and optimism contribute to the development of athletes' mental toughness. The findings are significant particularly in investigating the significant role of social and organizational resources on personal psychological resources (hope, efficacy, resiliency, optimism), and how it affects mental toughness.

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School Culture and the Promotion of Learners' Social Skills

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I. INTRODUCTION

School as institution provides a dynamic environment for individuals' socialization where the young citizens undergo a process of learning the basic life skills and healthy social adjustment. Through planned and unplanned educational experiences, the learners spend at least eighteen years of studies, attaining academic degrees that promote their contribution to the economic and social order. In school, they discover themselves, learn to relate with other people and gradually develop their own identity [1].

The structural-functionalist perspective of education emphasizes the positive aspects of schools in the socialization process such as the learning of skills and attitudes. Education supports to maintain society by introducing the young to the values of achievement, competition and equality of opportunity. Education as the influence exercised by adult generations on those that are not yet ready for social life and that societies need a system of education to correspond to their needs, reflecting the customs of day to day life. The task of schools is to transmit culture, shared beliefs and values to the young members of society. Schools are a miniature society where cooperation, interaction, rules and universal standards also apply [2].

School as social system possesses structures that define the roles and positions of individuals as well as facilitate the performance of functions. It has also a culture of its own [3]. School culture refers to the school's values, beliefs and stories encompassing the attitudes, expected behaviors and values evident in the way a school operates. It also embraces the undefined, the extremely powerful but difficult to describe, the unwritten norms and expectations that seem to permeate everything [4, 5].

Studies on school culture reveal its impact on students' academic achievement [6, 7, 8]. Principal's leadership is significant in promoting school culture which in turn results to learners' high academic achievement. Teachers' perceptions on school leadership indicate school culture and their effectiveness is impacted by administrators' reaction to their concerns [9]. While most researches tend to affirm the

positive association of school culture, teachers' perceptions and students' academic performance, there have been less studies on the relations of school culture to the promotion of learners' social skills.

Social skills are described as set of competencies that allow an individual to initiate and maintain positive social relationships, contribute to peer acceptance, and satisfactory school adjustment [10]. Such qualities enable individuals to communicate, persuade and interact with other people without undue struggle or disharmony. Presents the learners' social skills that comprise observational learning, communication with others, teamwork and feedback. Social skills are found to be related with the learners' metacognition. [11].

This study intends to find out how the school culture impact on the learners' social skills. Utilizing a qualitative approach, it analyzes school culture based on the theoretical assumptions of Talcott Parsons of an action system with four functional imperatives such as the adaptation, goal attainment, integration and latency (AGIL). This framework is the basis of describing how the school culture influences the learners' development of social skills.

This study analyzed school system in the perspective of Talcott Parsons [12]. It viewed the school system as action system possessing four components and functional imperatives (AGIL) without which it cannot effectively accomplish its purpose. These are the behavioral organism responsible for the function of adaptation (A), personality system that undertakes the task of goal-attainment (G), social system which brings about integration (I) and cultural system as the balanced force of latency (L) [13]. The behavioral organism refers to the actors responsible for moving the school system, namely: the administration, faculty, staff, students, alumni and other stakeholders. They have biological needs which the school system has to meet as part of its functional requisite of adaptation.

The personality system corresponds to the personality orientations of the actors. It can be observed in how the managers, faculty, personnel and students internalize the

vision-mission of the school, incorporating it into their own lives and ensure the system's goal-attainment. The social system is the collectivity of personalities in school organization possessing status and roles that determine their cohesiveness and interaction to provide for integration. The cultural system is the shared values, philosophies, beliefs, rituals, material symbols and technology. These are governing principles of the actors as they perform their roles so that the entire school system can maintain equilibrium of its functions and have latency.

Therefore, this study attempted to answer the specific questions such as: a) How does the school system perform the four functional imperatives of AGIL? b) In what ways do these four functional imperatives of AGIL influence the elements of school culture such as core values, norms, beliefs, rituals, material symbols and technology? c) How does school culture promote the learners' social skills?

Researches on organizational culture has been done in the previous years such as the works of Turner in 1971 stating "industrial culture" as having similar characteristics such as a specific set of shared meanings maintained by socializing new members. A subculture manifests shared customs of a group of people within a society [14]. This is found across industrial organizations. Elements of culture subsist in an organizational culture such as norms, values, belief system, ideologies, folklore, myth and symbols [15]. Organizational culture may have been consciously created by people or it may have evolved across time [16]. As Tsai noted, organizational culture encompasses the beliefs and values that have existed in an organization for a long time and may have influenced the staff's attitudes, behavior and job satisfaction. It can be observed in the management practice that can be understood as cultural manifestation of the organization through which normative, symbolic, semantic and organizational values are broached.

Schools as complex organizations are composed of individuals who bring numerous ethnic cultures, languages and habits of mind to the classroom. Schools are not just simply buildings with people inside but they are systems with different parts that are dependent upon one another. Schools possess their own culture as a complex, important yet most neglected concept in terms of school improvement. School culture is a stable factor consisting of convictions, values, understandings, views, meanings, norms, symbols, rituals, ceremonies and preferred behaviours related to outer and inner environments, much in common with important operational and educational processes for the development of schools. These elements are historically transmitted cognitive framework of shared but taken-for-granted assumptions, values, norms and actions and it defines a school's persona [17, 18, 19].

Studies reveal that school culture influences students' academic performance with the mediation of the principal's leadership that helps create a favorable school climate. School culture is indicated in the teachers' perceptions on school leadership where their effectiveness is impacted by administrators' reaction to their concerns. Leadership practice is correlated with school culture. On the other hand, school culture is associated with the students' achievement. Leadership practice does not necessarily relate with student achievement. The importance of school culture to instructional leadership is found to be correlated and this can result to better teachers' performance, higher students' achievement and more improved schools. Positive school cultures provide safe, supportive, encouraging, inviting and challenging environment for students and staff [20, 21]

Relationship of school culture to students' achievement has been emphasized in researches in many countries, but the influence of school culture on learners' social skills is less given attention. Most studies on social skills focus on their importance to enhancing youth development, emotional and academic learning. After-school programs are found to be significant in increasing learners' self-perceptions, bonding to school, positive social behaviors, academic achievement as well as reducing problem behaviors. Social development model among children is emphasized in the study of Catalano, Oesterle. Teaching requisite skills to culturally diverse students for better adjustment and creating positively affirming environment is deemed important in the study of. The lack of literature on the connection of school culture to learners' social skills development prompts the conceptualization of this study. It attempts to contribute explanation based on the views of specific groups of population in local school context.

II. MATERIAL AND METHODS

This study is anchored on the qualitative field research utilizing checklist, focus group discussion (FGD) and in-depth interview. Validity and reliability of these methods were emphasized in the appropriateness of the research questions to the objectives of the study providing accuracy of findings and trustworthiness of results as enhanced through triangulation. Informed consent was obtained through formal letters of request and visit to the superior and school presidents prior to the conduct of data collection. The key informants were composed of administrators, faculty and staff, college students and members of the alumni. They provided key information on the description of school culture. Purposive sampling was employed. In the study of the "key informants for a study of a school system might include student leaders, administrators, school board members, and leaders of parent-teacher associations". Collecting data on description of a group culture can appropriately use the emic approach, that is acquiring the view point of those who are immersed in that particular cultural system.

Four tertiary schools of Northern Mindanao were purposively selected on the basis of its commonalities of organizational elements of norms, philosophies, practices, material symbols and technology. Throughout the four schools, the researcher conducted eleven sessions of in-depth interview and focus group discussion (FGD) among 9 school administrators, 25 faculty and staff, 41 students and 20 alumni members. Questions in the in-depth interview and focus group discussion (FGD) were open-ended which generated the informants' spontaneous ideas and views. Rephrasing the questions enhanced ease on the understanding among the informants. Recording of the proceedings was done with informants' consent.

Emic approach of describing a culture largely takes consideration of the view point of the individuals who are part of the organization. Their in-depth views occupy the core data. Thematic analysis is used to arrange the informants' views into particular domains related to the concepts of Talcott Parsons on social system.

III. RESULTS AND DISCUSSION

A. School System's Performance of the AGIL

Adaptation as a functional imperative allows the actors of the school system to maintain healthy adjustment to the physical and social environment. It accounts for the ways how the school system provides for the satisfaction of biological and educational needs of the clients. Their needs were met through having the physical infrastructure such as buildings fully equipped with teaching and learning resources. The students showed satisfaction of the regularly updated curriculum and the offering of new academic programs delivered by equally qualified administrators, faculty and staff.

These schools may have limited resources but they encourage the faculty to attain post graduate degrees. Aside from salaries and fringe benefits, other forms of incentives such as subsidy for attendance in trainings, conferences and psycho-spiritual formation programs were provided to faculty and personnel. These boosted their morale and in turn they became more motivated to serve. The students, though they found the school fees to be expensive still consider their schooling a big opportunity for their development. As stated in one of their responses: *"The administration is doing what is right and best for the school."*

Goal-attainment is being exhibited through pursuing the schools' vision, mission, goals and objectives (VMGO) as essential foundation. Regular activities such as orientation program, faculty and students' trainings, assemblies and celebrations highlighted the schools' manner of articulating and promoting the VMGO. Key informants attested having deeper understanding of their school's VMGO and were inclined to act accordingly. However, students expressed

somewhat ambivalent participation in carrying out the goal-attainment. Some were highly convinced but others were hesitant.

As they stated, they just followed the school norms for the sake of it even without having deeper meaning on it. Inconsistencies of behavior and disciplinary problems were considered as the constraints. In their statements, the informants expressed that: *"Some do not cooperate with the school, not everybody follows the VMGO. When there are people who do not believe in us, it's a big problem. That means we have not shown the best we can to follow the VMGO."* The members of the alumni believed that they have contributed to the promotion of their school's VMGO by the job they are doing, through their cooperation in community activities and service to their families.

Integration is characterized in the schools' social structures that worked well to unite the different units from the administration, to the faculty, staff, students and other stakeholders. Collaborative management was practiced through having administrative and academic councils responsible for the planning, directing, implementing, monitoring and evaluating of all the activities and operational procedures. The key informants appreciated the smooth channel of communication. Some flaws and tensions were observed in the process of implementing different management styles of administrators. As they stated: *"When there is miscommunication, this can affect the plans and efforts of the officers and members. In cases when the objectives of our activities are not expressive of the schools' VMGO, we cannot proceed with our plans."* Faculty and students reflected a positive impression on the flow of activities and the mechanism of fulfilling the various tasks and functions by the different offices.

Latency is the manner by which the school system seeks to furnish, maintain and renew the motivation of the individuals and the cultural patterns needed to nurture such motivation. The four schools were described as having wholesome and conducive social atmosphere that contributed to the maintenance of cohesive relationship of administrators, faculty, staff and students. Accordingly, people in their schools were friendly and accommodating to one another. Courtesy and camaraderie were evident. For the faculty and staff, in spite of limited financial resources, a good number were eager to pursue master's or doctoral degrees. These opportunities added their interest to show good examples and offer the best service to their clients.

B. The AGIL and Its Influence on Elements of School Culture

Adaptation Through Curriculum, Material Symbols and Technology. The schools' commitment to provide conducive

environment for the clients' healthy adjustment to their environment brought forth the constant drive for maintaining safe and durable buildings equipped with advanced facilities and technology. Notable in the four schools were the clean campus, well-lighted and ventilated classrooms complete with audio-visual equipment, air-conditioned libraries, equipped laboratories for science, speech, nursing and health courses as well as early childhood facilities. Clients found these schools favorable for the welfare of students. School fees were compensated through the provision of quality physical structures and learning spaces. This was matched with the offering of updated curriculum responsive to the needs of the learners. Religious instruction occupied the core of the curriculum. Through accreditation, the schools maintained their distinct standards of quality services.

Goal-Attainment Through Core Values, Beliefs and Philosophy. The four schools were Catholic hence governed by religious core values, beliefs and philosophy founded on strong faith in God, obedience to Christ's teachings, respect for the Church, service and charity, discipline and resourcefulness, nationalism and excellence. The key informants felt challenged to internalize such core values through their day to day activities, meetings, conferences, recollection and retreat sessions. These guided them to behave accordingly and act in a manner befitting the standards of their schools.

Integration Through Norms and Policies. Administrative and faculty manuals, students' handbooks and other important school documents stipulated the norms and policies for everyone to follow. The key informants observed coming to school on time, starting activities on time, being present in all school activities and appointments, wearing school uniform, being decent and modest in attire, being courteous and disciplined, working with dedication, participating in liturgical celebrations and community services. Sanctions were provided for those violating these standards. Disruptive behavior and actions were not tolerated. Offices and personnel were assigned to supervise the general conduct and proper decorum in all undertakings. By having these norms and policies, integration was made effective providing cohesiveness and harmonious relationship of the administrators, faculty, staff, students, alumni.

Latency Through Rituals and Ceremonies. Rituals and ceremonies were performed in accordance with the Catholic teachings. The Eucharist served as the center of the celebrations and worship activities. Marian greeting was commonly uttered, prayers were done before and after classes or any activities. Everyone was expected to participate in these activities. Consideration was given for the non-Catholics and non-Christians to be exempted from attending worship since respect for religions was practiced. Celebration of feast days revolved around the schools' foundation and the liturgical

seasons of the Catholic Church. Legal mandates were also highly observed such as the flag ceremony, participation in national celebrations and honoring the national heroes. Graduation ceremonies were solemnly conducted starting with the baccalaureate mass. The event would culminate in the graduates' singing of the Alma Mater song. These practices shaped the schools' identity.

C. School Culture and Learners' Social Skills

Social skills are described as the individual's competencies that facilitate positive and healthy relationship with others, help build social acceptance and promote smooth adjustment in school and other institutions. Thematic analysis of the key informants' responses revealed that their school culture has an influence in their own personal acquisition of social skills and process of adjustment to their environment. Among the themes on social skills that transpired were: self-awareness, coping mechanism, camaraderie and fellowship, belief in God, excellence, responsibility and service.

Self-awareness was shown in how they view themselves in relation to their personal needs and understanding of who they are. Key informants described themselves as having basic needs related to Maslow's Hierarchy of Needs such as: physiological, safety, affection, self-esteem and self-actualization. Key informants believed that health, safety, career achievement and family well-being are important while self-actualization was considered the higher goal for themselves. They believed that that their school provided the conducive environment to satisfy these needs. School facilities, equipment, resources, management practices and relationships served to support their needs. Self-knowledge was related to their view of themselves as honest, strong, courageous, responsible, hardworking, friendly, humble, faithful, obedient to the school rules and regulations, also affirmed the long-term impact of their school's core values in molding their habits and attitudes as persons.

Coping mechanism refers to one's capability to struggle against external and internal adversities, conflicts and intense emotions. The key informants revealed manner of coping as the ability to manage themselves and adjust to the constraints of their own personal conditions and school environment. They identified some stressors such as financial instability as the foremost concern, loss of a loved one, work load, school requirements, family responsibilities, school management style, and illness. Their ways of coping with such conditions included attitude of acceptance and patience, stretching the budget to meet basic needs, maintain simple lifestyle, time management and prioritization, having loans, working to support one's studies, talking to and seeking friends' advice, prayer and reflection. These ways of coping show personal qualities reflective of the social skills such as: asking for help, learning how to listen, expressing one's feelings, negotiation,

goal setting, working cooperatively, dealing with frustration, controlling anger, using self-control, responding to failure and decision-making.

Their schools' teachings have molded them to be resilient in the face of adversities. As they stated: *"In our school, I've become more responsible and open-minded. I develop my leadership skills. I've grown into a mature person and strong in solving problems and handling life's difficulties. I've learned time management. I can balance my study and work along with spiritual growth. I learned more professional skills. Now, I have developed an intimate relationship with God. I am now confident to handle responsibilities in school."* The schools being managed by a religious congregation have structures supporting stakeholders' acquisition and development of positive attitudes and values. Among these are the offering of religious studies, holding of regular recollection and retreat sessions, leadership trainings, worship assemblies and incorporation of discipline in all areas. Informants confirmed that this support mechanism fostered their resilience and perseverance.

Camaraderie and fellowship are two qualities that the key informants emphasized. This is related to the type of social skills as communication with others, teamwork and feedback. The key informants attested that there is strong fellowship among students in their school manifested in the manner of treating one another warmly, being friendly and having good rapport between teachers and students. Their classmates have supported them in their religious activities thereby strengthening their faith in God. They were being helpful in their needs. Others were observed as disobeying school rules but this did not disrupt the orderly regular conduct of school activities and functions. Key informants who were administrators confirmed these observations in their statement:

"When it comes to social condition, the people are simple, humble yet hopeful. The students are also simple. Their lifestyle is simple. The school does not have so much problems of juvenile delinquencies. In terms of the people, or co-workers, everybody is nice, warm and accommodating. There is very high degree of civility and acceptance of one another." Studies confirm that school culture helps provide safe, supportive, encouraging, inviting and challenging environment for students and staff. Having a positive school culture could enhance better teachers' performance, which in turn, leads to improved students' performance.

Belief in God was accepted as important aspect of key informants' personal attributes they learned from their school. This is strengthened by the school's vision, mission and core values that are founded on the Catholic teachings. As they stated, their school provided the direction aspired for especially in line with the quality of education. One noted that *"the school's vision and mission had become her own with*

100% sense of ownership." She is convinced that her work in school is an extension of Jesus Christ's mission.

Other informants affirmed their spirituality, strong acceptance of commitment and being God-fearing. They also believed that personnel and students are showing their commitment to the school and faith in Christ. Personnel and students were interested in involving in Church services and community activities. Key informants mentioned: *"I have learned to value service and I have sympathy for the poor. Respect for people is what I have developed."* These views relate to the findings in the studies of spirituality as a form of intelligence that predicts functioning and adaptation, demonstrated by correlations of spirituality with improved health or well-being (Emmons, 2000). It is also the ability to create meaning based on deep understanding of existential questions, and awareness of and the ability to use multiple levels of consciousness in problem. The same study found out that those female gifted students who have moral virtue have better relations with family and friends.

Excellence, responsibility and service were also recurring themes in the key informants' responses. These three interrelated concepts were understood as the highlights in their institutional priorities. It served as the guiding principle in accomplishing tasks and direction to which academic endeavors would lead to. Excellence can be understood as having very good characteristics, such is not achievable by all. Furthermore, it means being outstanding as shown in quality that is attained more than a defined threshold in a certain field.

In this study, the key informants believed excellence as having continual growth and not settling for less or mediocre. It is also expressed as working slowly but surely, and being on time in all activities. Discipline is mentioned as a habit among many. They maintained that their schools inculcated in them the values of loyalty and punctuality. They have also learned to be generous and committed to serve others. They can readily accept added responsibilities in school. This they confirmed by saying: *"I see the generosity in my colleagues. They are generous of their time to serve. They go beyond what is required. They spend more time in school. I saw the same qualities among teachers and staff. The condition in school provides for the development of a sense of commitment in them."*

IV. CONCLUSION

Applying Talcott Parsons' perspective on social action system as having four functional imperatives such as adaptation, goal-attainment, integration and latency (AGIL), the four schools were found to have consistent patterns that meet such requisites. Adaptation is promoted through the provision of resources that answer the needs of the constituents such as: adequate and well-equipped physical facilities, having updated school curricula, salaries, benefits and incentives to the

faculty and staff, and other support services. Goal-attainment is pursued through application of the vision, mission, goals and objectives of the institution.

Adherence, participation and cooperation of the constituents are the indicators. Integration is manifested through the quality of relationships, the open channels of communication and the structures that promote them. Latency is exhibited in the consistency of Catholic practice that is focused on the celebration of the Eucharist and other ceremonies. Prayer and worship is essential in the daily activities. Celebrations and holidays based on the Church liturgical seasons mark the yearly routine. These are cultural elements that form the identity of the four schools. Organizational culture of these four schools are shaped in line with these four functional imperatives of the AGIL. These can be observed in the curriculum, material symbols and technology, core values, beliefs and philosophy, norms and policies as well as rituals and ceremonies.

The learners are found to have enhanced social skills fostered through the schools' organizational culture. These are identified as: self-awareness, coping mechanism, camaraderie and fellowship, belief in God, excellence, responsibility and service. School culture has strengthened the motivation of the learners to uphold positive values that have become part of their personal identity. However, their conditions also indicate stresses due to overlaps in the performance of tasks, lapses in discipline, inconsistencies of behavior and difficulty in maintaining the institutional thrusts. Recommendations are addressed on the strengthening of the open channels of dialogue and feedback as well as implementation of measures that are responsive to the needs and concerns of all school constituents and stakeholders

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FULL PAPER-ORAL PRESENTATIONS
Topic 3. Health and Environmental Sciences

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Physical Activity and Cardiovascular Risk Factors in University Employees: Rationale and Study Protocol

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Abstract— *Noncommunicable Diseases (NCDs) are one of the leading deaths globally. Lack of physical activity increase the risk of NCDs. Although there have been numerous studies investigated physical activity and its relationship to cardiovascular risk factors, only a few studies in Indonesia have evaluated the role of physical activity in the cardiovascular disease's development. This study aims to describe the level of physical activity and investigate the relationships between physical activity and cardiovascular risk factors among University employees. This cross-sectional study will be conducted at the end of 2019. The level of physical activity will be carried out using International Physical Activity Questionnaire-Long Form (IPAQ-LF). Plasma glucose, cholesterol, blood pressure, waist circumference, and BMI will be measured using an appropriate tool for each measure. We expect to identify factors that affect physical activity and cardiovascular risk factors among University employees.*

Keywords— *NCDs, physical activity, cardiovascular risk factors*

I. INTRODUCTION

Noncommunicable Diseases (NCDs) defined as a medical condition that is not caused by a particular infection. Although it is not transmitted between humans, NCDs are responsible for 71% of all deaths worldwide (41 million people per year) [1]. The four main types of NCDs are cardiovascular diseases, cancers, chronic lung diseases, and diabetes that can be increased by modifiable behavior such as tobacco use, physical inactivity, unhealthy diet and consume of alcohol [2]. According to World Health Organization (WHO), three quarters of global NCD deaths affect people in developing countries. In Indonesia, the increase of NCDs has been driven by high rates of obesity as one of the risk factors of hypertension, heart disease, cancer and diabetes [3]. The fact that Indonesia was the least physically active country in the world [4], it may trigger the increase prevalence of obesity.

Research into environment and physical activity found that the current physical surroundings appears to be the contributor influencing the prevalence of obesity [5]–[7]. The contemporary design of the built environment such as in work sites and public places encourages people to minimize muscular activity and human movement. For example, the replacement of stairs with motorized alternative such as escalators and elevators promote an inactive lifestyle. Not

only environment, modernization and the development of technology also play the role in decreasing of physical activity participation globally [8]. In the US, most women tend to do 25% more screen based activities such as watching television and operating computer rather than do their daily household [9]. In addition, lack of physical activity was also influenced by car-ownership among African populations [10]. Those lifestyles contribute most to the development of a sedentary behavior. The decreasing physical activity participation which is caused by technological issue is predicted to continue [8]. Studies in developed countries [8], [11] reported that by 2030 adults would only expend their daily energy lower than the public health recommendation (142 METs hours per week).

It is well documented that the effects of regular physical activity are able to reduce the development of NCDs including cardiovascular diseases, type 2 diabetes mellitus, cancers, osteoporosis, dementia, Alzheimer's, and obesity [12], [13]. Furthermore, a recent study shows that the risk of death that caused by cardiovascular disease had relationship with being fit and active [14]. Although many outcomes of studies revealed the benefit of physical activity, the data shown that lack of motivation, lack of time and lack of resources are the common barriers among adults to do regular physical activity [15]. In term of lack of information, sedentary individuals like university employee overlook their surroundings as suitable circumstances for physical activity without substantial costs. A study conducted by Ryan et al. [16] found that the employees spent 66% their worktime just sitting behind the table. In addition, 25% of them spent more than 55 minutes in one sitting period. While public health recommendation suggests every adult should accumulate 30 minutes or more of daily moderate-intensity physical activity during the week [11], those employees' activity is far from the guidelines. Consequently, those behavior could increase the risk of cardiovascular diseases, obesity, and diabetes [17].

Several studies have identified the relationship between physical activity and cardiovascular risk factors among youth, adult, and older people [18]–[21]. BMI, waist circumference, blood pressure, lipid profile, and plasma glucose are generally associated with physical activity. In Indonesia, to date, little is known about the relationship between physical activity and cardiovascular risk factors among University employees, despite clear relationships on the patient with certain diseases

[22], [23]. Using International Physical Activity Questionnaire-Long Form (IPAQ-LF) to examine the level of physical activity and identify cardiovascular risk factors among University employees could help us to provide strong foundations on which to develop interventions that target improved physical activity in workplace surroundings.

II. METHODS

A. Participants

This cross-sectional study will be carried out at the Universitas Sebelas Maret (UNS) Surakarta at the end of 2019. There are 1739 non-academic University staffs across faculties and institutions in UNS. A sample will be randomly purposive. Therefore, we are planning to visit five places: Faculty of Sports, Teacher Training and Education Faculty, Postgraduate School, Medical Center UNS, and Institute of Research and Community Services UNS. Inclusion criteria: non-academic University employees and not having any disability that hinders self-reliant walking will be invited to participate.

B. Procedures

Data are going to be collected in several faculties and other institutions in UNS Surakarta. In every faculty and institution, the participants will be gathered in an empty room, then will be given the information in terms of research protocol. Before the procedures start, eligible participants are going to sign the informed consent. Furthermore, they will be directed to fill out a questionnaire, and the assessment of cardiovascular risk factor and their height, weight, waist circumference, and Body Mass Index (BMI) will be taken afterwards. Following these measures, participants demographic information will be recorded based on their self-report. The participants will be given the health card that record their measurements on that day as a present of their participation. We will advise them to keep the card as we are going to do other measures in the next study.

Research Permit to each faculty and institution leader is in progress. The ethical clearance of this study is also in progress. We are submitting the document in the Research Ethics Committee, Medical Faculty, Universitas Muhammadiyah Surakarta, Indonesia.

C. Measures

- Physical Activity

The long form of IPAQ (in Bahasa Indonesia) [24] is going to be used to assess physical activity level of participants. This questionnaire estimates moderate-intensity and vigorous-intensity of walking activity within each of the work, transportation, house chores and gardening and leisure-time domains in the last 7 days. The indicator of sedentary behavior is also included in the series of questions this questionnaire with questioning the time spent sitting. IPAQ differentiates levels of activity into low, moderate, and high from summing scores (in METs) for the specific type of activity across domains [25]. To calculate physical activity in a week ($\text{MET}\cdot\text{h}\cdot\text{week}^{-1}$), the number of hours dedicated to

each domain is multiple by the specific MET score for every activity.

- Physical measurements of cardiovascular risk factors

Blood pressure will be measured with Omron automatic blood pressure monitor HEM-8712 with participant sitting for approximately 5 minutes after completing several assessments. Three measurements will be taken on the left arm at interval 3 minutes, and the mean systolic and diastolic blood pressure will be used in the analysis. Cholesterol and plasma glucose will be obtained using capillary blood test by trained staff. Waist circumference will be measured using a tape measure. Starting from the top of hip bone, then bring the tape measure all the way around the body, level with the belly button. During the measurement, participants are not allowed to hold their breath, and the measure is not too tight. Height will be measured using GEA medical stature meter. This measuring instrument is attached to the wall with a height of 2 meters from the ground. The participants should stand against the wall, then pull the tool from the top towards the head. Body weight and BMI will be measured using Omron Karada Scan Body Composition Monitor HBF-375. This tool will provide the extensive insight in body by utilizing 8 sensors on both hands and feet.

D. Statistical Analyses

The level of physical activity and cardiovascular risk factors will be reported descriptively. t-test will be used to compare the differences in continuous variables between men and women. Multiple regression is going to be carried out to assess the relationship between physical activity and cardiovascular risk factors (e.g., blood pressure, cholesterol, plasma glucose, waist circumference, and BMI). All analysis is going to be conducted using SPSS 23 for Windows.

III. RESULT AND DISCUSSION

This article describes the rationale for and protocol of a relationship between physical activity and cardiovascular risk factors among University employees. It will use cross-sectional study design to investigate the relationship between the level of physical activity and cardiovascular risk factors. To our knowledge, this is the first study to investigate between the two variables among non-academic University staffs in Indonesia. By discovering this precious information, we can target physically inactivity staffs and will help us to develop intervention that suitable for the staffs. The results of this research will be the first steps towards development of effective interventions in increasing physical activity level in the University setting in Indonesia.

In the previous study on the relationship between physical activity and cardiovascular risk factors in developing population in Africa, lack of physical activity had a direct relationship on cardiovascular diseases [21]. In addition, low level of physical activity was also associated with

cardiovascular risk factors among Chinese youth [19]. Studies in Indonesia, mostly investigated the relationship between the two variables in the patients with a certain disease, such as diabetes mellitus [22] and coronary heart disease [23]. Physical activity had a significant relationship with cardiovascular risk factors among those patients. To our knowledge, only a little study in Indonesia using non-patient population to their participants.

This study is going to investigate the relationship between physical activity level among University employees as this population is considered to have the major problem in an active lifestyle. Further, we expect to develop the most appropriate physical activity for this population without interrupting their daily task in the office. For example, to take advantage of stairs as a media to exercise among working activities. A number of stair-use interventions in western societies have successfully encourages stair climbing behavior within the built environment [26], [27]. Therefore, we are planning to apply the similar intervention in Indonesia population, which certainly consider the number of variables that may affect the results such as the weather condition and culture.

In this study, we will not be gathering the information regarding the diet of the participants that might affect the level of physical activity and the risk factor of cardiovascular diseases. Therefore, we are planning to include this variable for further study. One of the strengths of this study is we are using non-patient population to gather the information about the relationship between the physical activity level and cardiovascular risk factors. As a result, the outcomes of this study will have a valuable advice for general population instead of people with a certain disease. Especially for University employees or other employees with similar working time pattern.

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Education to Elevate High Risk Pregnant Knowledge

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Abstract— Introduction: The Maternal Mortality Rate (MMR) in the city of Semarang has increased from 122.25 in 2014 to 128.05 in 2015 and began to decline from 2016 to mid-2018. Although the MMR dropped in the last 2 years but the number of pregnancies at risk height is still high. This study aims: To elevate high risk pregnancy knowledge and decrease MMR. Method: An exploratory study with a qualitative approach was applied in this study to identify the high risk factors. Next, the researcher gave a comprehensive management proposal on the case. The researcher conducted in-depth interviews with patients education with pamphlets during a home visit while observing environmental conditions on 29th June 2018. Results: Comprehensive intervention is carried out in the form of education and discussion with patients and families regarding the handling of high-risk maternal childbirth and family planning programs. Conclusion: The Maternal Mortality Rate in Halmahera Health Center is affected by the high risk of pregnant women. This is influenced by the low implementation of ANC and KB, also caused by the implementation of pregnant classes that are less than optimal. Then a comprehensive intervention was carried out with education and discussion.

Keywords— risk pregnancy, pregnant, maternal mortality rate.

I. INTRODUCTION

According to data from the Ministry of Health in 2015, the Maternal Mortality Rate has decreased, but that was still far from the target of the 2015 MDGs. This condition have been caused by among others inadequate quality of maternal health services, the condition of unhealthy pregnant women and other determinant factors. Some conditions that can cause unhealthy conditions for pregnant women include handling complications, anemia, pregnant women suffering from diabetes, hypertension, malaria, and four too (too young <20 years, too old > 35 years, too close for 2 years and too close too many children > 3 years old). As many as 54.2 per 1000 women under the age of 20 have given birth, while women giving birth over 40 years are 207 per 1000 live births [1].

The number of maternal deaths in Semarang City in 2014 was 33 cases out of 26,992 live births or around 122.25 per 100,000 live births, compared to 2013, which was 29 out of 26,547 live births or around 109.2 per 100,000. This was still higher than the 2015 MDG target of 102 per 100,000 residents. One factor that affect maternal mortality rate is the high number of pregnant women at high risk.

Although the rate of teenage pregnancy in the United States is at its lowest level in nearly 40 years, it remains the highest among the most developed countries in the world. But pregnant women in old age are included in the category of high-risk pregnant women, who can threaten their lives and their fetuses such as low birth weight, babies born less months, fetal death, abortion and bleeding. The target percentage of high risk pregnant women in Semarang city is 20% of pregnant women in the community. In 2014 the number of obstetrics / complications handled was 2,904 cases or 100% of the total 2,904 obstetric complications. The number of pregnant women is 29,026 people. High risk neonatal in Semarang City in 2014 which was handled was still not as expected, that is 3,350 cases or 82.7% of the total estimated 4,049 neonatal, an increase from 2013 the number of neonatal handled by 2,980 cases or 74.8% of the total estimate 3,982 neonatal risti.

Based on the data obtained about health services at the Halmahera Health Center in the Maternal and child health section, there are two aspects that the scope of coverage is still less than the target set in 2017, namely High Risk Pregnant Women and coverage of childbirth assistance by health workers. The problem of High Risk Pregnant Women is a case that is still high in Halmahera Health Center. Women in old age Women occupy the top position of the data, especially in the Rejosari area.

The Maternal Mortality Rate (MMR) in the city of Semarang has increased from 122.25 in 2014 to 128.05 in 2015 and began to decline from 2016 to mid-2018. Although the MMR has decreased in the last 2 years but the number of

height risk pregnancies is still high. Number of high risk pregnancies at Halmahera Health Center in 2017-2018 as many as 20%. The majority of high risk pregnant women are aged (> 35 years) as many as 92 cases. This study aims: To increase knowledge of high risk pregnant and reduce maternal mortality.

II. MATERIALS AND METHODS

This research is a quantitative descriptive study with a qualitative approach was applied in this study to identify the high risk factors for pregnancy in older pregnant women.

The study population was all mothers who visited Puskesmas Halmahera. a total sample of a pregnancies was obtained by total sampling technique.

Data collection research using questionnaires and analyzed using descriptive tests. Next, the researcher gave a comprehensive management proposal on the case. The researcher conducted in-depth interviews with patients education with pamphlets during a home visit while observing environmental conditions on 29th June 2018. The data analysis was use SPSS for Windows.

III. RESULTS AND DISCUSSION

A pregnancy is called high-risk if a mother or a baby has an increased chance of health problems. There was a positive correlation between recurrent high-risk pregnancy and previous experience of having a newborn requiring NICU admission . High-risk pregnancy detection by healthcare personnel and obstetrics complications management were related with mortality [2]. Maternal age and high Risk pregnancy is related [3].

Pregnancy outcomes for the different risk groups [4]. In the western world, the risk of Cardio Vascular Disease in pregnancy has increased due to increasing age at first pregnancy. In other study explain that another risk is preeclampsia. Preeclampsia during pregnancy is a predictive factor of adverse outcomes of pregnancy such as abortion, stillbirth, and low birth weight.

Pre-eclampsia is a multisystemic disease characterized by the development of hypertension after 20 weeks of gestation, with the presence of proteinuria or, in its absence, of signs or symptoms indicative of target organ injury Pre-eclampsia and eclampsia are two hypertensive disorders of pregnancy, considered major causes of maternal and perinatal death worldwide. The prevalence of anxiety and depressive symptoms in high risk pregnant is crucial [5]. Verified that the anxiety of high-risk pregnant women decreased as the pregnancy stress decreased and as the sense of mastery increased [6]

Pregnancy in old age is a pregnancy that occurs in women older than or equal to 35 years. In pregnancy in old age there is an increase in various risk factors that increase morbidity and mortality in both mother and fetus. This is supported by research conducted in the UK which says that women who

become pregnant at the age of > 35 years increase various labor complications and the risk of low birth weight and prematurity. There was a high number of high-risk pregnancies delivered at Sanglah, which 46.85% of it being a high risk delivery. The characteristics of the high-risk pregnancies can be used to plan an appropriate care to reduce the maternal mortality rate [7].

Increased age affects the ability of the uterus to receive the fetus (embryo). Decreased uterine ability occurs in women over the age of 35 years. The aging factor can also make it difficult for the embryos to attach to the mucous lining of the uterus. This condition can cause a miscarriage, or cause a tendency for the placenta to be abnormally located. In addition, it will also cause the risk of pregnancy outside the womb (ectopic).

Based on research taken from the medical records of Adhyatma Hospital patients for the period of 2012 as many as 412 mothers from 2077 deliveries (19.84%) had a vulnerable age of 35-55 years. This high number can indicate the lack of awareness of women about the dangers of pregnancy in old age. This shows the role of primary health services in dealing with pregnancy issues, indicated by the understanding of health workers regarding high risk pregnancies and the increased awareness of mothers regarding the importance of antenatal care.

Based on previous research and information taken from the Halmahera Health Center. Observations using the H.L approach. BLUM to solve the problem of elderly pregnant women, data obtained that the environment, behavior, health services and genetics / population can influence the occurrence of elderly pregnant women. From the patient's behavioral factors influence the pregnancy in old age. Patients pay less attention to body conditions and often work without rest.

The patient does not understand the condition of his own body. Patients do not have sufficient knowledge and level of understanding so they are easily influenced by inaccurate information. The personal and family life of pregnant women is affected during bed rest. Accordingly, comprehensive support is needed to enable women to cope with these problems. To reach this goal, the provision of family-centered support services based on coordination among health sections, supporting organizations, charities, social workers, and systems providing psychological and consultation services are recommended. Patient must know about maternal nutrition. The medical profession and the lay public associate maternal nutrition with fetal development and subsequent pregnancy outcome. . Balance the natural and medical perspectives in the care of childbearing women at high risk [8].

From the health service factor, we found that patients lack understanding of high risk pregnant women and their complications for both mother and baby. Patients have never received information about high-risk pregnant women from health services before they become pregnant. This has turned into an important contribution to the ways of thought and development of nursery of women during a high-risk pregnancy. Pregnancy is a crucial time to promote healthy

behaviours and parenting skills. Good ANC links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle [9]. Pregnant women should be educated more about unsafe products during pregnancy [10]. The study addressed that improving pregnant women care quality due to decreasing fetal movement (DFM) [11].

From environmental factors, after the home visit found an environment with a low income level and low education level so as to provide inappropriate information to patients. Narrow, dense and slum environment, although it does not directly affect but can be another source of disease for patients. Genetic factors do not affect the incidence of high-risk pregnant women, because high-risk pregnant women are not genetically inherited.

Taking cases of elderly pregnant women is based on data on visits of patients diagnosed with pregnancy at old age (> 35 years) at the Halmahera Health Center during 2017 and early 2018. Holistic history taking is conducted on June 26, 2018 and home visits to observe the behavior and environmental conditions of patients conducted in Kanalsari B Rw 06 RT 08 Rejosari on 29 June 2018. The cause of health problems related to diarrhea using the HL Blum approach. Interventions were carried out on 29 June 2018.

This descriptive study revealed of the pregnant ladies at the KIA unit at Puskesmas Halmahera have High Risk. The High Risk Pregnant distributed among the pregnant women in Rejosari (61%). The knowledge associated with pregnancy represents the major problem. The results shows that the maternal knowledge on danger signs in pregnancy in the high category. Low maternal knowledge is in the age interval of 20-35 year, high maternal knowledge based on education, low maternal knowledge based on the work that is on mothers who do not work, low maternal knowledge based on pregnant experience are at multigravida mothers.

Multiple factors such as education, residency, having nuclear type of family and previous anemia history found to affect knowledge and practice regarding prevention of high risk pregnancy significantly. High risk pregnancy program to reduce perinatal morbidity and mortality. And the risk scoring system can thus be used not only as a test for predicting perinatal mortality but also as a simple and cost effective screening tool for identifying pregnancies at higher risk of perinatal mortality and morbidity so that these are subjected to the special high risk care they need [12]. The authors recommend should be trained on early identification of mothers with obstetrical complications and on their prompt referral to health facilities that can provide emergency obstetric care. However, the relationships of the knowledge management variables to the perceived value of enterprise risk management are not significant. We conclude that better knowledge management is associated with better risk control, but that more effort needs to be made to break down organizational silos in order to support true Enterprise Risk Management.

Coordination between implementing KIA and Promkes Puskesmas programs makes interesting posters. GASURKES work optimization in monitoring and reporting cases of pregnant women with WhatsApp media. A large number of pregnant women need ophthalmic care, which represents a great medical challenge. For midwives, it is suggested to maintain and improve the health promotion efforts such as counseling, education, information and the provision of free media for pregnant women, in order to improve the knowledge and understanding of mother especially regarding to the danger signs in pregnancy in order to reduce delays in handling the danger signs in pregnancy [13]

Implementing health belief model based educational sessions in health centers is suggested to reduce complications of this problem. Granting education can also be used as an alternative to reduce stress during pregnancy [14]. Patient need antenatal services, and improved skills and knowledge of midwives. Provision of antenatal educational guidelines was beneficial in improving mother's knowledge regarding different aspects of antenatal period that could have a positive impact on their mother's and child's health [15]. Raising awareness and education of pregnant women during pregnancy promote and improve the health of the baby and be a natural delivery. Therefore, it is suggested that prenatal education more widely used [16] Might improve knowledge management in the future.

IV. CONCLUSION

Patients with 37 years of age are third pregnant. Identification of problems obtained by behavioral factors: the behavior of ANC and family planning was not in accordance with the puskesmas program. Environmental factors: the culture of the surrounding community is not supportive.

Health Service Factors: GASURKES is not effective, the role of stakeholders is still not optimal, counseling material is not innovative and creative, Education and culture of the surrounding community is not supportive. Comprehensive interventions carried out in the form of counseling on family planning programs and the handling of high-risk mothers' deliveries (installation and filling of P4K stickers on front doors / porch glass and filling: estimated deliveries, birth attendants, delivery sites, labor assistants, transportation, prospective blood donors). Effectiveness of the implementation of classes of pregnant women in the puskesmas.

This descriptive study revealed of the pregnant ladies at the KIA unit at Puskesmas Halmahera have High Risk. The High Risk Pregnant distributed among the pregnant women in Rejosari (61%). The knowledge associated with pregnancy represents the major problem. The results shows that the maternal knowledge on danger signs in pregnancy in the high category. Low maternal knowledge is in the age interval of 20-35 year, high maternal knowledge based on education, low maternal knowledge based on the work that is on mothers who do not work, low maternal knowledge based on pregnant experience are at multigravida mothers.

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Maternal mortality rate (MMR) in Halmahera health centers caused by high risk pregnant women due to old age can be resolved through comprehensive interventions through counseling to the community, optimizing puskesmas, work programs and cross-program collaboration.

No clear referral guidelines were observed regarding the high risk care during pregnancy in the puskesmas. Furthermore, no consultations were done among the study populations for high risk pregnancy problems and elevate high risk pregnancy knowlgrage to decrease Maternal Mortality Rate.

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Merpati Putih Breathing Exercise and Brisk Walking Exercise Improve Pulmonary Function in the Elderly

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Abstract— Increasing age is one of the factors that can reduce a person's pulmonary function and affect his daily activities. The purpose of this study is to look at the effects of Merpati Putih Breathing Exercise (MPBE) and Brisk Walking Exercise (BWE) on pulmonary function in the elderly. This study uses the ex post facto method with One-Shot Case Study design. 28 elderly people were chosen and divided into two groups, MPBE and BWE, respectively consisting of 8 men and 6 women. Subjects have attended training for at least 6 months. The pulmonary function was tested using a spirometer to count Forced Vital Capacity (FVC), Forced Expiratory Volume in One Second (FEV1), FEV1/FVC ratio, and Peak Expiratory Flow (PEF). There was a significant increase ($P < 0.05$) on FEV1 ($2,13 \pm 0,73; 2,52 \pm 0,55$) and FEV1/FVC ratio ($75,66 \pm 1,67; 88,21 \pm 9,37$) on MPBE group, also a significant change of FEV1/FVC ratio ($75,74 \pm 1,12; 92,74 \pm 8,35$) on BWE group. MPBE and BWE have positive effects on pulmonary function.

Keywords—component, formatting, style, styling, insert (key words)

I. INTRODUCTION

Pulmonary function in elderly are very important factor that support their quality of life [1]. Disorders of pulmonary function can cause a decrease in physical activity, muscle strength, and mobility in the elderly [2]. The rate of decline in pulmonary function can be different between elderly individuals of the same age [3]. This is due to factors such as smoking status [4], body mass index [5], or physical activity [6]. The impact of the decline in pulmonary function will be increasingly felt as we get older. Decreasing pulmonary function in old age occurs due to Capacity of respiratory muscle and pulmonary elasticity changes [7].

Lung function affected by physical activity [8]. Physical activity can reduce the risk of premature death and chronic diseases such as cardiovascular disease or diabetes mellitus [9]. The benefits of physical activity also apply to people with chronic pulmonary disease such as asthma or chronic obstructive pulmonary disease (COPD) [10]. Several studies have shown that higher physical activity is associated with a lower risk of hospital admission and all causes of death in patients (COPD) [11]. In addition, exercise training in COPD

patients is associated with increased ventilatory muscle function and a positive effect on forced vital capacity (FVC) [12]. Because of the positive impact of physical activity on patients with chronic pulmonary disease, physical activity has been included in the pulmonary rehabilitation program [13].

This study aims to see the effect of physical activity on pulmonary function in the elderly. The chosen physical activities in this study are Merpati Putih Breathing Exercise (MPBE) and Brisk Walking Exercise (BWE). Breathing exercise was chosen because a lot of research has been done about the benefits of this breathing exercise, such as improving physical function, quality of life and as a means of preventing disease [14-16]. Breathing exercise also has a positive relation to pulmonary function [17]. On the other hand, Brisk Walking Exercise (BWE) was chosen because walking is one of the physical activities that are very easy to do in everyday life [18]. Walking is the most favorite physical activity in the world today [19]. Regular walking for 150 minutes every week has a positive relation to health conditions [20]. Exercising Brisk Walking for 3×20 minutes a week can reduce the risk of cardiovascular disease [21] and several types of cancer [22]

II. MATERIALS AND METHODS

A. Participants

A total of 28 elderly were divided into 2 groups, they were merpati putih breathing exercise and brisk walking exercise group. Each group consisting of 8 men and 6 women. The sample is the elderly who have been practicing for at least 6 months in both of groups, which is done twice a week. Characteristics of the samples from each group will be presented in table 1.

TABLE I. Average Group Characteristics

Group	N	Age	Height (cm)	Weight (Kg)	BMI (Kg/M ²)	Heart Rate (bpm)	Blood Pressure (mmHg)	Oxygen Saturation (%)
MPBE	14	67	156,79	58,79	23,64	76	150/93	98
BWE	14	66	157,36	65,29	28,47	83	137/85	97

B. Study Design

Ex post facto was used as the method of this study with a one shot case study research design. That method was used because researchers sought to determine the causes or consequences of differences that already existed between or between groups of individuals [23], in this case the effect of merpati putih breathing exercise and brisk walking exercise in the elderly.

C. Measured Variables

Ada beberapa variabel atau indikator untuk melihat kondisi paru-paru [24,25,26] yaitu Forced Vital Capacity (FVC), Forced Expiratory Volume in One Second (FEV1), FEV1/FVC Ratio, and Peak Expiratory Flow (PEF). The measurement of lung function using spirometer (Spirometry Context). In addition to lung function, weight, height, oxygen saturation, pulse and blood pressure are measured to see the condition of the sample.

The process of collecting lung function data was carried out before the sample performs physical activity, this was done to avoid respiratory distress due to fatigue. Pulse, blood pressure and oxygen saturation were checked to determine the condition of the sample before lung function test. Height and weight were measured for filling data on the spirometry context as a basis for prediction of lung function.

D. Statistical Analysis

All data was analyzed using IBM SPSS 21.0. To see the effect of Merpati Putih Breathing Exercise and brisk walking exercise, the predicted data will be compared with measurement data and processed using Paired T-test and Wilcoxon.

III. RESULTS AND DISCUSSIONS

The results of of statistical analysis will be presented in figures 1 to 4.

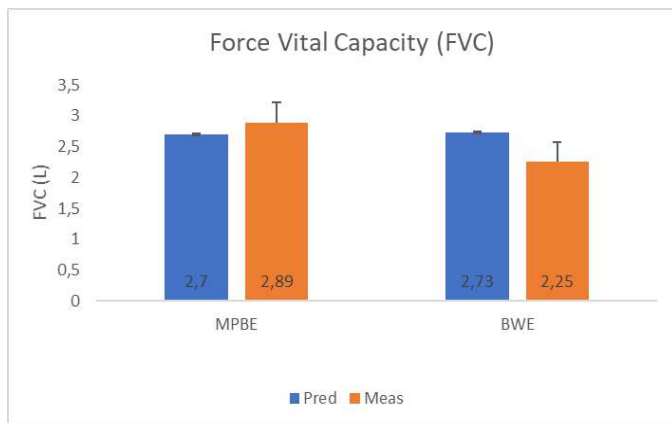


Figure 1. The Result of Force Vital Capacity (FVC)

In figure 1 it is known that FVC prediction score of MPBE group increase from 2.70 L to 2.89 L, an increase of about 7%. In the BWE group there was a decrease from the

prediction of 2.73 L to 2.52 L there was a decrease of around 8%.

FVC can be used to measure the presence and severity of lung disease [27], by knowing the value of FVC can help patients in the treatment of chronic obstructive pulmonary disease (COPD). Based on Figure 1, it is known that MPBE can increase FVC by 7% and in BWE even though there is a decrease of 8% from the prediction, but with BWE can maintain the FVC value under normal circumstances. To find out the normal value of lung function can be seen in table 2.

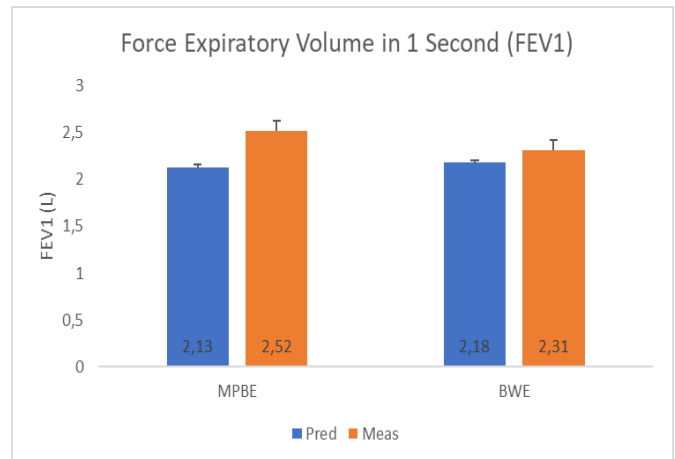


Figure 2. The Result Force Expiratory 1 Second (FEV1)

In Figure 2 it is known that the FEV1 prediction score of MPBE group increase from 2.13 L to 2.52 L, an increase of about 18%. In the BWE group there was an increase from a prediction of 2.18 L to 2.31 L an increase of about 6%.

FEV1 is used to assess the severity of the obstruction. A predictive score of FEV1 between 70% and 85% is considered mild, values between 60% and 69% is moderate, between 50% to 59% is severe enough, between 35% and 49% is severe, and less than 35% is very severe obstruction [28] In figure 2 it is known that MPBE and BWE can increase the FEV1 value. From Figure 2 it is known that MPBE can increase FEV1 by 18% and BWE can increase FEV1 by 6%.

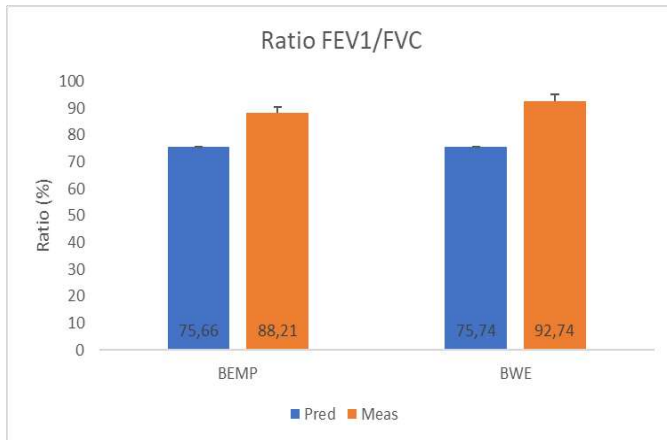


Figure 3. The Result Ratio FVC/FEV1

Figure 3 shows that in the MPBE group is significantly increase in the FVC / FEV1 ratio from the prediction score 75.66% to 88.21%, an increase is around 12.55%. In the BWE group there was an increase from the prediction of 75.74% to 92.74 an increase of about 23%.

The FVC / FEV1 ratio is a value that indicates what percentage of lung air capacity can be exhaled in 1 second and expressed as a percentage. the FEV1 / FVC ratio is commonly used in the diagnosis of obstructive and restrictive pulmonary disease [29]. The normal FEV1 / FVC ratio is around 75% and in obstructive pulmonary disease, FEV1 decreases due to obstruction of air coming out of the lungs thus, the FEV1 / FVC ratio will decrease [30]. In figure 3 it is known that BEMP can increase the FVC / FEV1 Ratio by 12.55% and BWE can increase the FVC / FEV1 Ratio by 6%.

TABLE II. Normal Values of Pulmonary Function Tests

Pulmonary function test	Normal value (95 percent confidence interval)
FVC	80% to 120%
FEV1	80% to 120%
Absolute FEV1/FVC Ratio	Within 5% of the predicted Ratio
TLC	80% to 120%
FRC	75% to 120%
RV	75% to 120%
DLCO	> 60% to < 120%

Timothy J. Barreiro, And Irene Perillo: An Approach to Interpreting Spirometry. 2005

The decline in pulmonary function will occur over time and increase in age. The main changes in the elderly respiratory system include a decrease in the strength of the elasticity of the pulmonary parenchyma, a decrease in respiratory muscle strength, and a decrease in responsiveness to hypoxemia and hypercapnia [31]. Therefore, it is important to prevent a decrease in respiratory muscle strength and reduce functional

decline in the elderly by reducing the risk of morbidity and mortality [2]. More specifically in inspiratory muscle training with moderate intensity can increase respiratory muscle strength, thickness of the diaphragm, and diaphragmatic mobility in elderly women [32].

Merpati Putih Breathing Exercise (MPBE) is a type of breathing exercise that has a positive influence on improving lung function, this occurs because breathing exercises can increase the strength of respiratory muscles [33]. MPBE is a breathing exercise with the method of holding and suppressing breathing under the stomach while moving to cause a hypoxic state (lack of oxygen) in the lungs, continues to the blood and ends in all body tissue cells, especially in active muscle cells . Hypoxic state will train and stimulate all body cells through the mechanism of hypoxia to stay afloat in the face of oxygen deprivation. When cells can survive in a state of lack of oxygen, then of course the function of cells will be better in a normal oxygen state.

Walking is the easiest exercise to do with a small risk of injury [21]. The beneficial effects of walking on physiological and psychological well-being [35]. Previous studies suggest that 20 minutes of brisk walking exercise with 3 days a week has a positive effect on decreasing cardiovascular disease [21]. Besides brisk walking is an exercise that not only increases immunity but increases lung capacity and respiratory muscle strength, thereby increasing respiratory function [36].

IV. CONCLUSION

The result from this study are those Merpati Putih Breathing Exercise (MPBE) and brisk walking exercise (BWE) have the potential to improve and maintain lung function in the elderly. Furthermore, research can be done on the elderly who have COPD.

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The Effectiveness of a Physical Exercise Promotion Program for Strengthening Leg Muscles in Preventing Falls in the Elderly

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Abstract— This research aimed to study the effectiveness of a physical exercise promotion program for strengthening leg muscles in preventing falls in the elderly. Protection motivation theory was employed as a theoretical framework in this study. The experimental group comprised 30 elderly people aged 60 years and older who received medical care at Pathum Thani Hospital, Thailand. Simple random sampling was used to select participants to the experimental group (n = 30). The participants took part in the physical exercise promotion program consisting of 2 activities. The first activity, Know Risks - Know Dangers - Prevent Falls, comprised watching a video, group discussions, media lectures, and demonstrations and practices of a 10-step physical exercise. The second activity involved the use of intelligent postcard innovation to prevent falls as well as releasing emotions and feelings. The comparison group received activities determined by the hospital with a monthly follow-up for 3 months. A questionnaire and a leg muscle strength test were used as an instrument in this study. Data were collected both before and after participating in the program and subsequently analyzed using descriptive statistics, paired t-test and independent t-test.

The results showed that after participating in the program, the experimental group had higher mean scores for physical exercise to prevent falls and leg muscle strength than before participating in the program and those in the control group at a .05 significance level. This study concluded that the program developed by the researchers can effectively promote physical exercise to strengthen leg muscles in preventing falls in the elderly.

Keywords— *physical exercise to prevent falls, leg muscle strength, elderly*

I. INTRODUCTION

At present, the population of the elderly is increasing and is about 2 times greater than that of the young population. While the ratio and number of the working-age population began to decline, the proportion of the elderly is expected to rise, increasing continuously from 13% in 2015 to 32.1% in 2016 [1]. Dramatic change in the structure of the Thai population has

caused Thailand to become an aging society since 2005, increasing to 10% of the total population [2]. According to the 2014 population survey of the elderly in Thailand, 11.6% of the elderly had history of falls during the past 6 months prior to the interview date [3]. These injuries can lead to disability and death in the elderly. This is evident as the statistical data of deaths showed death rates had increased from 5.89% in 2010 to 10.03% in 2014 [4].

The main cause of falls is the elderly themselves, including blurred vision, balance problems, lack of exercise, congenital diseases, and the use of medications [5]. Another cause is due to environment conditions such as slippery floors and stairs, uneven floors, insufficient lighting, no handrails around the house, stairs and bathrooms. Although both the elderly and the environment conditions are the main causes, the most effective way to prevent falls is to lessen falls caused by the elderly [6] through practicing a 10-step physical exercise to strengthen leg muscles [7][8]. The main purpose of the 10-step physical exercise is to increase efficiency of the movement system such as leg muscles and joints. It is recommended that the elderly should practice 5 to 15 minutes a day to help increase the efficiency of the movement and balance system [9].

Based on previous studies, it was found that the factors affecting the prevention of falls among the elderly were bio-social factors, including gender, age, marital status, occupation, and history of falls [10] as well as motivational factors, including perceived severity of falls, perceived vulnerability to falls, expected response efficacy, and expected self-efficacy. These factors are in line with the protection motivation theory which explains that motivation to prevent diseases of a person depends on four factors, namely the perceived vulnerability, perceived severity, perceived response efficacy and perceived self-efficacy. These perceptions can lead to changes of attitude and behavior [8].

In Thailand, although there are several studies focusing on relationships between perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy and behavior to prevent falls as well as a number of physical exercise program to prevent falls for

older people in communities [11]. Nonetheless, a high incidence of falls in the elderly is still reported. The motivation concepts to prevent disease show that awareness can affect the elderly to feel threatened and cause fear and thus lead to the occurrence of falling prevention behavior [12]. For this reason, the researchers are interested in developing a physical exercise promotion program for strengthening leg muscles in preventing falls in the elderly.

Objective—To study the effectiveness of a physical exercise promotion program for strengthening leg muscles in preventing falls in the elderly.

II. MATERIALS AND METHODS

A. Materials and Methods

This study is a quasi-experimental research category two group pre-test and post-test design. Determine the appropriate sample for quasi-experimental research [13]. There should be at least 30 people. These study groups were 60 persons with elderly which ages 60 years and over. Participants were simple random sampling to either the experimental group ($n = 30$) and comparison group ($n = 30$).

Eligibility/exclusion criteria—Elderly people aged 60 years and over who receive medical care at Pathum Thani Hospital in Pathum Thani Province. They must be able to participate and complete all activities according to the plan. Only elderly who can communicate and understand Thai language were selected.

Elderly who recently participated in the fall prevention program or have severe diseases such as cancer, heart disease, stroke, etc. were excluded.

A questionnaire developed by the researchers consisted of eight sections which included question regarding 1) personal data, 2) perceived vulnerability to falls, 3) perceived severity of falls, 4) perceived response efficacy 5) perceived self-efficacy 6) physical exercise intention, 7) physical exercise in preventing falls and 8) leg muscle strength.

The questionnaire was reviewed by three experts to ensure its content validity. The index of item-objective congruence (IOC) for each part, namely perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy, physical exercise intention, and physical exercise in preventing falls was 0.60-1.00 while the Cronbach's alpha coefficient was .84, .90, .82, .84, .80 and .86, respectively. Their leg muscle strength was measured utilizing the 30-second chair stand test by physical therapists. Transform the results by using the performance test criteria by chair stand method to test the leg muscle strength of the elderly[9].

Statistical analysis—The biosocial characteristics data were analyzed by descriptive statistics using frequency, percentage, mean, standard deviation. Paired T-test was done to determine intervention effects before and after the received intervention. Independent t-test was done to determine intervention effects before and after among experimental group and comparison

group. Significance was set at $p < 0.05$. Statistical analyses were performed using SPSS version 23.0.

Before the study, an informed consent to participate was obtained from all participants in this study, which was conducted in accordance with the Helsinki declaration and approved by the Committees for Medical and Health Research Ethics at Pathum Thani Hospital (0032.203.3/42).

B. Intervention

The experimental group took part in the physical exercise promotion program consisting of 2 activities. The first activity, Know Risks - Know Dangers - Prevent Falls, comprised watching a video regarding falls in the elderly, group discussions, media lectures, and demonstrations and practices of a 10-step physical exercise to strengthen leg muscles. The second activity involved the use of intelligent postcard innovation to prevent falls as well as releasing emotions and feelings.

The first activity started with an explanation of the intervention procedures by the research team. Subsequently, the participants were provided the Know Risks - Know Dangers - Prevent Falls Activity, comprising watching a video regarding falls in the elderly followed by group discussions about "What are the causes of falls in the elderly? And how do falls affect the elderly?". Then, the team gave a lecture about physical exercise to prevent falls in the elderly before demonstrating the 10-step physical exercise to strengthen leg muscles and asked the participants to practice the exercise.

The second activity involved the use of intelligent postcard innovation to prevent falls as well as releasing emotions and feelings. The intelligent postcard innovation consists of HP REVEAL media to illuminate the postcard image through the HP REVEAL Application on smartphones. When the image is shining, there will be a video teaching how to practice the 10-step physical exercise to strengthen leg muscles developed by Nutthakritta Sirisophon [7], which the elderly must follow until finish. For each practice, a witness must sign and give his or her contact number in a behavior tracking form. Later, the elderly were added into line groups using the ID line or the QR code in the postcard in order to tracking behavior and provide information. Finally, the releasing emotions and feelings activity allowed the elderly to talk about their abilities to perform successfully and the results they expected from the practice of physical exercise in preventing falls.

III. RESULTS AND DISCUSSIONS

Biosocial characteristics of the experimental group and comparison group. By using descriptive statistics, it found that most participants were female aged 60-65 and married. The majority of the participants were unemployed with no history of falls in 6 months before the interview date.

Comparative analysis of mean difference within experimental group. Using paired t-test, it is found that after participating in the physical exercise promotion program in preventing falls, the experimental group had higher mean

scores in perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy, physical exercise intention, physical exercise in preventing falls and leg muscle strength than before participating in the program at α .05 significant level. The comparison group found that after the experiment, the mean score was not different from before the experiment (Table 1).

TABLE I. COMPARATIVE ANALYSIS OF MEAN SCORE DIFFERENCE WITHIN THE EXPERIMENTAL GROUP AND THE COMPARISON GROUP.

Variables	Pre-trial		Post-trial		P-value
	\bar{X}	S.D.	\bar{X}	S.D.	
Perceived vulnerability to falls					
Experimental group	3.31	0.43	4.14	0.50	.000*
Comparison group	3.32	0.50	3.35	0.51	.501
Perceived severity of falls					
Experimental group	3.40	0.49	4.25	0.52	.000*
Comparison group	3.45	0.40	3.59	0.55	.127
Perceived response efficacy					
Experimental group	3.35	0.45	4.22	0.58	.000*
Comparison group	3.48	0.56	3.44	0.53	.493
Perceived self-efficacy					
Experimental group	3.32	0.37	3.99	0.48	.000*
Comparison group	3.17	0.58	3.20	0.55	.586
Physical exercise intention					
Experimental group	3.39	0.41	4.19	0.59	.000*
Comparison group	3.33	0.53	3.40	0.54	.240
Physical exercise in preventing falls					
Experimental group	3.29	0.50	3.70	0.72	.000*
Comparison group	3.08	0.64	3.16	0.66	.115
Leg muscle strength					
Experimental group	17.63	5.74	20.03	5.75	.000*
Comparison group	16.53	5.22	16.93	5.32	.117

Comparative analysis of mean difference among the experimental group and comparison group. Using independent t-test, it is found that after participating in the physical exercise promotion program in preventing falls, the experimental group had higher mean scores in perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy, physical exercise intention, physical exercise in preventing falls and leg muscle strength than comparison group at α .05 significant level (Table 2).

This research studied the effectiveness of a physical exercise promotion program for strengthening leg muscles in preventing falls in the elderly. The results showed that after participating in the program, the experimental group had higher mean scores for perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy, physical exercise intention, physical exercise in preventing falls and leg muscle strength than before participating in the program and those in the control group at α .05 significance level. This is consistent with the study [7][14]. This is due to the fact that the experimental group was received the physical exercise promotion program as a strategy for improving perceived vulnerability to falls, perceived severity of falls, perceived response efficacy, perceived self-efficacy and physical exercise intention consisting of watching a video regarding falls in the elderly, group discussions about "What are the causes of falls in the elderly? And how do falls affect the elderly?", media lectures about physical exercise to strengthen leg muscles in preventing falls in the elderly, and demonstrations and practices of the 10-step physical exercise to strengthen leg muscles.

TABLE II. COMPARATIVE ANALYSIS OF MEAN SCORE DIFFERENCE WITHIN THE EXPERIMENTAL GROUP AND THE COMPARISON GROUP.

Variables	Experimental group		Comparison group		p-value
	\bar{X}	S.D.	\bar{X}	S.D.	
Perceived vulnerability to falls					
Pre-trial	3.31	0.43	3.32	0.50	.946
Post-trial	4.14	0.50	3.35	0.51	.000*
Perceived severity of falls					
Pre-trial	3.40	0.49	3.45	0.40	.670
Post-trial	4.25	0.52	3.59	0.55	.000*
Perceived response efficacy					
Pre-trial	3.35	0.45	3.48	0.56	.352
Post-trial	4.22	0.58	3.44	0.53	.000*
Perceived self-efficacy					
Pre-trial	3.32	0.37	3.17	0.58	.242
Post-trial	3.99	0.48	3.20	0.55	.000*
Physical exercise intention					
Pre-trial	3.39	0.41	3.33	0.53	.640
Post-trial	4.19	0.59	3.40	0.54	.000*
Physical exercise in preventing falls					
Pre-trial	3.29	0.50	3.08	0.64	.167
Post-trial	3.70	0.72	3.16	0.66	.004*

Variables	Experimental group		Comparison group		p-value
	\bar{X}	S.D.	\bar{X}	S.D.	
Leg muscle strength					
Pre-trial	17.63	5.74	16.53	5.22	.441
Post-trial	20.03	5.75	16.93	5.32	.034*

falls. There have been relatively studies low-muscle quality is associated with a higher incidence of falls in older. These findings provide support for the concept that muscle quality is important [15]. A possible inverse relationship exists between attrition levels and effect size of prevention exercise programs [16] and a three-tier model, comprising assessment, prevention and intervention, to proactive programs, and innovative tools and technology that have been developed for fall prevention. The comparison group received activities determined by the hospital consisting of awareness about fall prevention and brochures which were inadequate to motivate the practice. These activities had no effect on exercise behavior change and leg muscle strength in preventing falls.

IV. CONCLUSIONS AND SUGGESTIONS

Conclusions— The physical exercise promotion program developed by the researchers can effectively promote physical exercise to strengthen leg muscles in preventing falls in the elderly. This study shows the positive effect of physical exercise promotion program on physical exercise intention which can lead to physical exercise and strengthening leg muscles in the future.

Suggestions—1) The physical exercise promotion program can effectively promote the physical exercise behavior in preventing falls and strengthening leg muscles in the elderly. Hence, it may be used with other elderly groups. 2) More studies on the development of health promotion a three-tier model, comprising assessment, prevention and intervention, to proactive programs, and innovative tools and technology to physical exercise behavior modification in the elderly are suggested.

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In addition, the use of intelligent postcard innovation to prevent falls as well as releasing emotions and feelings, particularly the exchange of mastery experience affected desire to practice which helped improve physical exercise in preventing falls. According to the protection motivation theory, awareness can affect the elderly to feel threatened and cause fear which lead to the occurrence of falling prevention behavior [12]. If the elderly can perform regular physical exercise, it will affect the strength of the leg muscles to prevent

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Factors Enhancing Basketball Culture among Students in University of Suwon, South Korea

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Abstract— This study is focusing on the internal and external factors in enhancing basketball culture among students at the University of Suwon, South Korea. A Quantitative method which had 9 dimensions: Self-satisfaction, self-development, economic, political issues, opportunity, social, experience, parental support, and facilities was used in collecting data. The survey was involving 375 respondents within the University of Suwon. The SPSS version 22 was used to analyze the result of this study and independent T-test was used to compare the dimension between internal and external factors. The results show both of internal (2.62 ± 0.75) and external (2.51 ± 0.74) factors were highly dominated among male students compared to a female which was lower for both sections. The result of internal (2.37 ± 0.84) and external (2.37 ± 0.76). There were no significant differences between means ($p < 0.05$) of the internal (0.053) and external (0.624). As a conclusion, this study shows that male students were prone to play basketball sport and enhancing basketball culture rather than female students. This is due to the presence of both internal and external factors that motivated them to play. Relatively, this study provides useful information for further research in this area of research. For the future study, the researcher can study on the effectiveness of basketball culture among students in other universities in Korea or focusing on a comparison study between different types of sports.

Keywords—Basketball, sport, culture, internal factors and external factors.

I. INTRODUCTION

Sports are one of the most popular activities which are fun and can fill leisure time for all ages due to it can lessen stress and depression mood from school assignments, working task and even household chores. Participation through sports is able to build a good relationship between people due to it such a platform where people performing and helping each other in a group task. For instance, basketball sport is one of the famous indoor games which is widely known and have been played among people all around the world [1]. In the People Republic of China (PRA), basketball is already assimilated with its culture.

Moreover, it is similar to the United State and beyond which is grew tremendously enterprise until this sport became an integral part of American culture that requires The American National Basketball Association (NBA) that was the

most popular professional sports league existed in 1946 after professional games followed [2].

In South Korea, basketball was a well-liked indoor games after football due to it is a less injury-prone sport than football and the sufficient facilities provided for both school and public area which then it is appeared such a culture in the country and acts as the most regular activity played by Korean for all the time [3]. Korea is develop country, and what is interesting, basketball is becoming part of their cultures and what factors are enhancing this environment? Interesting to note, basketball is not originally from Korea and yet it is able to assimilation with Korean culture. Therefore, this study was using internal and external factors to undress the reason for this.

II. METHODS

This study was descriptive research and questionnaire was used as a tool in getting the information from the respondent. The questionnaire was using a 4-Likert scale that had been adopted and adapted from the Sport Motivation Scale (SMS-28). The respondent rated their response referring to '1=Strongly disagree', '2 = Disagree', '3 = Agree' and '4 = Strongly agree'. The questionnaire consisted of 3 sections which were Section A (Demographic Profile), Section B (The Internal Factors Enhancing Basketball Culture) and Section C (The External Factor Enhancing Basketball Culture). The questionnaire was distributed in the form of a booklet to all students in the University of Suwon, South Korea. The population of students in 2017 was 12 000. Hence, the sample size was about 375. The respondent was randomly selected and below is the conceptual framework of the study (Fig. 1).

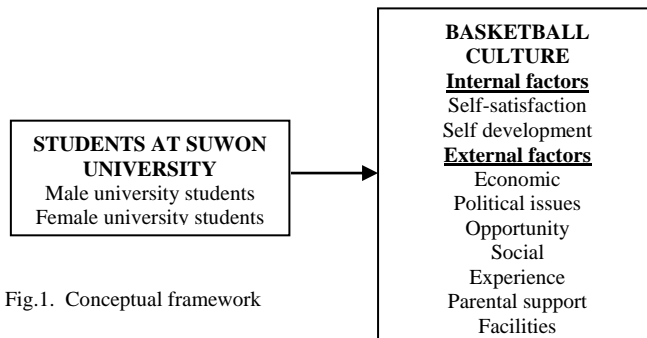


Fig.1. Conceptual framework

Statistical Package of Social Science (SPSS) version 22.0 for MacOS had been used in order to analyze the data collection. For the inferential statistic, independent t-test was used to analyze the comparison between internal and external factors. Thus, a pilot study had been conducted before getting the actual result for the survey. The Cronbach's Alpha was used to identify the question within the questionnaire is reliable or not. Then, the result of reliability showed .879 for internal factor and .925 for external factor respectively.

III. RESULTS DISCUSSION

A. Demographic

The number of male respondents was 211 (56.3%) while female respondents were 164 (43.7 %). It is because male university students tended to play basketball as their preferred sport. It can be seen that the range of 21-24 years' old was the highest frequency among other range of years which recorded about 194 respondents (51.7%) due to at the age of 21 to 24 years old, young people were able to do exercise or activity because of the fitness level. The highest major studies were Physical Education which is the frequency was about 242 (64.5 %). It is because the Physical Education department was just like sports science which is most of the students were practice sport regularly than sedentary respondents. The highest frequency of residential students was staying with a family that scored about 181 (48.3 %). This is due to, there was a lot of public transport provided that was so efficient within Korea country that leads students to stay with family even though it takes about 1 hour to reach the university if they came from Seoul city.

B. Factors Enhancing Basketball Culture

Based on the collected data, respondents were attracted to play basketball because of they have such a strong internal factor (.879) which they feel the excitement when playing basketball, which acts as their self-satisfaction .741. Then, their self-development was increased as well as self-satisfaction dimension which about .783. While respondents tend to enhance the basketball sport as their culture due to the presence of the external factors (.925). For instance, economic, political issues, opportunity, social, experience, parental support and facilities factor. The highest factor was a facilities factor (0.804) due to the institution was provide such a sufficient facility for both indoor and outdoor court toward students in order to let students and public use it even in bad weather because of the indoor court such an alternative for them to perfecting their skills and strategy.

Based on the Self Development Theory (SDT) within people behavior, it can be founded internal factors was slightly high compared to external factors [4]. For this study, overall, internal factors (0.053) was associated with positive results due to the presence of various dimensions like self-satisfaction and self-development factors that contribute students'

involvement to play basketball sport regularly rather than external factor (0.624). Thus, external factors which were consisted of 6 dimensions such as economic, political issues, opportunity, social, experience, parental support and facilities factor.

Generally, it can be seen that most of the male university students were attracted to answer the research study rather than female university students. The numbers of male respondents were 211 (56.3%) while female respondents were 164 (43.7 %). It is because male university students tended to play basketball as his preferred sport. Girls are also such a high priority group for PA promotion and constitute the population of aimed for this study [6]. It can be seen that at the age of 21 to 24 years old (194 respondents and 51.7% percentage) was scored better than is because male university students tended to play basketball as their preferred sport.

It can be seen that the highest major studies were Physical Education which is the frequency was about 242 (64.5 %). While the lowest major studies among respondents was a Dance department that was only 12 (3.2 %). It is because the Physical Education department was just like sports science which is most of the students were practice sport regularly than sedentary respondents. Thus, some of them were the basketball player that represents for the university till the highest level even for their country (Korea). Among the three education level available in the university, it can be seen the highest frequency for the education background was the degree level that scored about 360 (96.0%). It is because most of them were the freshmen and just encounter for the degree level. There was most of the atheist religion were answered this questionnaire which records about 189 (50.4 %) while the mean and standard deviation were 2.27 ± 0.976 due to most of them did not have any religion or belief to any god. Korea country had conquered by many people who are a free thinker.

The highest frequency of marital status was single that about 355 (94.7 %). It is because most of the students are did not married yet while in studies which they were focused for the commitment as a student rather than having a family. Thus it is also they are not ready to take two tasks while in studies because they were scared if they are not able to handle their life with some commitment. The highest frequency of residential students was staying with the family that scored about 181 (48.3 %). It is because there was a lot of public transport provided that was so efficient within Korea country that leads students to stay with family even though it takes about 1 hour to reach the university if they came from Seoul city. Hence, they were preferred to live with family due to much better, comfortable, saving and loving.

The highest frequency was a team sport that scored about 165 (44.0 %). This is because, most of them like to play sport with friends which they can create good teamwork among teammates, enhance self-discipline and leadership value. There was a useful value that can be foster through

involvements in basketball such as discipline, respect, and teamwork. Participants are given the same amount of time to improve their skills to achieve the same end goal which was promoted discipline as time specific seasons [5]. The highest frequency was a court game that scored about 307 (81.9 %), then, the mean was about 1.37 ± 0.883 . Hence, this is because most of them were preferred to play basketball as their favorite sport after baseball and football that were famous in Korea. It can be seen, most of them said that the facilities factor also contribute to this basketball sport involvements due to there were both indoor and outdoor basketball court were provided within Suwon University which was not only lead them to pursue a quality education but the mindset to let them know through the use of sport [5]. Then, the highest frequency of training was once a week that scored about 149 (39.7%). This is because most of the Korean students were not like to do exercise regularly instead of that they were so stressed for studies and doing many part-time jobs while studying in order to gain money for life and for the sake of the high living cost in that expensive country.

Comparison between internal and external factor toward gender. The descriptive analysis for a mean and standard deviation for both internal and external factors between male and female was showed as male was scored highest for both internal (2.62 ± 0.75) and external factors (2.51 ± 0.74) compared to the female which are low. This is because male university students are motivated to practice basketball sport rather than female. They were might be more excited and eager to play basketball due to they think that they can make a new friend, improve their skills and enhance teamwork value.

Eventually, the independent sample t-test and significance difference for both internal and external factor were determined. There were no significant differences between the means ($p < 0.05$) of the internal (0.053) and external factor (0.624). Even though the result was not significant but it showed that male university students tended to play basketball and enhance the basketball culture within Suwon University much better compared to the female who did not involve much to this sport.

IV. CONCLUSION AND RECOMMENDATION

In conclusion, throughout this study, it can be seen that male students were prone to play basketball sport and enhancing basketball culture rather than female students due to the presence of both internal and external factors that motivated them to play. Paper such "A Theory of Human Motivation" in Psychological Review (1943) was proposed by Abraham Maslow which is concerning about Maslow's hierarchy of need that was a theory in psychology which was a motivation was such a vital thing that acts as a catalyst to burst up people spirit to do something [8].

Thus, based on the whole result that was recorded, both internal (0.053) and external (0.624) factors were greatly

possessed by male students even it slightly differed in amount. Even though, the result was not significant ($p < 0.05$) between internal and external factors but male students were practiced a healthy lifestyle by playing basketball frequently and lead to the enhancing basketball culture. This is because male students are tended to have some leisure time to do sport activity, meets new friends, corporate with a teammate as needed within team sport context and enhance their chances to pursue study to the highest level. Some African-American girls are disappearing from the classroom and basketball court which at the same time there are opportunities for them to pursue study for higher level through sport [5].

However, physical inactivity among female students and its effect on the integrity form major public health and social welfare [7]. It is important to implement sports programs among undergraduate students as a healthy lifestyle in order to reduce this issue. But, the effectiveness of these programs was depending on the internal and external factors that influencing the physical sports practice of students. In this sense, intrinsic factors such as health and fun were associated while external factors were associated with some incentives like rewards, wages, and bonus. Therefore, educational institutions such as Suwon University should generate an effective solution and provide such a sufficient space for sports activities development in order to enhance the involvement and sportsmanship for a better quality of university students. Lastly, parental support is also needed in turn can best help their children motivated to participate with sport and showed their capability.

However, future researchers are recommended to look forward for this study regarding the results that has been revealed through the internal and external factors enhancing basketball culture among students through additional appropriate area such as choosing a sample target which is future researcher can choose an athlete or sports students as their sample target in order to know the results of basketball culture in Korea and conduct such an experimental studies in order to know the effectiveness of the basketball culture among Korean. Based on the experiments, the researcher might be able to test them by some fitness test or else that can reveal their results that capable to reveal this basketball culture.

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UVO CARD: Media to Improve Awareness of Consuming Vegetables and Fruits in Generation Z

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Abstract— Consumption of variety vegetables and fruits is an important collaboration to achieve balanced nutrition. But generation Z likes to consume fast food rather than vegetables and fruits. Based on Riskesdas 2018, Indonesian people aged 10-14 years, 15-19 years, and 20-24 years are classified as lower consuming vegetables and fruits per day of the week. Low intake of vegetables and fruits has been identified as a cause of several global deaths in the world. Efforts to increase awareness can be done by using adapted game from UNO card. UVO card visualize the source of vitamins in vegetables and fruits, knowing the diseases that will appear due to lack of vegetables and fruits intake, understanding vitamin requirements according to Nutrition Adequacy Rate, knowing the portion of vegetables and fruits for a plate meal for a day according to Fill My Plate, and consumption of vegetables and fruit to realize Healthy Life Community Movement program. Using interesting pictorial media will influence the reception of information and form a positive attitude towards consumption of vegetables and fruit in generation Z, so that will increase vegetables and fruits consumption.

Keywords—*Vegetables, Fruits, Healthy Life Community Movement, UVO card, Generation Z*

I. INTRODUCTION

Generation Z is intended for populations born in 1995-2010 and the number has reached more than 68 million people in Indonesia. One of the characteristics of Generation Z is that it likes to eat fast food rather than fruits and vegetables. The results of Riskesdas 2018 stated that Indonesian people aged 10-14 years, 15-19 years, and 20-24 years were classified as a fewer consume vegetables and fruits per day in a week with a percentage 96,8%, 96,4%, and 95,7% [1].

Eating a variety of vegetables and fruits is an important collaboration to get balanced nutrition. Advice for eating vegetables and fruits are clearly stated in Healthy Life Community Movement. Guided by Nutrition Balance Cone, the best portion for eating vegetables is 3-5 portions and fruits 2-3 portions every day [2]. For Indonesia people, especially toddlers and school-age children, it is recommended to consume 300-400 grams of vegetables and

fruits per person per day and for teenager and adults consume 400-600 grams per person per day [3].

Vegetables and fruits contain vitamins and minerals are needed by the body every day. There are vitamin A, vitamin C, vitamin E, magnesium, zinc, potassium, phosphor, and folic acid [4]. Low vegetable and fruit intake has been identified as a cause of several global deaths in the world, inadequate fruit and vegetable intake caused 14% gastrointestinal cancers, 11% ischemic heart disease, and 9% in cases of stroke, diabetes, cardiovascular disease, and health problems associated with micronutrient deficiency [5,6]. Conversely, consuming enough fruit and vegetables every day can reduce the risk of non-communicable diseases and help meet daily fiber needs, reduce the risk of breast cancer, and prevent cataract formation, chronic obstructive pulmonary disease, diverticulosis, and hypertension [7,8].

But in reality, the trend of consuming vegetables and fruits is slowly being displaced by taking supplements and multivitamins [9]. Therefore, the fulfillment of vitamins by eating vegetables and fruits need to be encouraged again. Awareness of choosing vegetables and fruits as the main choice to meet the needs of vitamins naturally, is an important key for the implementation of the Healthy Life Community Movement.

That effort can be done by using a very popular game. Games are needed to create a positive attitude towards consumption of vegetables and fruit in generation Z. The aim of this study is to increase awareness of consumption of vegetables and fruits for vitamin fulfillment in Generation Z using customized card game.

II. MATERIALS AND METHODS

This study is a literature study. Information that has been obtained is relevant to the problem, many sources from, journals, articles, scientific bulletins and others. Then it used as a theory that underlies the discussion of existing problems. The game card design is made with a photo editing application on the computer. UVO card game modules are also made for game instructions and guide line for game supervisors.

III. RESULT

Efforts to increase awareness of nutrition consumption can be done through counseling using a variety media. For generation Z, who like to playing, cards are a suitable media. UNO card is one of the most popular game that played by all aged all over the world [10]. Then, UNO card modified to UVO (UNO Vitamin Only) card so that it becomes communicative, easy to understand media game with eye catching, attractive, and fun visualization.

One set of UVO cards consists of 54 cards with color variations. Red cards represent vitamin A, yellow card represent vitamin C, and green card represent vitamin B1. UVO cards consists of number cards and action cards that have same number of cards, which are 27.

The number card are composed of numbers 1-9 with attractive design with picture of fruits or vegetables which are source of vitamin and give information about amount of vitamin per 100 grams fruits and vegetables. The number card are composed of numbers 1-9 with attractive design with picture of fruits or vegetables which are source of vitamin, and there is information about amount of vitamin per 100 grams fruits and vegetables. Action cards composed of draw 2 cards, reverse cards, skip cards, wild cards, and wild draw 4 cards.



Fig. 1. Number card design

Each action card has special rules and contains important information. Draw 2 cards visualize processed drinks from vegetables or fruits that are source vitamin and give information about vitamin content per glass. If this card is played, the next player must take two cards. Reverse cards visualize vitamin intake for men and women accordance with their Nutrition Adequacy Rate. When this card is played then the direction of the game is reversed. Games that are clockwise are counter clockwise. Skip Card visualizes

diseases caused by deficiency of vitamin. If this card is played, the next player will not get a turn to play. Wild card have a design portion of consumption of vegetables and fruits in a plate for one meal per day, and also promote the recommended meals with balanced portion according to the guidelines of the Ministry of Health of the Republic of Indonesia in 2003. When a wild card is played then the next player must getting out a card accordance with the wishes of the player who issued the wild card. Wild draw 4 card has a design of Nutrition Balance Cone that was issued by the Ministry of Health of the Republic of Indonesia in 2014. When this card is played, the next player must take four cards and also must getting out a card accordance with the wishes of the player who issued a wild draw 4 card.



Fig. 2. Draw 2 card design



Fig. 3. Reverse card design

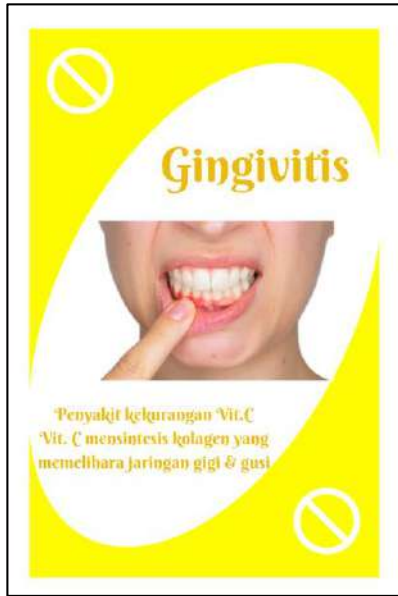


Fig. 4. Skip card design

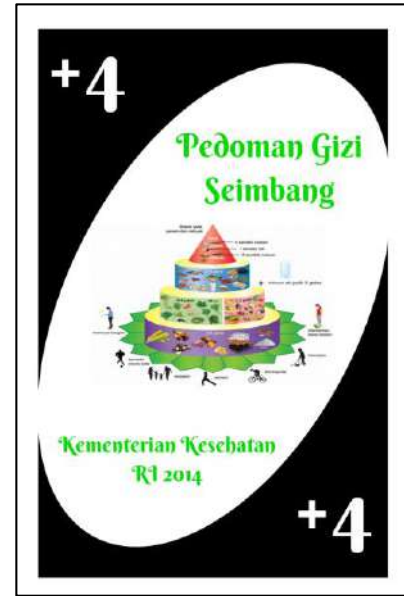


Fig. 6. Wild 4 card design



Fig. 5. Wild card design

The UVO card game can be played by 2-7 people. The principle of the game is to equalize the colors or numbers printed on the game card. The effect of pictures and colors will affect the received of information. Pictures that represent eye perception, which is process of receiving information will be more effective. It can happened because the information 14% is taken by hearing and 86% through vision so that more information can get [11].

Playing UVO cards is a fun activity and the players unconsciously studying and understand the sources of vitamins in vegetables and fruits, a disease that will be caused lack of vegetable and fruit intake, the need for vitamins according to Nutrition Adequacy Rate, knowing the portion of vegetables and fruits for a plate meal for a day according to Fill My Plate , and consume vegetables and fruit to realize Healthy Life Community Movement program. These things will create a positive attitude in the selection of food and increase consumption of vegetables and fruit as a fulfillment of vitamins for generation Z.

III. CONCLUSION

UVO cards are an alternative media to increase awareness of consuming vegetables and fruits for generation Z who consume less vegetables and fruit. Designs and interesting pictures make information easy to understand. Awareness of consuming vegetables and fruits that have increased should be accompanied by the availability of vegetables and fruit, the affordability of getting vegetables and fruit, and the social environment that supports the Healthy Life Community Movement campaign.

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Factors Related to Unwanted Pregnancy

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Abstract— Adolescent sexual behavior that is at risk has a big influence on cases of unwanted pregnancy. This can be experienced by married women, due to the failure of family planning, because of the large number of children, or conditions as child or adolescent, or indeed do not want to have children, then pregnancy occurs. Data of adolescents aged 15-19 years who have given birth and are pregnant with their first child according to the Indonesian Demographic and Health Survey 2017 (IDHS 2017) show that Central Java Province has the third highest number of six other Provinces (West Java Province, East Java Province, Central Java Province, Banten Province, Jakarta Province, Yogyakarta Province) with a percentage of 4.3% of 4.198 young women on the island of Java. [1] Prevention of unwanted pregnancy is very important to reduce the incidence of abortion and other adverse effects such as premature birth, low birth weight, and the morbidity and mortality of mothers and children. This study aims to determine the factors that influence unwanted pregnancy in adolescents by reviewing 7 domestic journals, 5 foreign journals and supporting the other articles. The results of the study concluded the majority of unwanted pregnancies arising from predisposing factors include lack of knowledge of reproductive health and parental care, peer influence, easy access to pornography and local socio-cultural conditions. This is supported by health services that are not youth friendly and the planning and implementation of government programs that must be optimized.

Keywords— unwanted pregnancy, adolescent, predisposing factors

I. INTRODUCTION

An estimated 80 million women experience an unwanted pregnancy each year. Unwanted pregnancy, which includes mistimed pregnancy and unwanted pregnancy, is an important issue that needs attention, especially in developing countries. An unwanted pregnancy will lead to a miscarriage or abortion, low birth weight, premature birth, and morbidity and death of the mother and child. This of course also has an increased risk for maternal and child mortality. An unwanted pregnancy has a serious and detrimental impact on health, social and economic matters. In the field of health services also have a negative impact because of unwanted pregnancies mothers have a tendency not to check their pregnancies with competent health workers, inadequate immunization and improper breastfeeding behavior. In the socio-economic field with the

reduction of undesirable events can improve the welfare both of mothers and their children. If it is related to the targets of Sustainable Development Goals (SDGs), then a decrease in unwanted pregnancy will help achieve the third target of SDGs, namely good health and well-being

An unwanted pregnancy can be caused by unhealthy behavior and conditions before or during pregnancy such as rape, lack of knowledge about contraception, too many children, health reasons, deformed fetus, young age or not ready to have children, irresponsible partners or relationships with partners yet steady. In addition, the incidence of unwanted pregnancy is closely related to various aspects such as socio-demographic conditions of the family, culture and beliefs that exist in the community. Government programs in reproductive health such as family planning and adolescent reproductive health programs that are less successful are thought to be one of the triggers for unwanted pregnancy.

The World Health Organization (WHO) estimates that of the 200 million pregnancies per year, around 38 percent (75 million) are unwanted pregnancies. Data from Indonesian Demographic and Health Survey 2017 (IDHS 2017) found that 84 percent of births were expected later and 7 percent of births were not wanted at all. Several studies have shown factors that can influence the incidence of unwanted pregnancy, including area of residence, mother's age, parity, number of live children, birth spacing, contraceptive use status and economic status. With the high prevalence of unwanted pregnancies, it is necessary to know the factors that influence unwanted pregnancies as one step to reduce the risk of unwanted pregnancies in Indonesia [5].

II. MATERIALS AND METHODS

This research uses the review journal method. The information obtained is relevant to the problem taken from several sources including 7 domestic journals, 5 foreign journals, and supporting the other articles.

III. RESULTS AND DISCUSSION

According to the theory of Lawrence Green and friends from Linggasari research states that human behavior is influenced by two main factors, namely behavior factors (behavioral causes) and factors outside behavior (non

behavioral causes) [14]. Furthermore, the behavior itself is determined or formed from 3 factors, namely:

1. Predisposing factors, which include attitudes, knowledge and etc.

There were no differences in reproductive health knowledge, differences in sexuality attitudes, and in dating behaviour attitudes among high school students assisted by PKBI in Central Java and high school students in control in Semarang City [2].

Unwanted pregnancy is influenced by the low knowledge possessed by adolescents, permissiveness in relationships, the youthful access to pornographic media, the influence of close friends in relationships and parental care of parents who tend to apply Permissive-indifferent [12].

Unwanted pregnancies in adolescents occur due to free sex behavior before marriage, lack of knowledge about sex education, access to pornographic media. parents who are less concerned and influence peer behavior [13].

The majority of unwanted pregnancies occur in Muslims from lower economic circles [6].

Unwanted pregnancy has an impact on the health of mothers and babies so that family support needs to be done [10].

Decreasing rates of unwanted pregnancies through increased knowledge and services should focus on high-risk women [9].

In Kampala, Uganda, sexual coercion among pregnant women aged 15-24 years is high and significantly associated with unwanted pregnancy. Comprehensive sex education targeting young people (<25 years), along with availability and access to youth friendly centers may be useful in addressing sexual coercion and its negative outcomes [8].

2. Enabling factors, which include the physical environment, the availability or unavailability of facilities or means of occupational safety, for example the availability of APD, training and so on.

Based on previous research it can be seen that the counseling process provides a role that helps reduce trauma, makes the counselee confident and realistic and understands her responsibilities as a mother [13].

While the counseling model for adolescents who must have easy procedures, full service, appropriate opening hours, no discrimination, respect for privacy, provide pro choice, and price cheap [7].

3. Strengthening factors, these factors include laws, regulations, surveillance and etc.

Based on Regulation of the Minister of Health Regulation No. 97 2014 concerning pre-pregnancy health services, pregnancy, childbirth, and the postpartum period and the provision of contraceptive services, as well as sexual health services show that there are regulations that facilitate adolescents to obtain adequate reproductive health information and services [3].

Inappropriate family planning implementation programs can be used to obtain unwanted expenditure levels [11]. According to the strategic plan of the health ministry in 2015 - 2019 efforts to reduce the risk of unwanted pregnancy in adolescents are carried out by increasing the knowledge of reproductive health carried out in formal education through the School Health Unit (UKS) [4].

IV. CONCLUSION

The results of the study concluded that the majority of unwanted pregnancies were influenced by predisposing factors including lack of knowledge of reproductive health and parental care, peer influence, easy access to pornography and local socio-cultural conditions. This is supported by health services that are not youth friendly and the planning and implementation of government programs that must be optimized.

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Factors Related to Physical Inactivity among Post Stroke Patients: A Literature Review

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Abstract— Stroke is disease that occurs when blood supply to a certain part of the brain experiences disruption so that part of the brain become damaged or died. People with stroke had lower level of physical activity than age matched control and did not meet physical activity guideline. This study will analyze some research result to determine the risk factors of physical inactivity in post stroke patients. The design of this paper was review of literature related to physical inactivity in post stroke patients. Most of literature used in this article was from article journal and previous academic research result. Self-efficacy was an important factor for behavior change. Social support and perception also influence in behavior change, especially physical activity. The factors related to physical inactivity in post stroke patients were self-efficacy, social support, and perception.

Keywords— physical inactivity, risk factors, post stroke

I. INTRODUCTION

Stroke is disease that occurs when blood supply to a certain part of the brain experiences a disruption so that part of the brain become damaged or died. It is caused by something blocks blood supply (hemorrhage stroke) or occurs when blood supply in the brain is burst (ischemic stroke). A stroke or called brain attack can causes long-term brain damage and disability or even cause death [1]. In 2016, stroke was to be the second leading cause of premature death in the world after ischemic heart disease and was remains the second leading cause of premature death globally in 2040 [2]. Every two seconds, people in the world will have stroke [3]. In 2016, of the 56.9 million people deaths worldwide while ischemic heart disease and stroke to be the biggest killer in the world, as much as 15.2 million deaths [4].

Stroke is the fourth biggest killer in the United Kingdom and around five minutes people will have stroke [3]. In Indonesia, the largest proportion of deaths is caused by cardiovascular disease as much as 35%. The results of the Basic Health Research (Riskesmas) 2013 stated that the prevalence of stroke in Indonesia based on population aged

over 15 years was 7%. It rises to 10, 9% in Basic Health Research 2018 [5]. Stroke was also to be the major cause of disability in the elderly over 60 years with a proportion of total dependence of 13, 9%. In 2017, the number of non-hemorrhagic stroke cases in Central Java was 18.284, which decreased compared to 27.302 in the previous year and as many as 9.993 hemorrhagic stroke cases slight increased from 9.631 in 2016 [6] [7].

Recurrence stroke more than doubled the all-cause mortality [8]. Stroke patients experience limitation in their daily activities and participation after discharge from the hospital to their homes [9]. Participation restriction and activity limitation remain highly until 4 years after stroke [10]. Activity limitations such as limitations in self-care, daily life activities, and walking. Inability to return to their work, decreased interaction with society and inability to join in religious activities are the example of participation restrictions [9].

In post stroke patients, impairments that commonly happen among them were in memory, function in executive and visuocstructional, deficit in language and other verbal functions [11]. The previous study stated that cognitive impairment prevalence at 3 months was 24%, 22% at 5 years and 21% at 14 years. That was relatively unchanged at 22% [12].

The risk factors of stroke are categorized to non-modifiable and also modifiable. Non-modifiable risk factors among hemorrhagic and also ischemic stroke are race/ethnicity, sex, and age. While modifiable risk factors are medical conditions such as hypertension, and behavioral factors such as diet, smoking, and physical inactivity [13].

Cardiovascular disease, including stroke, can largely be prevented by addressing risk factors for behavior, one of which is physical activity. The goals of exercise and physical activity that prescription for patients must be considered to many things, such as patients' tolerance, environment, social support, stage of recovery, specific impairments, activity limitation and restriction in participations. Prevent from complication of

prolonged inactivity, recovery from daily life activities [14] and also maximize functional recovery in rehabilitation among stroke patients have growing evidence base [15].

The trends in the prevalence of self-reported inactivity among adults decreased from 1998 to 2016. The largest drop occurring in the past decade, from 40.1% to 26.9% between 2007 and 2016, respectively. Limiting sedentary time was associated with getting lower risk of cardiovascular and mortality after accounting for other traditional risk factors and physical activity [16].

Physical inactivity was to be the fourth leading risk factor of mortality in worldwide as much as 6% of deaths globally [17]. Physical inactivity is also become major risk factor of strokes and heart attacks characterized by a buildup of cholesterol, fatty substances, calcium, and other elements that supply blood to the brain or heart [18]. Also people with stroke has lower level of physical activity than age-matched control and do not meet physical activity guideline [19].

From the data above showed that physical inactivity is the most common incidence in post stroke patients. The study aimed to determine factors related to physical inactivity in post stroke patients through literature study

II. MATERIALS AND METHODS

The design of this study was review of literature. The literature was more recent paper focusing on the physical inactivity in post stroke patients. The literature that was used in this study mostly was from the journal and previous academic research result. It was to determine the factors related to physical inactivity in post stroke patients and the prevalence of stroke case currently in the World and several countries, such as Indonesia and United Kingdom. The literature search mostly selected from WHO, AHA Journal, Stroke Association, ISRN Neurology, Ministry of Health of Republic Indonesia, Central Java Health Office, and many more.

III. RESULT AND DISCUSSION

Physical activity is determined as body movements that require energy expenditure and are produced by skeletal muscle [17]. Both exercise and physical have positive influence after stroke condition in psychosocial and physical aspect. Stroke patients should be given promotion of physical activity in low to moderate intensity, reduction of sedentary behavior, strengthening in the muscle, and risk management as prevention if secondary stroke. The physical activity level among stroke patients is lower than people without stroke. The important part of risk management of patients is modification of health behavior. By increasing physical activity of light intensity can be the first step in increasing activity in stroke patients. This is because stroke patients difficult to meet the recommended level from moderate to severe of physical activity. Both physical activity and exercise schedule must be included in the management of stroke sufferers. Below is the summary of exercise/physical activities recommendations for people with stroke (table 1) [14].

This article is review of literature about factors related to physical inactivity in post stroke patients, especially about self-efficacy, social support and perception. Self-efficacy, a belief of one's ability of something, is an important factor for behavior change. Some studies measure the association between self-efficacy and behavior changes. Low physical activities were significantly related with low self-efficacy [20]. This result was strengthened by previous research that showed that the level of physical activity is significantly related to self-efficacy [21].

Strong self-efficacy can increase well-being in many ways because someone with high confidence they can complete a difficult task and can deal with problems. Generally people with good self-efficacy will more quickly rise from failures and have a high commitment to be able to achieve something. Self-efficacy can provide a direct indication of a patients' ability to change. In addition, self-efficacy can also be easily measured. One of good method that can support post stroke patients to change their behavior is using motivational interviewing. Older patients often feel physical discomfort and affect less confident. While the stroke patients with high fear were also had self-efficacy in low level [20]. Moreover the result showed that behavior factors such as self-efficacy is related to the quality of life and disability in daily life activities in stroke survivors [22].

Social support has the association with behavior change such as physical activity. The highest influence in carrying out low physical activity was low social support. The result showed that the physical activity level was significantly related to social support [21]. Social support such as information support and awareness support have a significant correlation with quality of life people with post-acute stroke. As much as 40% information support from family will improve quality of life of stroke patients. Other than that, appreciation support will improve the quality of life in the post-acute stroke patients by 13.8%. While emotional support and appreciation support are not related to quality of life in patients with post-acute stroke.

Social supports also come from families (children and spouses) and other stroke patients. They are as the important factor to influence stroke patients with giving motivation to exercise. Both of them have role for stroke patients. For example from other stroke patients, they give strong impact with exercise together and sharing transportation for each other to the gym. They didn't want to miss exercise because they felt as part of a team. While to encourage the motivation and help them to go to the exercise sessions is the role of both children and spouses [23].

Family also need to actively help survivors in their daily activities, hear complaints, involve in family meetings and activities and find solutions [24]. Besides, of those respondents that have partner when they have stroke, as much as 42% reported that they have a negative change in their relationship and 26% respondents reported negative changes in family relationships [25].

Receiving support from qualified personnel is also important besides from family and other stroke patients. Some participants use term of professional to describe qualified personnel, but in fact that person did not have specifically in the type of professional. People that lead exercise must

understand about many things, such as give information about exercise, give external motivation in society, ensure the safety and comfort, and understand the challenges and ability of each stroke patients [26].

TABLE 1. SUMMARY OF PHYSICAL ACTIVITIES/EXERCISE RECOMMENDATION FOR INPATIENT AND OUTPATIENT OF STROKE SURVIVORS

Mode of Exercise/Setting	Goals/ Objectives	Prescriptive Guidelines: Frequency/Intensity/Time
Aerobic Large-muscle activities, such as walking, graded walking, ergometry (arm-leg, arm, stationary cycle), functional activities seated exercise, if appropriate	Increasing speed in walking and efficiency; increasing independence in daily living activities; improving exercise tolerance (functional capacity); improving vascular health and induce other cardio protective benefits (e.g. decrease the risk factor, vasomotor reactivity); reducing motor impairment and improve cognition	<ul style="list-style-type: none"> • 40-70% Vo₂ reserve or HR reserve; 55%-80% HR max; RPE 11-14 (6-20 scale) • 3-5 day/week • 20-60 minutes/session (or multiple 10 minutes sessions) • 5-10 minutes to warm-up and cool-down • To increase lifestyle physical activity complement with pedometer
Muscular strength/endurance Upper/ lower extremities resistance training, trunk using free weights, partial weight-bearing or weight-bearing activities, elastic bands, spring coils, pulleys	Increasing strength of muscle and endurance, ability to perform work activities and daily living; reducing cardiac demands that is RPP during lift or carry objects by increasing strength of muscle, so that decrease the % MVC that a given load now represents	<ul style="list-style-type: none"> • 1-3 sets of 10-15 repetitions of 8-10 exercises involving the major muscle groups at 50%-80% of 1RM in 2-3 day/week • Resistance gradually increased over time as tolerance permits
Flexibility Stretching (trunk, in lower and upper extremities)	Increasing ROM of segments that involved, increasing ADL; prevent contractures; decreasing injury risk	<ul style="list-style-type: none"> • Static stretches: hold for 10-30 seconds • 2-3 day/week (before or after aerobic or strength training)
Neuromuscular Coordination and balance activities, yoga, tai chi, recreational activities to challenge hand-eye coordination with sport balls or paddles, video game with active play, interactive computer games	Improving balance, quality of life skill recovery, and mobility; improving level of safety during ADLs; decreasing fear of falling.	<ul style="list-style-type: none"> • As a complement of aerobic, muscular strength or endurance training, and stretching activities • 2-3 day/week

1RM indicates 1 repetition maximum; ADLs (activities of daily living) ; RPP (rate-pressure product); MVC (maximal voluntary contraction); ROM (range of motion); Vo₂ (oxygen uptake); HR (heart rate); RPE (rating of perceived exertion (6–20 category scale))[14]

Some studies showed that physical activity also influenced by perception. Significant relationships were also found between self-level reporting of physical activity and negative beliefs relating to physical activity [27]. Some of participants discusses their barrier to perform exercise that influences they unable to perform particular activities [26]. The patients felt that they able to increase physical activity but they often felt fatigue. This was a barrier to conduct physical activities [28].

Low physical activity should give additional attention, for example by more intense support. Recommendation for stroke patient that in this issue about psychosocial including social support should be prioritized in dealing with stroke patients besides self-efficacy should be considered closely to support physical activity in stroke patients [21], and need to promote health education about family support [24].

Many physical benefits that were associated with exercise, such as felt stronger in physically, better in walking, and balance improvement. This benefits help to engage in 3 days, a week, for 6 months of treatment intervention [23].

IV. CONCLUSION

Factors related to physical inactivity in post stroke patients were self-efficacy, social support, and perception.

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Students' Performance and the Levels of Assessments on the PE&H 1 Content and Learning Competencies: Basis for Open Senior High School PEH 1 Module

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Abstract— This study aimed to know the students' Physical Education and Health performance and their assessment on the content and learning competencies of their PEH subject. The study included 126 PE students. The descriptive type of research was used. It was concluded that the PEH curriculum of the senior high school is provided at a level that students are given an avenue to develop themselves physically for lifetime fitness. However, it was also noted that the students' PE performance is affected by the facilities and equipment of the school. It was found out that the students have average grade in PEH thus more efforts have to be done on both the teacher and the students to improve students' performance in physical education hence a PEH module is proposed intended for the students of the open senior high school program that will enable learners to learn at the time, place and pace which satisfies their circumstances and requirement. This proposed program is aimed to make the PEH curriculum relevant to the times and one which allows students to face the challenges of wellness and living one's life to the fullest

Keywords— *senior high school*

I. INTRODUCTION

Physical Education (PE) is considered to be an important part in the general education program. In 1999, UNESCO asserted that every educational system must give physical education an appropriate place to strike a balance between psychomotor skills and cognitive as well as effective learning in the classroom. This means that PE is not considered as a footnote or an addition to academic programs or something to occupy the student's leisure time. It emphasizes that physical education has to have a fixed place in the school timetable and it is seen as one or the only subject which offers the opportunity for students to improve their physical fitness, develop physical and social skills, and gain knowledge which is not included in other areas of the curriculum [1].

In the unpublished study of [2] today's quality physical education programs are important because they provide learning experiences that meet the developmental needs of youngsters, which help improve a child's mental alertness,

academic performance, readiness to learn and enthusiasm for learning.

The department of education however, aims to establish and implement high-quality physical education programs for senior high school that will provide students with the appropriate knowledge, skills, behaviors, and confidence to be physically active for life. Through the physical education curriculum, students will develop an understanding of the importance of physical fitness, health, and well-being and the factors that contribute to them; a personal commitment to daily vigorous physical activity and positive health behaviors; the basic movement skills they require to participate in physical activities throughout their lives.

The Open high School program is known as a "school without walls" because it is limiting the barrier between school, home and community. Republic Act (RA) 10665 or the Open High School System Act seeks to provide more learners access to secondary education through the open learning modality. Its idea of learning is that "learner-centered and flexible, enabling learners to learn at the time, place and pace which satisfies their circumstances and requirements. Hence, the law encourages young people to complete their secondary education by bringing the schools to where the learners are.

The researchers being PE teachers for years is concerned to make the physical education curriculum relevant to the times and one which allows students to face the challenges of wellness and living one's life to the fullest. The main thrust of this study, therefore is to identify students' PE performance and their levels of assessments on the senior high school physical education 1 content and learning competencies. In the process, the researcher would like to come up with strategies for developing the open senior high school PEH 1 modules.

This study aimed to answer the following questions:

1. What is the students' assessment of their current PEH 1 curriculum content and learning competencies?
2. What is the level of the students' performance in their PEH 1 subject?

3. What open senior high school physical education strategy can be formulated based on the findings of the study?

The results of this will be the bases of a revised PE 1 curriculum pacing guide. This study is most useful to PE teachers for this will serve as their baseline data in preparing the students not only in satisfying them on the basic knowledge about physical education but also in making them go further to some isolated skills which might help them develop their interest and skills. The findings of this study will also benefit students for they will be provided with a more suitable atmosphere for learning and enriching experiences.

The study was conducted at Sinonoc National High School, a secondary school located at Sinacaban, Misamis Occidental.

In this study, the researchers intended to know the students PEH 1 performance and their assessment on the content and learning competencies of their PEH 1 subject. The results was then used as the baseline data in formulating the Open Senior High School modules.

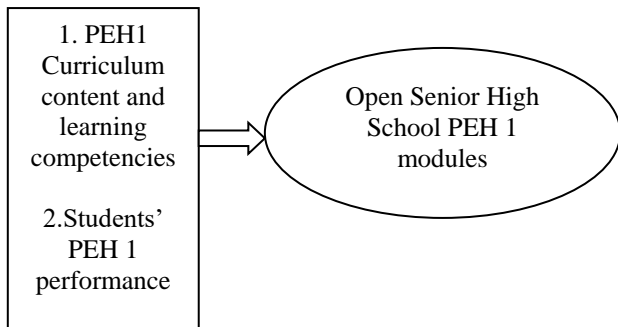


Fig 1. The schema of the study.

II. RESEARCH METHODS

A. Respondents of the Study

The respondents of the study were the 126 PE 1 students enrolled in the first semester SY 2018-2019. The respondents were not sampled because there were only four PE 1 classes in the first semester SY 2018-2019 and the entire population was used.

B. Data Collection/Instrumentation

This present study utilized the PEH 1 Curriculum Content and Learning Competency Checklist. This instrument was modified adapting the DepEd Curriculum Guide used by PE teachers in Physical Education 1 since school year 2016. The specific contents and learning competencies of the subjects were rated by the respondents if each item was achieved at the end of the semester.

The following scale was used:

Rating Scale:

4.21-5.0	Very Developed
3.41-4.20	Developed
2.61-3.40	Moderately Developed

1.81-2.60	Needs Some development
1.0-1.80	Needs Substantial Development

Further, the PE grades of the students were taken from the final grading sheets of their PE teacher. The general point average has the following equivalents.

Grade	Interpretation
95-100	Very High
90-94	High
85-89	Average
80-84	Low
75-79	Very Low

C. Data Analysis

The researchers gathered all the respondents and administered the distribution and answering of questionnaires in one setting with the aid of the class advisers. The researcher then collected, tallied and tabulated the data.

Data was statistically analyzed through Microsoft Excel. After the analysis, the researcher formulated specific activities and ideas utilizing the responses of the respondents that would enhance students' PEH performance and improve the content and learning competencies of the PEH 1 curriculum fitted for the open senior high school enrollees. The PE and Health 1 module is to be suggested and applied to the open senior high school starting school year 2019-2020. The PEH teachers will evaluate the program later to determine its effectiveness in terms of enhancing and raising the level of students' PE performance and physical activity participation.

Percentage and weighted Mean was used to measure the profile of the respondents' level of PE performance in PEH 1 subject and their levels of assessment in the curriculum content and learning competencies in PE 1.

III. RESULTS AND DISCUSSION

This part presents the discussion and interpretation of results per research question.

1. What is the students' assesment of their current PEH 1 curriculum content and learning competencies?

Most modern schools' goal is to equip students with the knowledge, skills, capacities, and values along with the enthusiasm to maintain a healthy lifestyle into adulthood [10]. In this study, the PE curriculum includes the content and learning competencies of the physical education and health 1 course.

The PEH 1 course is offered to grade 11 students in the first semester in order for them to gain the knowledge and skills necessary to develop a lasting interest in lifetime participation. Also, the course aims increase the student's level of physical fitness and knowledge of life-long health. Table 1 presents the evaluation of the respondents' acquired knowledge and skills in PE 1.

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TABLE I. RESPONDENTS' ASSESMENT OF ACQUIRED CONTENT AND LEARNING COMPETENCIES IN PEH 1

At the end of the PE 1 course, I was able to	Mean	Interpretation
1. Relate health behaviors (eating habits, sleep and stress management) to health risks factors and PA performance	4.02	Developed
2. Display initiative, responsibility and leadership in fitness activities	4.00	Developed
3. Set FITT goals based on training principles to achieve and/or maintain HRF.		Developed
4. Distinguish aerobic from muscle-and bone-strengthening activities	3.74	Developed
5. Analyze physiological indicators such as heart rate, rate of perceived exertion and pacing associated with MVPAs to monitor and/or adjust participation or effort.	3.73	Developed
6. Participate in an organized event that addresses health/fitness issues and concerns	3.73	Developed
7. Recognize the value of optimizing one's health through participation in Pas	3.67	Developed
8. Realize one's potential for health-and fitness related career opportunities	3.67	Developed
9. Organize fitness event for a target health issue or concern	3.64	Developed
10. Observe personal safety protocol to avoid dehydration, overexertion, hypo- and hyperthermia during MVPA participation	3.62	Developed
11. Identify school and community resources in case of an injury or emergency	3.61	Developed
12. Explain how to optimize the energy systems for safe and improved performance	3.59	Developed
13. Demonstrate proper etiquette and safety in the use of facilities and equipment	3.58	Developed
14. Engage in moderate to vigorous physical activities (MVPAs) for at least 60 minutes most days of the week in a variety of settings in- and out-of school	3.49	Developed
15. Differentiate types of eating (fueling for performance, emotional eating, social eating, eating while watching tv or sports events)	3.34	Moderately

At the end of the PE 1 course, I was able to	Mean	Interpretation
16. Recognize the role of PAs in managing one's stress	3.26	Developed
17. Self-assess health-related fitness (HRF) status as barriers to PA	3.2	Moderately
MEAN	3.6	Developed

Table 1 shows that the respondents rated themselves developed as highest in relating health behaviors (eating habits, sleep and stress management) to health risks factors and PA performance their acquired content knowledge and learning competencies. Organizing sports event for a target health issue or concern and in realizing one's potential for health-and fitness related career opportunities is developed. Moreover, this implies that the students were able to explain how to optimize the energy systems for safe and improved performance. However, they rated themselves developed in analyzing physiological indicators such as heart rate, rate of perceived exertion and pacing associated with MVPAs to monitor and/or adjust participation or effort. This implies that students need to understand further why it is important to understand the benefits and pitfalls of both an active and inactive routine. The students are moderately developed in recognizing the role of PAs in managing one's stress. This implies that students failed to consider physical activity participation as a way of getting rid of stress. Moreover, students rated themselves moderately developed in self-assessing health-related fitness (HRF) status, barriers to PA participation and one's diet. This shows that at the end of the course, students manifest that the current learning competencies for Grade 11 (HOPE 1) is yet to be very developed. This finding implies that there is a need to give emphases on the importance of good diet and lifelong physical activity participation. . Generally, the respondents' mean rating of their assessment of acquired knowledge and skills in PEH 1 is developed. It is evident that the current curriculum must be thoroughly understood by the students as well as the teacher who will implement it so that the students who are the byproducts of this curriculum will have very developed acquired knowledge and skills in physical education and health.

2. What is the level of the students' performance in their PE 1 subject?

In education, a grade (or mark) is a teacher's standardized evaluation of a student's work. The student performance is evaluated from the information collected through assessment activities in different forms, depending on the purpose. Table 2 presents the average grade of the respondents of their PEH 1 subjects.

TABLE II. STUDENTS' PE 1 PERFORMANCE

Range	Frequency	Percentage	Interpretation
95-100	15	11.90	Very high
90-94	28	22.22	High
85-89	48	38.10	Average
80-84	12	9.52	Low
75-79	23	18.26	Very Low
Total	129	100.00	

In PE, student's grades are based on effort and performance skills. Teachers use scoring rubrics in assessing what students know, are able to do, and are working towards.

The data presented in Table 2 shows that the grade 11 students have average performance in physical education and health 1. This implies that the majority are neither poor nor excellent in the performance of the competencies of physical education and health activities as required in the department of education curriculum. Maybe this is due to the time allotted for PEH that is 1 hour per week and they lacked focus on this subject. It is also noted that a big number of students also have very low performance level. This could be because they lack the interest of participating because they had been taking physical education classes since grade 1 and this is their 11th year. Or perhaps they had less time in physical activity participation because they had more subjects to take that are more difficult and more complicated.

The significant findings of the study reveal the need to enhance the physical education curriculum according to its content, activities strategies and approaches. This development program aims to raise the performance level of the students in order to maximize their participation in physical activities through having a very positive attitude towards physical education.

3. What open senior high school physical education modules can be formulated based on the findings of the study?

School: Sinonoc (Open Senior High School Program)
 Course: Physical Education and Health 1 (HOPE1)

A. Course Description

This course is designed to give students the opportunity to learn fitness concepts and condition in techniques used for obtaining optimal physical fitness. Students will benefit from comprehensive weight training and cardiorespiratory endurance activities. Students will learn the basic fundamentals of strength training, aerobic training, and overall fitness training and conditioning. Course includes both lecture and activity sessions. Students will be empowered to make wise choices, meet challenges, and develop positive behaviors in fitness, wellness, and movement activity for a lifetime.

B. Desired Learning Results

TABLE III. DESIRED LEARNING RESULTS

Expected Graduate Attributes	Desired Learning Results: By the end of the course, students at the proficient performance level will be able to
1. Logical and Creative Thinker	Create and implement a health and fitness plan Demonstrate knowledge and competency in motor skills, movement patterns and strategies needed to perform a variety of physical activities
2. Articulate and Effective communicator	Translate their knowledge of fitness concepts, principles, and strategies by way of writing their fitness plan and fitness portfolio
3. Socially-responsible Individual	Implement the fitness plan by conducting workshop in the local community

C. Final Product/Performance

Culminating:	
Fitness Plan. A group of eight students will share their fitness plan to a group of 20 in the community through workshop	
Enabling:	
Aerobics Routine	Students are grouped
Yoga Routine	into eight members
Resistance training	and create a routine
	to perform together
Introductory:	
Progress Portfolio: Each student will submit his/her laboratory activities as application of the principles of fitness and wellness to his/her own life. This is an assessment of record keeping or other written work required of students	

D. Valid Assessment(Scoring Rubrics

1. Fitness Plan Project Rubric
2. Aerobics Routine
3. Resistance Training Rubric
4. Yoga Routine Rubric
5. Fitness Progress Portfolio
6. Nutritional Package rubric
7. Oral Presentation
8. Community Information Board Rubric

E. Learning Activities

TABLE IV. LEARNING ACTIVITIES

Topic	Scope and Sequence	Time Frame
<i>I. Introduction to Fitness and Conditioning</i>	<ol style="list-style-type: none"> Class Curriculum, Expectations, Grading Policy Classroom Rules and Procedure Dressing Policy 	0.5 hours
<i>II. Fitness Pre-test</i>	<ol style="list-style-type: none"> Personal Fitness Assessment Comparison of personal scores data to health standards and set goals of maintenance and improvement. 	1.5 hours
<i>III. Physical Fitness Concepts and Techniques</i>	<ol style="list-style-type: none"> Principles of physical fitness Components of total health fitness and the relationship between physical activity and lifelong wellness. 	2 hours
<i>IV. Physiological Indicators</i>	<ol style="list-style-type: none"> Listening to the Heart Fitness Technology (heart rate monitors, skin calipers, BMI/BMR/Fat counter) 	2 hours
<i>V. Nutrition</i>	<ol style="list-style-type: none"> Nutrients Nutrition labeling information Food Choices Food Guide Pyramid Comparison of food values Weight Management-proper practices to maintain, lose, gain Eating Disorders Safety techniques (including modifications for health conditions, i.e. asthma, obesity; breathing techniques; proper movement forms, i.e., correct stride, arm movements, body alignment; proper warm-up, cool down, and stretching) 	2 hours

Topic	Scope and Sequence	Time Frame
Enabling <i>I. Cardiorespiratory Endurance Training</i>	<ol style="list-style-type: none"> Cardiorespiratory fitness assessment and goal setting to maintain or improve fitness levels Cardiorespiratory activities including i.e. power walking, pacer test, interval training, incline running, distance running, aerobics and circuits. Aerobics 	2 hours
<i>2. Flexibility Training Relaxation Techniques and Core Training</i>	<ol style="list-style-type: none"> Basic types of flexibility exercises (i.e. dynamic, static) Basic competency in relaxation and breathing techniques Yoga 	2 hours
Culminating <i>I. Resistance Training for Muscular Strength and Endurance</i>	<ol style="list-style-type: none"> Principles of resistance training Safety techniques (spotting, proper body alignment, lifting techniques, spatial awareness, and proper breathing techniques) Proper weight training principles and concepts in order to achieve desired results Performance of basic resistance exercises (including free weights, hand weights, weight machines, exercise bands and tubing, medicine balls, fit balls) Advanced techniques of weight training 	4 hours
<i>II. Fitness Post Test</i>	<ol style="list-style-type: none"> Reassess personal fitness and compare scores to pre-test scores and personal goals Evaluate and implement fitness and activity plans 	
<i>III. Closure</i>	FINAL EXAMINATION	

Topic	Learning Activities
INTRODUCTORY TOPICS <i>I. Introduction to Fitness and Conditioning</i>	Method: Lecture and group activity Activity: PowerPoint presentation of the meaning of physical fitness and conditioning
<i>II. Fitness Pre-Test</i>	
<i>III. Physical Fitness Concepts and Techniques</i>	Method: group activity Activity: Fitness Stations
Principles of physical fitness.	Method: Collaborative learning Activities:
Components of total health fitness and the relationship between physical activity and lifelong wellness.	1. FIT TAG 2. FIRST PRIORITY 3. GRAB BAG 4. CIRCUIT CITY 5. SCORE A GOAL FOR FITNESS
Physiological Indicators	
<i>IV. Nutrition</i>	
Nutrients	Method: Collaborative learning Activities:
Nutrition labeling information	PHYSIOLOGICAL INDICATORS MONITORING Recording/Calculating Heart Rate
Food Guide Pyramid Food Choices Comparison of food values	Method: lecture/PowerPoint presentation group activity: Nutrition Fitness
	Method: lecture/PowerPoint presentation group activity: Do You Realize What You're Eating?(nutritional guide)
ENABLING TOPICS <i>I. Cardiorespiratory Endurance Training</i> Cardiorespiratory fitness assessment and goal setting to maintain or improve fitness levels	Method: lecture/PowerPoint presentation Group activity: 1. Food Pyramid Game 2. Nutritional Budgeting

Topic	Learning Activities
<i>II. Flexibility Training, Relaxation Techniques and Core Training</i>	Method: lecture by PowerPoint presentation Activity: 1. Group game 2. Aerobics routine 3. Aerobics / Tae bo/ Dance Project Method: collaborative learning Activity: Flexibility Assessment
Basic types of flexibility exercises (i.e. dynamic, static)	Method: Teacher demonstration and group activity Activity: Sun Salutation Yoga poses
Basic competency in relaxation and breathing techniques	
CULMINATING TOPICS <i>I. Resistance Training for Muscular Strength and Endurance</i>	Method: Lecture / Class Discussion Group activity Method: Individual performance Activities: 1. lift weights for the desired purpose 2. Performance of basic resistance exercises (including free weights, hand weights, weight machines, exercise bands and tubing, medicine balls, fit balls)
Principles of resistance training	
Weight Management- proper practices to maintain, lose, gain	Method: Game/ quiz bowl Activity: 1. Who Wants To Be A Fitnessaire Closure? 2. Fitness monopoly Method: Individual performance Activity: Pushin' Through The Maze
Proper weight training principles and concepts in order to achieve desired results	
<i>II. Fitness Post Test</i>	Reference: [3][4][5][6] [7][8][9]

IV. CONCLUSION AND SUGGESTION

Based on the findings, the following conclusions are drawn:

1. The PEH 1 curriculum of Sinonoc NHS senior high school is provided at a level that students are given an avenue to develop themselves physically for lifetime fitness.
2. The students have average grade in physical education and health 1 therefore more efforts have to be done on both the

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teacher and the students to improve students' performance in physical education.

3. The students' PE performance is affected by the facilities and equipment and safety procedures of the school.
4. The students need a differentiated open senior high school physical education and health 1 curriculum.

Taking into account the findings of this study, the researchers arrived at the following recommendations:

To PE and health teachers, the differentiated PEH 1 curriculum pacing guide must be implemented to the open high school congruent with the national standards for sports and Physical education. Teachers should give more physical activities that are of interest to the students to make them more active and participative so as bring out the best and improved performance.

To the administrators, improve the scope and sequence of contents and sports specialization, provide student-centered activities, vary methods and strategies to be used in the

presentation of the lessons and employ appropriate forms of assessment.

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The Impact of Forest Fires in Indonesia Stunting: A Literature Review

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Abstract— Forest is part of the national natural resources which have an important role in various aspects of human life and the state. According to data from Sipongi Karhutla Monitoring System, land and forest fires in Indonesia reached a total area of 510,564.21 hectares in 2018 while in 2019 land and forest fires in Indonesia reached a total area of 135,749.00 hectares. Wildfires are capable of lowering the level of the quality of human health, either directly or indirectly. These impacts have implications for toddlers (under five years) and elderly. Besides the unexpected impact of the fire smoke will affect the child's growth and result in the incidence of stunting. The high risk caused by the smog not only attacks the respiratory tract, but also attack the cardiovascular system. Based on research, carbon monoxide contained by smog from forest fires causing the formation of carboxyhemoglobin, hemoglobin which binds carbon monoxide rather than oxygen. As a result, oxygen levels in the body decreases and anemia. In children who suffer from anemia able to cause growth retardation, due to the reduced supply of oxygen to the body tissues for the long term.

Keywords— forest fires, haze, impacts

I. INTRODUCTION

Forests are part of the national natural resources which have an important role in various aspects of human life and the state. Forest are lungs of the earth. Based on the important function of forests for the life of the world it is necessary to maintain and protected from actions that could result in loss of balance of the ecosystem and habitat of living beings.

Based on data Ministry of Environment and Forest of Indonesia explain that Indonesia is one country that has extensive tropical forests amounted to 133,300,543.98 ha. Include nature reserves, protected forests and production forests. Some islands in Indonesia have considerable forest such as Sumatra and Borneo, which is a region in Indonesia is often experienced forest fires / land every year. Plus, if there are anomalies in the climate, can cause dryness and the increase in the number of forest fires / land.

Forests have quite a lot of problems, forest fires are one of the big problems and gets the attention. Forest fire is a phenomenon that not familiar, especially in some parts of Indonesia such as Sumatra and Borneo. Based on data from the World Wildlife Fund (WWF) Indonesia there are 20 million people who have been exposed to the smoke of forest fires, causing pulmonary disorders and respiratory system [2]. The effects of smoke and dust containing toxic gas generated from forest fire can cause discomfort in breathing and worsen the health of people with allergies and respiratory problems. In addition to human losses, the financial costs such as damage to houses and other infrastructure, power outages and the extinction of flora and fauna endemic to dominate the perception of the impact of fires often highlighted [3].

According to data from Sipongi Karhutla Monitoring System, land and forest fires in Indonesia reached a total area of 510,564.21 hectares in 2018 while in 2019 land and forest fires in Indonesia reached a total area of 135,749.00 hectares [4]. Our Lungs of the earth are in flames, in 2015, Indonesia was able to form the center of world attention for the umpteenth time because of forest fires and land very badly. One indicator used is the concentration of particulate matter (PM10) in Palangkaraya (Central Kalimantan), shows the concentration in 2015 ($> 2,000 \text{ ug / m}^3$) was higher than in 2002 and 2006 ($< 2,000 \text{ ug / m}^3$). Peat fires are a serious problem for Indonesia, providing damaging environmental effects and an estimated 1,748 million metric tons of CO₂ eq. emissions, approximately 5% of the CO₂ emissions of the annual global fossil fuel in 2015. As a result of forest fires and land, Indonesia is considered as an exporter of ASEAN air pollution as well as one of the emitters of greenhouse gases (GHG) world, after the industrialized countries such as China and the United States. Therefore, land and forest fires put in a category disastrous as having an impact in the form of smog that can interfere with the activity and the health of surrounding communities [3].

Land and forest fires are not only damaging to the ecosystem, the environment and may increase global warming, but also have a negative effect on human health, such as Acute Respiratory Infections (ARI), obstruktif chronic

lung disease, and disorders of the eyes and skin. Land and forest fires turned out to be more dangerous than imagined, based on research conducted joint team of Duke University and the National University of Singapore long-term health effects and unexpected that increase the rate of stunting [5].

II. MATERIALS AND METHODS

The design of this paper was a literature review. The literature that is used in this paper mostly was from the journal and previous academic research result. The method used in this research is the method of literature study. First, formulate the problem, determine the problem topic that will be discussed then link it with the solution of the problem that has been created from the existing solution. Second, search literature articles that are relevant to the topic of the problem, namely impact of forest fire and get an overview of the research topic. The source of the article source is very helpful if supported by the knowledge of the topic being studied. The source are provides an overview/summary of the previous research. Third, evaluate data, Look at any contribution to the topic discussed, search and find the right data source as needed to support article writing, data in the form of qualitative data, quantitative data and data derived from a combination of both. Last, Analysis and Interpretation, the last step is to discuss and find and summarize the literature that will be made based on available data.

III. RESULTS AND DISCUSSION

Land and forest fires is not an peculiar phenomenon to some areas in Indonesia especially for Sumatra and Kalimantan. Almost every year in Indonesia, forest fires and land. The central government and the provincial government has made various efforts to mitigate and handle forest fire both preventive and repressive, but the fire still happen over the years. Until this phenomenon evolved into a form of catastrophe that has an impact on various aspects of community life.

1997 ago, in the month of August to November Indonesia suffered the worst forest fires and the longest in the history of the event forest fire. Besides caused by improper forest management, the practice of oil palm land clearing by burning forests, the El-Nino also contribute to forest fire at the time. El Nino is a phenomenon of rising sea surface temperatures around the Pacific Ocean along the equator which would influence the spread of the formation of rain clouds [11]. As a result, extreme long drought in Indonesia, trigger drought Prolonged, crop failure, various diseases, and forest fires, El Nino of 1997 is one of the worst in the 20th century. In these conditions, the burning of peatlands could cause fire that spreads very rapidly through the underground, resulting in severe fires difficult to extinguish. This event is capable of destroying approximately 11 million hectares of land in Indonesia, particularly in Sumatra and Kalimantan, which can transmit thick haze to spread to Thailand and Vietnam [9].

Wildfires are capable of lowering the level of the quality of human health, either directly or indirectly. These impacts have implications for toddlers (under five years) and elderly. The direct impact of forest fire smoke inhalation is an upper respiratory infection, while the indirect impact is the emergence of diseases in muscles and connective tissue system, if the closure of forest fire smoke takes place in a fairly long period [6]. The result is a significant increase in patients with respiratory diseases, bronchial asthma, bronchitis, pneumonia, skin and eye irritation in the various regions affected by forest fires[2].

Various air pollutants caused by forest fires, such as dust with small particle size (PM10 & PM2,5), SOx gas, NOx, COx, etc. can cause negative impacts on human health, including respiratory tract infections, shortness of breath skin irritation, eye irritation, etc. It also can cause interference visibility / sight, can disrupt all forms of outdoor activity [19]. Air pollution is an environmental and health problem throughout the world, especially in developing countries. Air pollution can directly influence one's thoughts and life experiences through visual perception. Air pollution can reduce the subjective well-being of people to a significant degree, such as the case of an increase in ARI is indirectly caused by the entry of smoke particles that contain harmful compounds such as SO2, NO2, CO and O3 disturbing respiratory function and health, especially in the channel respiration top and bottom, and causing infection pare such as bronchitis, edema pare and pneumonia [6].

From previous research, showing that there is strong evidence in early-life exposure to air pollutants are associated with low birthweight and preterm birth [1]. The suspected pathways from air pollutants to birth outcomes are inflammation and direct toxic effects to the placenta and fetus, oxygen supply to the fetus, and DNA expression. With respect to longer-term outcomes, the literature on the “fetal origins” hypothesis suggests that intrauterine health insults can cause lasting and irreversible damage to cardiovascular and respiratory health and that low birthweight is associated with shorter height in adulthood. There are very few studies that specifically make the connection between environmental exposure to air pollutants at early-life and long-term outcomes [20].

More recently, based on the publication previous study stated that to provide a information about the long-term health effects are not unexpected from forest fires, said that exposure to smog caused by forest fire and land give effect to the fetus and children, can result in a significant reduction in height by 3, 4 cm of normal height at the age of 17 years [10].

Based on previous study made an observations on the development of 560 fetuses and infants aged six months in the period from August to October 1997 with the condition affected by smog severe in Indonesia, especially in Sumatra and Kalimantan. The observations made by four periods in 1997, 2000, 2007, and 2014 to determine the high development of these children at the age of 3, 10 and 17

years old. It is certain that the results of these studies are not affected by air pollution levels from previous years, geography, indirect effects severe air pollution on a family's ability to work and earn wages, or reduction in food consumption during forest fires [4].

Based on data from the Ministry of Health of Indonesia towards the end of 2015 against diseases associated with the event forest fire and smog, consisting of 10.133 cases of respiratory infections, 311 cases of pneumonia, a total of 415 cases of asthma, eye irritation as many as 689 cases, and skin irritation as many as 1,850 cases [8]. The adverse effects of the fires to make people in the region are exposed to the smoke haze must bear the consequences. Thousands of people suffering from acute respiratory infection and diarrhea. Even among which there must be dying because there was strong to survive. Data Central Kalimantan Health Office said that the number of patients with ARI and diarrhea due to haze in 3 months (July to October 3, 2015) amounted to 21,085 people for ARI and 6,835 people for diarrhea. Most patients are toddlers (0-5 years old) and the elderly [7].

The smoke contains carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃) and particulate matter (PM10). CO is a colorless gas / odorless / tasteless; originating from incomplete combustion; flammable and toxic; that disrupt the blood's ability to bind oxygen blood oxygen deficiency. CO has an affinity to bind with hemoglobin higher than the oxygen (O₂) (240 times) so if exposed to it will be easily absorbed by the blood in the body. As a result, CO replaces O₂ in the blood leading to heart and blood vessel system and innervation. CO at low concentrations (<400 ppmv) can cause dizziness and fatigue, because oxygen in the body decreases and at high concentrations (> 2,000 ppmv) can cause poisoning and even death. NO₂ contribute to particle pollution and ozone precursors to acid deposits and are an essential ingredient of photochemical smog. NO₂ is toxic to living things. SO₂ role in the occurrence of acid rain and pollution particles of sulfate aerosols. SO₂ is a pungent gas that can cause shortness of breath, mucosal irritation and constriction of the bronchial airways, causing wheezing and can damage the lungs. O₃ is a secondary pollutant formed with the help of sunlight causes photochemical reactions oxidants; reactive (destroy / alter molecules); forming smog that is harmful to health; reduce crop production; effects of heat. O₃ can cause irritation to the eyes and respiratory tract as well as asthma, bronchitis and cause headaches [2].

Other evidence also shows that the composition of the forest fire smoke is composed of gases such as carbon monoxide, carbon dioxide, nitrogen oxides, ozone, sulfur oxides. Particles arising from forest fires called particulate matter (PM). More than 10 µm size usually does not enter the lungs but can irritate the eyes, nose and throat. However, particle size of less than 10 µm can be inhaled to the lungs. In the short term (acute) smoke wildfires can cause irritation of the mucous membranes of the eyes, nose, throat, which can cause symptoms of eye irritation and watery, runny nose

and discomfort in the throat, headache, nausea and easy-going ARI [8].

The high risk caused by the smog not only attacks the respiratory tract, but also attack the cardiovascular system. This is evidenced by research conducted by Peters that the increase in the fine particles in the air can increase the risk of myocardial infarction disease [12].

Inhalation of fine particles in the air and ozone in a short time can cause vasoconstriction of the arteries [13]. There is a relationship between air pollution with increased stroke patients admitted to the hospital because of an increase in pollutants PM10 and NO₂ [17]. PM10 can cause lung and cardiovascular disease [14]. PM10 can also increase the incidence of atherosclerosis [16]. Levels of fine particles in the air associated with the risk of death from respiratory and cardiovascular disease [15]. Molecular epidemiological studies show possible biological changes to the effects on birth weight, premature birth, and intrauterine growth retardation (IUGR) and support the view of the relationship between the relationship and outcome of this original birth.

Based on research, said that exposure to smog caused by forest fires great in 1997 in early childhood can significantly influence the physical growth and lung capacity, but does not have a significant effect on cognitive development [9]. In addition, the study explain on the relationship between the haze with physical growth in fetuses and children in the early days of his life. According to that, although their relationship is still uncertain, the carbon monoxide contained by smog causes the formation of carboxyhemoglobin, hemoglobin which binds carbon monoxide rather than oxygen. As a result, oxygen levels in the body decreases and anemia [9]. In another research, in children who suffer from anemia able to cause growth retardation, in the long term can lead to stunting, due to the reduced supply of oxygen to the body tissues [18]. In addition, the relationship between them is also suspected to be due to low weight and respiratory infection [9].

IV. CONCLUSION

The impact of forest fires will affect the various aspects of human life. The high risk caused by the smog not only attacks the respiratory tract, but also attack the cardiovascular system. For long-term and unpredictable impact of forest fires and smoke that will affect the child's growth and result in the incidence of stunting. Based on research that carbon monoxide contained by smog from forest fires causing the formation of carboxyhemoglobin, hemoglobin which binds carbon monoxide rather than oxygen. As a result, oxygen levels in the body decreases and anemia. In children who suffer from anemia able to cause growth retardation, in the long term, due to the reduced supply of oxygen to the body tissues. In addition, the relationship between them is also suspected to be due to low weight and respiratory infections. On the basis of this literature review, we need some future research about the impact of forest fires to cause growth retardation. Need

require further clarification about biologic pathways. By increasing attention to the life course, it would be to examine whether early exposures and impaired outcomes have any long-term consequences in later life.

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Local Language Pocket Book to Improve Parents' Knowledge about Stunting

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Abstract— Indonesia still has a high incidence of stunting. Stunting is a condition of a toddler who has less length or height which is not match by short and very short ages. Stunting has long-term impacts and efforts are needed to solve it. Although there was a decrease in stunting prevalence from 37.2% in 2013 to 30.8% based on Riskesdas 2018, 33 out of 34 provinces in Indonesia still had a percentage of more than 20% for the proportion of very short and short nutritional status which exceeds WHO's limits, <20%. The increase occurred in the short category of 18.0% to 19.3%. In addition, the proportion of nutritional status is very short and short by province by 29.9%. This figure is still higher than the 2019 National Midterm Development Plan target to reduce the percentage of stunting to 28%. There are many factors that influence the incidence of stunting, one of which is bad parenting practices. This also relates to parents' knowledge about health and nutrition before and during pregnancy and at 1000 The First Day of Life. Based on these problems the authors provide ideas in the form of educational media for parents related to stunting namely "Local Language Pocket Book" which contains stunting and its prevention using local languages so that it is easily understood and equipped with images to make it clearer.

Keywords— *stunting, education, pocket book*

I. INTRODUCTION

Stunting is a condition of a toddler who has less length or height which is not match by short and very short ages [1]. The incidence of stunting illustrates poor nutritional status and is chronic in times of growth and development since early life. According to WHO, the condition of this toddler has a height z-score according to age (Height / Ages) less than -2 standard deviations (SD) [2]. Based on data from UNICEF, as many as 1 in 4 children under five got stunting. Stunting is one of the targets of Sustainable Development Goals (SDGs) included in the second sustainable development goal of eliminating hunger and all forms of malnutrition by 2030 and achieving food security. The target set is to reduce the stunting rate by 40% by 2025 [1].

Stunting is a toddler nutrition problem that has long-term impacts and efforts are needed to solve it. Although there was

a decrease in stunting prevalence from 37,2% in 2013 to 30,8%. 33 out of 34 provinces in Indonesia still had a percentage of more than 20% for the proportion of very short and short nutritional status which exceeds WHO limits, <20%. The increase occurred in the short category of 18.0% to 19.3%. In addition, the proportion of nutritional status is very short and short by province by 29.9%. This figure is still higher than the 2019 National Midterm Development Plan target to reduce the percentage of stunting to 28%. [3]

There are many factors that influence the incidence of stunting, one of which is bad parenting practices. This also relates to parents' knowledge about health and nutrition before and during pregnancy and at 1000 The First Day of Life. "Local Language Pocket Book" has goal to improve parent's knowledge and contribute to decrease prevalence of stunting.

II. MATERIALS AND METHODS

This article was prepared using the literature study method. Data and information come from sources that are relevant to the problem. Sources of information obtained from journals, articles, books, news, health reports, and scientific bulletins. Theories and data related to problems become the basis for discussion.

III. RESULTS AND DISCUSSION

Stunting is a growth failure due to accumulation of nutrient insufficiency that lasts long from pregnancy to the age of 24 months [4]. Stunting occurs due to malnutrition that lasts long in the early period of life. Stunting children have a height below the standards determined by WHO based on their age. Characteristics of stunting in children are signs of late puberty, poor performance on attention and learning memory, late teething, 8-10 years old children become quiet, growth slows, and the face looks younger than his age [5].

Toddler is a period that is very environmentally, so there needs to be more attention, especially regarding the adequacy of nutrition [6]. The process of growth and development of toddlers requires the fulfillment of appropriate conditions, both in terms of intake such as the Early Initiation Breastfeeding

(IMD), the adequacy of exclusive breastfeeding for at least the first six months, provision of supplementary foods that are full of nutrition, as well as care patterns that pay attention to environmental hygiene [7, 8] Stunting in infants can inhibit future child development such as intellectual decline, susceptibility to non-communicable diseases, decreased productivity to cause poverty and the risk of giving birth to babies with low birth weight [9, 10].

The impact of stunting persists throughout the child's life until he is an adult. Stunting children have a higher risk of death than children who grow normally, physical and mental growth is disrupted, cognitive and psychosocial abilities are not optimal and when adults are at risk of obesity and non-communicable diseases such as hypertension and diabetes [5]. Stunting was allegedly hampering economic growth, reducing work productivity which ultimately added to the income gap [11].

The impact caused by stunting can be divided into short-term and long-term impacts. Short-term impact is an increase in the incidence of morbidity and death, cognitive development; motor; and verbal in children is not optimal, and increased health costs. Long-term impacts that are not optimal posture in adulthood (shorter than in general), increased risk of obesity and other diseases, decreased reproductive health; suboptimal learning capacity and performance during school term; and productivity and work capacity that is not optimal [1].

Stunting is an indicator of chronic malnutrition caused by poor interaction of various risk factors that have taken place at least in the first 1000 days of life [8]. If there is no improvement in the 1000 hpk period, then the long-term impact will be inherent to the child when he grows up because the damage that occurs during this critical period cannot be corrected after that period has passed [12].

Some of the causes of stunted children (Stunting) are malnutrition factors experienced when pregnant women and children under five, lack of maternal knowledge about health and nutrition before and during pregnancy and after birth, still limited health services including ANC-Ante Natal Care and Post Natal Quality care and early learning, lack of access to nutritious food, and lack of access to clean water and sanitation [11].

The nutritional status of pregnant women greatly influences the state of health and development of the fetus. Impaired growth in utero can cause low birth weight [13]. Research in Nepal proves that babies with low birth weight have a 4.47 times greater risk than normal underweight babies in the event of stunting [14].

There is a relationship between economic status, protein intake and zinc with the incidence of stunting and all three are risk factors for stunting. Low birth weight has no relationship with stunting but is a risk factor for stunting [15].

Research in Southern Ethiopia also proves that infants whose exclusive breastfeeding has not been fulfilled for 6 months have a high risk of stunting [16]. Research in Nepal

also shows that maternal education is a risk factor for stunting in children under five years [17].

Mother's nutritional knowledge is a factor related to the incidence of stunting in infants. Research on 2012 in East Semarang which states that maternal knowledge is a risk factor for stunting in infants. [18, 19]

Research concludes that there is a consistent correlation between health behaviors and perceptions of disease threats so that risk perception is one of the key concepts in predicting family and community health behaviors [20, 21]. While knowledge is an influential factor in shaping perception, the use of effective communication channels can increase knowledge and reach target groups to be one of the backbones to educate people to avoid things that are not desirable [22]

On the one hand Indonesia lags behind in terms of public knowledge about stunting, but on the other hand we are pursued by the higher incidence of stunting. Reflecting on the increasing trend of stunting, as well as its spread even in big cities, the gap in public knowledge about stunting has the potential to create a government program to reduce the incidence of stunting on the road in place. The existence of knowledge gaps about stunting requires efforts to bridge the results of academics' research with the community. [23]

Effective community participation can reduce the possibility of rejection if the promotional campaign message is packaged as well as possible. [24] If the risk factors for stunting are not conveyed properly to mothers who have children under five, it is very likely they will not be moved to avoid risky behavior. The government and development partners working in the field of maternal and child health need to change understanding of short children. This can be done by doing health promotion about what is stunting, stunting risk factors, the impact of stunting on children's health now and long term. To reduce the risk of stunting, it is necessary to get assistance, especially in ensuring there is balanced information about the causes and effects of stunting [23].

Health problems and disease problems, not solely stem from negligence of individuals, families, groups or communities. Most illnesses suffered by individuals as well as existing diseases in the community generally stem from ignorance and misunderstanding of various health information received. Health communication contributes and becomes part of disease prevention and health promotion efforts. Health communication in various forms such as advocacy media, mass media, entertainment media and the internet is able to shape attitudes and change individual behavior by increasing awareness and increasing knowledge [25]. Individual understanding begins with the absorption of stimuli by the senses, including the sense of sight and hearing. Factors that influence perception include information and individual experiences. [23]

Providing a booklet containing health information to provide understanding to mothers regarding methods of caring for children in a natural way is proven to have effective

communication [26]. In another study, the use of Javanese and Indonesian languages in the promotion of dental and oral health was effective in reducing dental plaque scores in children aged 6-8 years at MIM Klaseman, Gatak, Sukoharjo. In addition, the use of Javanese in promoting oral health promotion is more effective than Indonesian in reducing dental plaque scores in children aged 6-8 years at MIM Klaseman, Gatak, Sukoharjo [27].

Effective interventions are needed to reduce stunting, micronutrient deficiencies, and child mortality. Counseling about breastfeeding and fortification or supplementation of vitamin A and zinc have the greatest potential to reduce the burden of child morbidity and mortality. Enhancing complementary foods through strategies such as counseling on nutrition and nutritional counseling, food supplements in food insecure areas can substantially reduce stunting and disease-related burdens. [4]

Handling of stunting is done through specific interventions and sensitive interventions aimed at the first 1000 days of a child's life until the age of 6 years [28]. Specific interventions are actions or activities planned specifically for the first 1000 days of life and are short-term in nature. This activity is generally carried out in the health sector, such as immunization, PMT for pregnant women and children under five, monitoring the growth of children under five in the Posyandu, supplementing iron-folate tablets for pregnant women, promoting exclusive breastfeeding, complementary foods, and so on. Whereas sensitive interventions are various development activities outside the health sector aimed at the general public. Some of these activities are the provision of clean water, sanitation facilities, various poverty alleviation, food security and nutrition, food fortification, education and IEC Nutrition, education and IEC Health, gender equality, and others [29].

Sensitive interventions through counseling need to be done through approaches that are appropriate to the socio-cultural surrounding communities. Language is one of the important things in the delivery of health information in this case related to stunting. Interesting and creative images also clarify the information conveyed. So by making a Local Stunting Pocket Book in the form of a booklet can be an extension media for parents to more easily understand stunting and its prevention. This will make parents more understanding and have an impact on increasing parental knowledge about stunting, which is one indicator to reduce the prevalence of stunting in Indonesia.

IV. CONCLUSION

“Local Stunting Pocket Book” is an educational media that containing pictures and explanations about stunting that can be used in health issues related to stunting. This pocket book is designed with the concept of local socio-cultural adjustment. Using local language according to their respective regions including Javanese makes easier for the parents in region to

understand about stunting and improve parents' knowledge that related to decrease prevalence of stunting.

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Sports Nutrition Development Model

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Abstract— Nutrition is one of the factors that influence the achievement of North Sumatra sportsmen, so it needs to be considered and adjusted for nutritional needs with physical activity during the training program. This study aims to obtain models of sports nutrition development that can improve achievement. The research method used is qualitative methods with a descriptive approach. The study population was all North Sumatra sports that competed in the 2016 National Sports Week in West Java. The research sample is the 3 sports that won the most gold medals, namely Wushu, Karate, and Pencak Silat. The technique of obtaining data is by using questionnaires, interviews, documentation, and group discussion forums (FGD). Test the validity of the data, namely with credibility, transferability, dependability, and confirmability. The results showed that the model of sports nutrition development was carried out with balanced nutrition techniques consisting of carbohydrates, proteins, fats, vitamins, minerals, and water. The guidance model is applied based on the calorie needs of athletes with the right source of nutrition. Athletes' calories are measured by Basal Metabolic Rate (BMR).

Keywords— *Model, Nutrition, Athlete*

I. INTRODUCTION

Maximum performance improvement can be achieved if the athlete can improve the physical condition of all components and is developed according to needs. Therefore the development of athletes requires a variety of preparations with the main priority is physical preparation, technical preparation, tactics preparation, and mental preparation. This means that physical preparation is a very important thing to plan and do before other aspects. Because physical conditions are the basis of fluency in coaching [1].

The branch of sports (sports) Province of North Sumatra (North Sumatra) who competed in the National Sports Week (PON) in 2016 West Java is numbered "... " sports. The results obtained ranked North Sumatra at the top 10, namely rank 8. Sports which have a role in donating gold so that it can make North Sumatra experience an increase from 2012 which consists of 3 sports including Wushu, Karate, and Pencak Silat.

Wushu, karate, and pencak silat sports become the flagship sports of North Sumatra in PON so that they can be a guideline for other sports in gaining gold medal and making North Sumatra's sports achievements continue to increase. The data obtained related to the achievement of achievements was influenced by the nutritional intake of athletes according to

their needs. Control of nutritional intake is carried out by each sport in organizing training patterns and nutritional requirements needed so that athlete's fitness can be maximized and can avoid technical problems involving body preparation during exercise and competition.

Balanced nutrition for sports or often known as sports nutrition needs to be known and carried out by every athlete. Sportsman nutrition is one of the keys to supporting an athlete's performance, this is seen from the form of physical work carried out daily by athletes. Proper nutrition is not only important for the growth, maintenance and replacement of body tissues, but also for providing energy. Physical use in an athlete is not much influenced by the amount of energy produced by the muscles of the body, but more is determined by the body's ability to use the energy produced by the body's muscles to make the necessary movements.

II. MATERIALS AND METHODS

The method used in this study is a descriptive survey. Notoatmodjo states that "In general descriptive surveys are used to make an assessment of a condition and the implementation of a program in the present, then the results are used to develop a plan for improving the program" [2]. From this, it can be stated that the method used is appropriate, which is in accordance with the background of the research conducted. Therefore this study has a research method as a way of obtaining information about certain conditions, so that the research carried out in accordance with the aims and objectives of the study.

The technique of obtaining data is by using questionnaires, interviews, documentation, and group discussion (FGD) forums. Test the validity of the data, namely with credibility, transferability, dependability, and confirmability. Based on this, the researcher conducted the collection using the techniques and instruments as follows:

1. Descriptive field notes: this is the longest part and describes all the efforts of researchers to record details that occur in the field. The descriptive field record carried out by the researcher was to record all the events that occurred and were available.
2. Records of reflective fields: in addition to descriptive material, field notes contain sentences and paragraphs that reflect a more subjective understanding of research. The reflective field record carried out by the researcher is by recording the progress obtained by the researcher.

The method used in this study is a qualitative research method with descriptive survey techniques. Notoatmodjo, states that "In general, descriptive surveys are used to make an assessment of the conditions and implementation of a program in the present, then the results are used to prepare plans for improving the program" [2].

The sample in this study used Purposive sampling with the criteria of the North Sumatra flagship sports branch and the sport branch which won the most medals in the 2016 West Java National Sports Week. Based on the required sample criteria, in this study 3 (three) sports branches were obtained, namely Wushu, Karate, and Silat.

Data collection techniques are using questionnaire instruments, interview guidelines, and documentation. The results of the data acquisition are then carried out data analysis through a group group discussion (FGD) and data validity test that is with credibility, transferability, dependability, and confirmability.

III. RESULTS AND DISCUSSION

The research was carried out in the flagship sports in North Sumatra which won the most gold medals at the 2016 National Sports Week (PON). The sports branches studied were: Wushu, Karate, and Pencak Silat. Data acquisition is described as follows:

- *Wushu*

Wushu is the martial arts branch with the most winning medals with 14 people. Nutrition status in athletes is carried out by carrying out food consumption patterns as follows:

TABLE I. FOOD TYPES OF WUSHU ATHLETES' EXERCISE

Type of food	Quantity
Rice	500gr
Jam	25gr
Syrup	50cc
Sugar	40gr
Vegetables	200gr
Fruits	200gr

TABLE II. FOOD PORTIONS FOR 2-3 HOURS BEFORE THE MATCH

Type of food	Portion Size
Mixed vegetable dishes	150gr
Nonfat milk	200cc
Juice	150cc
Cakes	50gr

- *Karate*

Karate is a martial arts branch with the highest number of winners with 10 people. Nutrition status in athletes is carried out by carrying out food consumption patterns as follows:

TABLE III. FOOD PORTION TYPES OF KARATE ATHLETES

Food	Ukuran
Rice	500gr
Bread	50gr
Sugar	40gr
Butter	25gr
Egg	2 butir
Meat	150gr
Milk powder	25gr
Vegetables	200gr
Fruits	200gr

TABLE IV. FOOD PORTIONS FOR 2-3 HOURS BEFORE THE MATCH

Food	Portion
Grilled fish / chicken	100gr
Mixed vegetable dishes	150gr
Nonfat milk	200cc
Juice	150cc
Fruits	200gr

- *Pencak Silat*

Pencak Silat is the martial arts branch with the most winning medals with 15 athletes. Nutrition status in athletes is carried out by carrying out food consumption patterns as follows:

TABLE V. FOOD PORTION TYPES OF SILAT ATHLETES EXERCISE

Food	Standart
Rice	500gr
Bread	50gr
Biscuits	75gr
Jam	25gr
Syrup	50cc
Sugar	40gr
Butter	25gr
Egg	2 butir
Meat	150gr
Fruits	200gr

TABLE VI. FOOD PORTIONS FOR 2-3 HOURS BEFORE THE MATCH

Food	Portion
Potatoes (boiled / puree + milk)	150gr
Grilled chicken / meat	100gr
Nonfat Milk	200cc
Cakes	50gr

Based on data obtained from food consumption and its size to meet the nutritional status of athletes, it can be seen that the purpose of food is to meet nutritional needs. Nutritional status needs to be done to make athletes avoid problems related to body conditions such as fatigue, loss of concentration, and accuracy of using the right energy for each movement. The food consumed must be varied to avoid athletic saturation or psychological disturbances during the preparation process of the competition.

Good nutritional status is needed to maintain the degree of physical fitness and health and support the development of

athletes' achievements. Measurement of Body Mass Index (BMI) and percent body fat can describe a person's nutritional status. Some research conducted shows that athletes who have BMI and percent of optimal body fat have better physical fitness [3].

The number of nutrients needed for each individual has a different portion, the calculation is based on age, weight, gender, physical activity, environmental conditions (temperature), certain conditions (sick, pregnant or lactating women) [4]. Energy requirements needed by an athlete are needed for: (1) basal metabolism (Base Metabolism Rate (AMB) / Need for rest); (2) physical activity, and (3) food or special dynamic effects of SDA (specific dynamic action) and in general the greatest energy needs are needed for basal metabolism [5].

Calculation of the number of caloric requirements per day for athletes can be done by calculating BMI (Body Mass Index) with the formula $\text{weight (kg)} / \text{Height}^2$, BMR (basal metabolic rate) found in the table, SDA (specific dynamic action) of 10% BMR, physical activity energy in the table, and exercise energy based on the table. The need for energy for a person depends on the body's metabolism and physical activity and the food consumed is then measured by the standard count. Based on balanced nutrition guidelines explained that the level of need for athletes can be measured by the applicable provisions, making it easier for athletes to fulfill nutrients according to the recommended rules. Calculation of BMR can be done with calculations based on body weight contained in the table as follows:

TABLE VII. BMR CALCULATION

Age Years	No.	BMR: MJ/day	see*	BMR: kcal/day	see*
Males					
< 3	162	0.249kg - 0.127	0.292	59.512kg - 30.4	70
3-10	338	0.095kg + 2.110	0.280	22.706kg + 504.3	67
10-18	734	0.074kg + 2.754	0.441	17.686kg + 658.2	105
18-30	2879	0.063kg + 2.896	0.641	15.057kg + 692.2	163
30-60	646	0.048kg + 3.653	0.700	11.472kg + 873.1	167
≥ 60	50	0.049kg + 2.459	0.688	11.711kg + 587.7	164
Females					
< 3	137	0.244kg - 0.130	0.246	56.317kg - 31.1	59
3-10	413	0.085kg + 2.033	0.292	20.315kg + 485.9	70
10-18	575	0.056kg + 2.898	0.466	13.384kg + 692.6	111
18-30	829	0.062kg + 2.036	0.497	14.818kg + 486.6	119
30-60	372	0.034kg + 3.538	0.465	8.120kg + 845.6	111
≥ 60	38	0.038kg + 2.755	0.451	9.082kg + 658.5	108

* Weight is expressed in kg. Predictive equations for children and adolescents are presented for the sake of completeness. Source: Schofield, 1985.
 ** see = standard error of estimate.

Sumber : (FAO/WHO/UNU Expert Consultation, 2001)

TABLE VIII. PHYSICAL WORKING FACTORS (MULTIPLICATION WITH BMR)

Activity Level	Male	Female
Sleep	1,2	1,2
Very light working	1,4	1,4
Light working	1,5	1,5
Medium-Light Working	1,7	1,6
Medium working	1,8	1,7
Hard work	2,1	1,8
Heavy Working	2,3	2,0

Source: (Usman & Nusri, 2013)

A. Nutrition Training and Athlete Match

- Adequate nutrition of athletes

As an athlete, it is necessary to have sufficient nutrition before the match, this serves to facilitate the athlete in running the match. One that must be fulfilled before competing is the energy supply. Energy reserves are stored in the muscles and liver as glycogen, if a little energy supply will result in fatigue due to exhaustion.

a) Energy supply

Reserves of glycogen in the body can be enlarged through the "carbo-loading" technique, which is to give as much carbohydrate input into the athlete's body so that it will encourage the formation of large amounts of glycogen reserves. Energy supply can be done by carbo-loading process by providing high carbohydrate intake to athletes [6].

The production of adenosine triphosphate (ATP) in muscle work depends on the availability of muscle glycogen and blood glucose. Muscle tissue is the main glycogen deposit (400g or 6.7MJ), then liver (70g or 1.2MJ) and blood glucose (2.5g or 342kJ). This amount can vary and depend on factors such as food intake or intake. Although carbohydrates are not the only source of energy, carbohydrates are more needed as a muscle energy source for high physical activity [7].

The production of adenosine triphosphate (ATP) during intensive muscle work depends on the availability of muscle glycogen and blood glucose. Mild physical activity allows it to be produced with low carbohydrate sources. Conversely, for high activity will require a large energy source. Muscle tissue is the main glycogen deposit (400 g: 6.7 MJ), later (70 gr: 1.2 MJ) and blood glucose (2.5 g: 342 kJ). The amount of energy supply capacity varies between individuals according to the intake (food intake). Muscle glycogen content in endurance athletes trained with a mixed diet has muscle glycogen content of 130-230 mmol / kg muscle weight [4].

In the types of endurance sports with high intensity such as marathons, triathlons, martial arts and cross-country very much in need of high glycogen deposits. Because endurance sports (activity > 90 minutes) and ultra endurance (activity > 4 hours) if you have normal glycogen stores, energy requirements will not be fulfilled, thus causing a decrease in sports performance. To overcome this can be done with "Carbohydrate Loading (carbo-loading)" which serves to increase glycogen deposits from 200 to 300% in overcoming fatigue and the athlete's appearance can be improved.

According to Moehji, The carbo-loading implementation can be done in two stages [6], namely:

1. Stage of emptying the body's glycogen
 For several days athletes are given food with a composition of 20% fat, 15% protein, and 65%

carbohydrate from the total calorie needs during training in one day.

A week before the competition takes place, athletes are given a training load heavier than before. Then athletes are given a low carbohydrate diet that is 80-90 grams and not less than 80 grams. A low carbohydrate diet accompanied by a heavy burden of physical exercise is given for 3 consecutive days.

2. Stage of making carbohydrates (carbo-loading)

Three days before the match, the athlete's physical training load was lowered to a minimum. Then athletes are given a high carbohydrate diet and consume fat and protein no more than 20%. The size of the consumption of a high carbohydrate diet is up to 4 grams per 100 grams of muscle mass, or the overall body glycogen reserves reach 700 grams, equivalent to 2800 calories.

Carbohydrate loading can be modified by applying seven days before the competition to apply heavy training (day 1) to consume glycogen deposits, then on day 2-4 a low carbohydrate diet high in protein and fat is given to meet energy needs, but prevents glycogen filling. A high carbohydrate diet (70% of total energy) is given on days 5-7 before competing to maximize glycogen in the muscle that is depleted of glycogen.

Glycogen levels can be increased within 24 hours with a high carbohydrate diet (7-10 g / kg body weight or 70-85% of total energy), it takes 3-5 days to reach the maximum level. Three (3) days of a high carbohydrate diet are generally felt to be sufficient for competition and also to minimize lipogenesis.

TABLE IX. EXERCISE FOOD TYPES CALORIE REQUIREMENT 3000-3500 CAL

Food	Standart
Rice	500gr
Bread	50gr
Biscuits	75gr
Jam	25gr
Syrup	50cc
Sugar	40gr
Butter	25gr
Egg	2 butir
Meat	150gr
Milk Powder	25gr
Vegetables	200gr
Fruits	200gr

TABLE X. FOOD PORTIONS FOR 2-3 HOURS BEFORE THE MATCH WITH A CONTENT OF 700 CALORIES

Food	Portion
Potatoes (boiled / puree + milk)	150gr
Grilled chicken / meat	100gr
Mixed vegetable dishes	150gr

Nonfat Milk	200cc
Juice	150cc
Cakes	50gr

TABLE XI. MATCH FOOD SCHEDULE

Eating time	Time	Food
Up early	05.00	Orange juice, toast, half-cooked eggs
In the Morning	07.00	Full breakfast + one glass of milk
Noon	10.00	Orange juice / syrup / fruit juice and snacks / fruit
Noon	13.00	Lunch food complete
Afternoon	16.00	Tea / syrup / juice and snacks
Evening	19.00	Dinner complete
Towards Sleep	21.00	Tea + snacks

IV. CONCLUSION

The achievements of North Sumatra Athletes are based on the athlete's caloric needs as measured by the Basal Metabolic Rate (BMR) and the source of calories given with food ingredients that are reminiscent or not burdensome to the digestive aspects of vegetables, fruits, fish / eggs (occasional meat), milk (for morning / night), nuts, and drinking enough water. The application of sportsman nutrition models can provide a high role in gaining achievements in a sportsman.

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Health Risk Factors and Its Implications in the Development of Lifestyle-Related Diseases among Physical Education Teachers

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Abstract—A descriptive correlational study involving 347 PE Teachers ages 20-65 years old consisting of 228 (65.7%) females and 119 (34.3%) males of which 135 (38.9%) are single and 202 (58.2%) are married and are currently teaching or was a teacher in the cities of Iligan, Cagayan de Oro City and Ozamiz as respondents using a preformed set of questionnaire and aimed at determining the influence and relationship of identified Health Risk Factors with the Lifestyle-Related Diseases. Compared to the general Filipino population, there is a lower incidence rate of the following; Obesity (7.5% vs. 10%), Diabetes Mellitus Type-II (5.5% vs. 10.1%), Hypertension (11.5% vs. 21%) and Stroke (0.6% vs. 1.2%). The lower incidence rates suggest the significant role that active participation in physical exercise, good stress management, good food selection and proper diet control have in the development of Lifestyle-Related Disease. The single most influential Health Risk Factor is Dietary Intake which practically affects the development of all Lifestyle-Related Diseases. This finding is consistent with previous researches and confirms a strong link between unhealthy diet and various diseases. Of the Moderating Variables, Genetics and Hereditary Factors has the greatest predictive value. This implies that despite a good preventive measure, those who have the genetic make-up of the diseases will at some point in time express the genes to develop the specific Lifestyle-Related Disease. Despite having an over-all lower incidence rate of Lifestyle-Related Disease when compared to the general population, there is still an apparent risk of developing Lifestyle-Related Diseases for the Physical Education teacher population since the majority of them are in the metabolically efficient age (68%) with 18% being overweight. This can greatly predispose them to developing Lifestyle-Related Diseases and other illnesses. An Intervention Program or programs to address every Health Risk Factors related to Lifestyle-Related Diseases is therefore mandatory.

Keywords—*health risk factors, lifestyle-related diseases, physical education teachers.*

I. INTRODUCTION

Man's search for ever-progressing modernization had greatly given him many fold efficiency in his day to day living. No longer is he to walk or ride his horse to arrive to his work. Only a portion of the human population is relegated to toil the lands for yielding. Even so farming is so advanced that modern agriculture had so many tailor-made for specific jobs with the purpose that man's burden of labor is greatly relieved and is taken over by machines. International and local trading are now made accessible. Thus, modernization gives too many conveniences and comfort to modern men and altered the pace of lifestyles of so many societies. Modernization indeed paved to easing the lives of many including those in laborious works, but delegating the work to machines means man's body is no longer obliged to exert maximum effort which many translate into surplus calories as excess body fats which consequently can translate into certain diseases.

In the health sector, modern medicine had reshuffled the leading causes of mortality and morbidity. Diseases from infection, malnutrition and severe dehydration are now simple cases if detected early whereas in the previous centuries they were prominent causes of deaths. All in all, modern medicine has many times significantly lowered the mortality and morbidity rates. Despite all these, people continues to get sick and die, of which the leading causes of deaths changed its trend. Recently, majority of these deaths are from non-infectious causes, topping among the list is Lifestyle-Related Diseases.

Lifestyle-Related Diseases also sometimes called disease of longevity or diseases of civilization interchangeably includes some kinds of cancer, chronic obstructive pulmonary disease, diabetes mellitus type-II, hypertension, and stroke.

These diseases appear to increase in frequency as countries become more industrialized and people live longer. It is of insidious onset such that it is not felt until it is diagnosed, at this time of which it is almost or totally irreversible. Since its detection is usually in the advanced stage, lifestyle related diseases is better prevented than treated.

Statistics shows that more than half of early deaths are caused by unhealthy lifestyle. Public health experts said that unhealthy lifestyle such as inactivity, poor eating habits and tobacco and alcohol use caused chronic diseases and usually are the “actual causes of deaths”. Major killer diseases among elderly and these are believed to lessen the life-spans among them are the heart disease, diabetes, and cardiovascular disease, cancer, lung disease, and others. Nevertheless, all these diseases in one way or another can be prevented if one chooses to live a healthy lifestyle.

A research stated that as the country’s economic development improves, societal challenges similarly increase and so do health hazards and risks behaviors among Philippine population [1]. Like in many other developing countries, the changing family structures and lifestyle trends in the Philippines have resulted in a considerable change in our health profile.

Similarly, another research stated that the main barriers to living a healthy and active lifestyle were lack of health-related activities that would interest the community, and dearth of good sports and recreational facilities.

Unhealthy lifestyle results to recurring physical ailments, making one’s life more desperate and stressful. On the other hand having a healthy lifestyle could boost longevity to ensure productive years which is made possible by living healthy through regular exercise, right food intake, cessation of vices and stress management. Nevertheless, the health status determinant can be attributed much to one’s past lifestyle preference and to a lesser degree of his current lifestyle for it will take years to develop Lifestyle-Related Disease.

II. METHOD

The aim of the study is to determine the Health Risk Factors and its implications in the development of Lifestyle-Related Diseases among the Physical Education Teachers. After collating the data and consequential to the informations sought for, the study is able to answer the following:

1. What is the profile of the respondents in terms of age, BMI Classification. Civil status, gender, genetics and heredity factors?
2. What are the Lifestyle-Related Diseases among the Physical Education Teachers?
3. What are the Health Risk Factors that affect the development of Lifestyle-Related Diseases among the Physical Education Teachers?

4. Is there a significant relationship between the Independent Variables of Dietary Intake, Physical Exercise Engagement, Stress and Vices and the Dependent Variable of Lifestyle-Related Diseases among the Physical Education Teachers?
5. How do the moderating variables such as age, BMI, civil status, gender, genetics and hereditary factors interplay in the relationship between Health Risks Factors and Lifestyle-Related Diseases among the Physical Education Teachers?
6. What type of advocacy program can be implemented based on the results of the study?

The respondents of the study were the three hundred forty seven (347) Physical Education Teachers who graduated with the degree Physical Education or MAPEH teaching Physical Education Subjects in either public or private, secondary and collegiate schools in Region X, specifically in Iligan City, Cagayan de Oro City, and Ozamis City, from S.Y. 2010 – S.Y. 2016.

The respondents of this study were exclusively Physical Education Teachers of Region X, with practice (or who had their teaching practice if retired due to affectation of Lifestyle-Related Diseases), specifically in Iligan City, Cagayan de Oro City, and Ozamis City, who graduated with the degree of Physical Education or MAPEH, who age ranges from 20-65 years, who are teaching in the public and private, secondary and collegiate.

Teachers who are handling Physical Education subjects or course but are not degree holders of Physical Education or MAPEH were excluded in this study. This was to eliminate questioning the credibility of these Non-Physical Education major teachers who may have lacked receiving instructions that were received by those majors in Physical Education.

The researcher made use of a preformed set of questionnaire formulated to optimize data or information extraction from the respondents. The preformed set of questionnaire was face-validated by the thesis advisers and panel members. During the validation phase, the thesis adviser and panel members made sure that the questions were appropriate for this study.

The questionnaire is composed of two (2) parts. The first part of the questionnaire inquires personal information of the respondents regarding their profile in terms of age, BMI, civil status, gender, and genetics and hereditary factors. The second part requires data about the Health Risk Factors and are categorized into dietary intake, physical exercise engagement, life stressors and stress management, and vices.

The questions for the Dietary Intake, Physical Engagement and Activity Level, and Genetics and Hereditary Factors were taken and adapted from previous studies and is properly cited in the List of References. Some of the questions were modified to make quantification possible and to adapt to the local setting.

The Stress Level quantification questionnaire is formulated by the researcher in collaboration with Dr. Wil J. Maghanoy.

The questions are formulated based on hints provided by Kaplan and Saddock's Synopsis of Psychiatry 10th edition regarding the range of human emotions and reactions to life events. The concept is that human beings respond differently to various stimulus or stress and is affected by previous experiences and the integrity of coping and defense mechanism. Some individuals may view the same stress as level 2 but others may perceive it at level 5. The Stress Level scoring is established using 1 as the lowest score representing to NO STRESS PERCEIVED OR FELT, whereas, 8 is the highest score representing BREAKDOWN OR NEAR-BREAKDOWN OF psychological defenses. The midline score is based on the presumption that the stress level is being felt by the individual but it is effectively buffered by the defenses mechanisms. This scheme of determining stress level was already utilized by psychologists and psychiatrists but more on the aspect of anxiety and grief. The researcher and co-formulator, Dr. Wil J. Maghanoy, therefore renounces any claim of originality of the concept but only in its application including attempt to evaluate Acute and Chronic Stress.

It is emphasized here that the validation and reliability testing of the stress level scoring questionnaire was not done separately from the general questionnaire but rather incorporated as a whole with the general questionnaire, where the Cronbach's Coefficient is 0.903 indicating a very high reliability (See Appendix D). This was done by having a pre-survey conducted by the researcher using the PE Teachers of MSU-Naawan as respondents. The MSU-Naawan Campus PE Teachers were then excluded from the survey proper of this study.

III. RESULTS AND DISCUSSION

A. Respondent's Age

It is observed that out of 347 respondents, the age bracket 31-40 years old has the highest frequency, in which there are 125 respondents or 36% of the total population. This is followed by 30.9% (107 respondents) belonging to age bracket 20-30 years old, 19.6% (68 respondents) belong to age bracket 41-50 and 13.5% (47) respondents belong to 50 and above age bracket. Note that the age of 31-40 has the highest frequency which accounts to 125 respondents indicating a relatively young and middle-aged respondents. [2] describes this age group (31-40) as the most efficient age category and that it is this age group when the Basal Metabolic Rate and muscle mass starts decreasing. He added that this age group abuses their bodies much less than they did in their twenties. Being metabolically efficient means that a person needs less amount of energy to maintain bodily functions. If a person continues to eat the same amount of calories as he does during his twenties, then the excess calories is deposited as fat, which is a strong predisposition to Lifestyle-Related Disease.

B. Respondent's Body Mass Index (BMI)

The distribution of respondents showing the frequency belonging to each BMI Classification is as follows. 71.2% (247) of the respondents belong to the Normal Category. The Pre-Obese and Obese I are next in frequency ranking (65 and 21 respectively). There are also respondents who are Underweight (9 or 2.6%), Obese II (2 or 0.6%) and Obese III (3 or 0.9%).

C. Respondent's Civil Status

The BMI Classification and the corresponding civil status of the respondents showed. Married Individuals predominate at 58.2% (202) followed by those who are single at 38.9%. The widow/widower, separated and annulled have 2.3% (8), 0.3% (1), and 0.3% (1) respectively to complete the 347 respondents count.

D. Respondent's Gender

The frequency distribution of the respondents according to gender shows that there are more females (228) than males (119).

E. Respondent's Genetics and Hereditary Factors

Result shows that one hundred thirty or 37.5% of the respondents have relatives who are Hypertensive, 98 respondents (28.2%) have relatives who have Diabetes Mellitus Type-II, while 48 respondents (13.8%) have relatives who suffered a stroke.

F. Respondent's Affection with Lifestyle-Related and Other Diseases

Of the 347 respondents, 19 (5.5%) (8 males, 11 females) have Diabetes Mellitus Type-II, while forty (17 males, 23 females) or 11.5% are Hypertensive. A single case of stroke (0.3%) was reported but the actual incidence rate is (0.6%) because the other PE Teacher afflicted with Stroke did not participate in this study. There is no incidence of Chronic Obstructive Pulmonary Disease and Cancer.

G. Respondent's Dietary Preference

The dietary preference together with the frequency distribution of respondents presented showed that 79% (274) of the respondents dietary regimen is Mixed diet while, 8.1% (28 respondents) are purely vegetarian and 11.5% (40) of the respondents are Predominantly Meat products eater. One and four tenths percent (1.4%) or 5) of respondents did not answer this sections and is reflected under No Response.

H. Respondent's Number of Regular Meals in a Day

The number of regular meals the respondents usually eat in day showed that Eighty and seven tenth percent (80.7% or 280) of the respondents eat 3 regular meals a day while 15% (52) eat 2 regular meals a day. Two and nine tenth percent (2.5 or 10) respondents eat 4 times a day while 1.4% (5) respondents eat once a day.

I. Respondent's Daily Diet Composition

The main bulk/ composition of the respondents' regular meal and its corresponding percentages are shown. The usual regular meal is composed of up to 50% carbohydrate or rice, up to 25% meat, up to 25% fish, and up to 25% vegetables and fruits. The table depicts that about 75% of the respondents eat a more or less balanced diet. A meta-analysis study about the Mediterranean diet by [3] concluded that the ideal Mediterranean diet which is composed of fruits and vegetables, legume, whole grain cereals, fish, olive oil as the only source of fat, moderate consumption of red wine during meals, and minimal red meat consumption can significantly cut cardiovascular mortality, hypertension, and other several diseases.

J. Respondent's Number of Meal Snacks Eaten in a Day and Type of Snacks Eaten

The distribution of the respondents per number of meal snacks eaten in a day shows that majority of respondents (122 or 35.1%) eat 2 meal snacks a day, 100 respondents (28.8%) eat one meal snack a day. 55 respondents do not eat meal-snacks at all, while 70 respondents eat 3 meal snacks a day. The distribution of the respondents per type of snacks eaten shows that 36.6% (127) of the respondents eat carbohydrate rich foods for meal snacks, 30.5% (106) of respondents eat sugar-rich foods for meal snacks, while 17% (59) of the respondents prefer vegetables and fruits for their meal snacks.

K. Respondent's Physical Exercise Engagement

Of the 347 respondents, 83.9% (291) of the respondents get to exercise aside from the physical exercises of their PE Class, while 16.1% (56) of the respondents do not engage in such physical exercises/activities. Of those who exercise, 169 (48.7%) of them do it 2-3 times weekly while 80 (23.1%) and 42 (12.1%) do it once weekly and 4-5 times weekly, respectively. Majority of the respondents perform Light (101 or 29.1%) to Moderate (163 or 47%) intensity level physical exercises, while 27 (7.8%) of the respondents do a heavy physical exercise regimen. The average time spent for each physical exercise/activity session is between 30-45 minutes.

L. Respondent's Weekly and Yearly Stress Level

The stress quantification result is presented on How to tally the weekly stress level based on the Intensity Level Scoring. The highest obtainable stress value in each weekly stress category is 56 which represents 8 score points for extreme stress multiplied by 7 days in a week (8x7). The lowest weekly stress score is 7 (1 stress score per day multiplied by 7 days in a week or 1x7). The weekly stress is simply the sum of all daily stress scores in a week.

M. Respondent's Stress Management/ Coping Methods

The respondents' stress management of stress coping methods which range from physical activity (highest

frequency) to wring in a journal or blog (lowest frequency). As can be seen, more than 55% of the respondents turn to activities that burn calories to counter stress such as walking, jogging, biking, dancing, singing and physical exercise. Aside from this calorie-burning activities, the respondents are also into mind-calming activities like listening to music, spending time to unwind with the family, turning to prayers or attend spiritual activities, social networking, and spending time to unwind with friends, watching movies/television and other activities. Noteworthy is the 19.3% (67) of the respondents who go into binge-eating as a counter measure for stress. It needs to be examined if they also belong to the obese population.

N. Respondent's Vices: Smoking

The table shows that 87% (302) of the respondents are non-smokers while 12.1% (42) are smokers. Three (3) respondents did not answer this section and is reflected under No Response.

O. Respondent's Vices: Alcohol Drinking/ Consumption

Out of 347 respondents, 50.1% (174) respondents do not drink alcoholic beverages while 46.4% (161) respondents do drink alcoholic beverages and twelve respondents (3.5%) did not answer this section and is reflected under No Response.

P. Respondent's Vices: Leisure Activities (Gambling)

Out of 347 respondents, 85% (295) of them do not engage in leisure activities while 10.4% (36) of respondents are into leisure activities. Four and six tenths percent (16) of the respondents did not answer this section and is reflected under No Response.

Q. Relationship of Health Risk Factors to Probable Affection with Cancer

The direct relationship between the independent variables (Health Risk Factors) and dependent variable (Lifestyle-Related Diseases) shows that Dietary Type – 0.000 and Alcohol Drinking/ Consumption – 0.001 (α values) suggest very strong relationship between the Health Risk Factor and Cancer among the PE Teacher population respondents. Smoking with a value of 0.063 has a significant relationship to Cancer as compared to Dietary Type and Alcohol Drinking/ Consumption.

R. Relationship of Health Risk Factors to Probable Affection with Chronic Obstructive Pulmonary Diseases (COPD)

Dietary Type and Smoking has values of 0.000 and 0.015 respectively indicating that these two variables have a very high probability of exerting influence in the development of Chronic Obstructive Pulmonary Disease.). This finding seems to agree with that [4] observation that COPD patients lack of anti-oxidants in their respiratory system epithelial linings.

S. Relationship of Health Risk Factors to Probable Affectation with Hypertension

Smoking, Leisure Activities, and Dietary Type are below the 0.05 level of significance. The values are 0.001, 0.029, and 0.048 respectively. This implies that these four independent variables are strongly associated with the development of Hypertension for the PE Teacher population.

T. Relationship of Health Risk Factors and its Probable Influence in the Occurrence of Stroke

The probable influence of Health Risk Factors in the development of Stroke using the Likelihood Ratio Test. Three of the variables, Alcohol Drinking, Dietary Type and Weekly Community Stress are having values less than 0.05 indicating that they are strongly associated with the development of Stroke.

U. Relationship of Health Risk Factors and Moderating Variables to that of Cancer

The relationship of Health Risk Factors and Moderating Variables to that of Cancer was measured at 0.05 Level of Significance. BMI and Dietary Type are the variables having predictive values below 0.05 which are 0.043 and 0.043 respectively. This suggests that BMI (Obesity) and Dietary Type (Non-balanced Diet) significantly increases the PE Teacher population's chance of developing Cancer.

V. Relationship of Health Risk Factors and Moderating Variables to that of Chronic Obstructive Pulmonary Diseases (COPD)

This shows the relationship of Health Risk Factors and Moderating Variables to that of Chronic Obstructive Pulmonary Disease.

W. Relationship of Health Risk Factors and Moderating Variables to that of Diabetes Mellitus Type-II

The relationship of Health Risk Factors and Moderating Variables and its probable influence in the development of Lifestyle-Related Diseases can be seen that Genetics and Hereditary Factors has α value of 0.000, Yearly Family Stress has α of 0.059 which is a little higher than 0.05.

X. Relationship of Health Risk Factors and Moderating Variables to that of Hypertension

The relationship of Health Risk Factors and Moderating Variables and its association with Hypertension. There are 6 variables that have α values less than 0.05 which are namely Smoking, Civil Status, Genetics and Hereditary Factors, Yearly Job Stress, Dietary Type and Leisure Activities. The influence of yearly stress job in the development of Hypertension further confirms the statement of [5] that it is chronic stress that has the greatest influence in the development of numerous diseases. The very high association of civil status with Hypertension among the respondents in

this study is perhaps related to constant stressful relationship of the respondent to his/ her partner or the effect of solitary living or both.

Y. Relationship of Health Risk Factors and Moderating Variables to that of Stroke

The relationship between the independent variables and moderation variables in this study is investigated at 0.05 confidence interval. Variables having α values equal to or less than 0.05 are considered of significant association in the development of stroke, while α values higher than 0.05 are considered less significant.

CONCLUSION

The findings of the study, reveals that the impact of Health Risk Factors in the development of Lifestyle-Related Disease among the PE Teacher respondents is somewhat less than the general population. The beneficial effect of physical exercise/ activities played a lead role in lowering the chances of Lifestyle-Related Disease setting in the body of the PE Teacher. Healthy and balanced diet, effective stress management and less vices engagement all played significant roles in curtailing the incidence rate of Lifestyle-Related Disease among the PE Teacher population.

Although the result of the study generally reflects a positive note on the overall health status of the PE Teacher population, the results also leaves too much to be desired and done. The overweight PE Teachers are numerous, there are significant members who smoke and engages in vices and leisure activities. A lot of PE Teachers are Hypertensive and some have very unhealthy (illogical?) stress coping mechanism (for example Binge eating under stress). Worst is that a significant number do not perform physical exercises/activities at all! When all of the downside of the PE Teacher population would have been corrected, will we then expect an excellent health status among them.

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Cocobers (Corncob Cracker): Healthy Snacks from Corncob Waste in Grobogan Regency

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Abstract—Grobogan Regency was a city with the largest corn production in Central Java Province on 2017, producing 700,941 tons with a harvest area of 112,700 ha. Corn consists of 30% of waste in the form of corncobs. People only use corncobs waste as briquettes and animal feed. Corncob has several nutrition contents in the form of cellulose (40%), hemicellulose (41.4%), lignin (5.8%), crude protein (2.5%), starch (2.1%), crude fat (0, 7%), Carbohydrates dissolve in water (1.1%), Water content (1.7%), and Ash (1.8%). Cellulose, hemicellulose, pectin, lignin, gum, mucilage are included in the dietary fiber which is very important for digestion, but also can improve glucose tolerance and reduce plasma insulin concentration in normal people. Cocobers (Corncob Crackers) is a food innovation through the utilization of corncob waste into healthy snacks. Making Cocobers includes the collection of tools and ingredients, cleaning, smoothing, drying, making dough, frying, and packaging. Cocobers contain Carbohydrates (26.924%), Protein (5.562%), Fat (2.440%), and Rough Fiber (6.13%). Cocobers are very good if they are developed as superior products of the people of Grobogan Regency as an effort to build the community's economy.

Keywords— Grobogan regency, corncobs, Cocobers

I. INTRODUCTION

Grobogan Regency is one of the districts in Central Java Province. The economic pillars are in the agricultural sector, where out of 1,351,429 residents, 56% are workers in the agricultural sector [1]. Besides rice, the biggest agricultural crop in Grobogan Regency is corn. Based on data from the Central Statistics Agency for Central Java Province in 2017, Grobogan Regency was a district with the largest corn production in Central Java Province, produced 700,941 tons with a harvest area of 112,700 ha [2].

Corn fruit consists of 30% of waste in the form of corncobs [3]. Therefore, if the waste is not utilized maximally, it will disturb the environmental sanitation of Grobogan Regency. Until now, residents of Grobogan Regency only use it as briquette / fuel as a substitute for oil.

In addition, some breeders also use it as animal feed. In fact, this corncob waste can also be utilized as an economically valuable food.

Based on data of Grobogan Central Statistics Agency, the poverty severity index in 2017 increased from the previous year from 0.38% to 0.56% [1]. So, by utilizing corncob waste into an economically valuable food can be used as a strategy to reduce poverty severity index in Grobogan Regency. This can be implemented, by trading the food until it is judged to be a superior product typical of Grobogan Regency. Because in addition to economic value, food from corncobs is also rich in nutritional value.

Corncobs is one of the lignocellulosic wastes that are widely available in Indonesia. Lignocellulosic waste is agricultural waste containing cellulose, hemicellulose, and lignin. Each is a compound that can potentially be converted into other compounds biologically [4]. Corncob has several contents in the form of cellulose (40%), hemicellulose (41.4%), lignin (5.8%), crude protein (2.5%), starch (2.1%), crude fat (0, 7%), Carbohydrates dissolve in water (1.1%), Water content (1.7%), and Ash (1.8%) [5].

Some corncob content is a constituent component of dietary fiber. Because basically the constituent components of plant cell walls consist of cellulose, hemicellulose, pectin, lignin, gum, mucilage all of which are included in dietary fiber. Dietary fiber is very important for digestion, but it can also improve glucose tolerance and reduce plasma insulin concentration in normal person [6].

In several studies, corncobs were used by xylan extraction. Corncobs are the highest lignocellulosic material (12.4%) compared to other agricultural wastes [7]. Xylan is hemicellulose which is a polymer of pentose or xylose with β -1,4 bonds whose number of monomers ranges from 150-200 units [8]. Xylan can be processed into xylitol sugar, through the hydrolysis of xylan to xylose, then hydrogenated to xylitol. Xylitol has advantages over sugar (sucrose), as a low-calorie sweetener, has a low glycemic

index, and in metabolism it does not require insulin so it does not increase blood sugar. Therefore xylitol is good for diabetics [9].

Seeing that background, the authors intend to give an idea in the form of Cocobers (Corncob Crakers) which is a food innovation through the utilization of corncob waste into healthy snacks as a superior product of Grobogan Regency. This idea can also be utilized as a business opportunity for the residents of Grobogan Regency to improve their economic level.

II. MATERIALS AND METHODS

The preparation of this article had gone through systematic steps in order to obtain the results of a complete and structured study. The preparation of this article began by formulating the problem intended so that the problem discussed in the written idea becomes clear and does not widen. The formulation of the problem was carried out based on the literature review from various sources relevant to the topic discussed.

Data collection techniques used in the preparation of this article in the form of literature studies, production trials, and laboratory tests of nutritional content of the product. Literature studies are obtained through literature sources that are relevant to problems in the form of books, journals, scientific articles, and so on.

Cocobers production trials conducted by the author based on modifications to the basic formulation for making crackers. The ingredients for making crackers in general are tapioca flour (500 g), water (140 g), salt (10 g), and garlic (2.5 g) [10]. After being produced, Cocobers products were tested for nutritional content. The nutrient content test was conducted at the Chemistry Laboratory, Department of Biology, Faculty of Mathematic and Sains, Universitas Negeri Semarang.

After collecting data, the data were then analyzed using a theoretical approach based on the results of the literature study. The data analysis process carried out in writing this article includes data reduction and data presentation. Data reduction analysis was done by selecting, focusing, simplifying, and abstracting data that has been obtained based on library sources. This analysis was carried out in order to emphasize, summarize, focus, and discard nonessential data so that conclusions can be drawn. After reducing the data, the authors carry out the stage of data presentation that is compiling information on the results of the data reduction stage and then presenting it in full, both data obtained from literature studies, production trials, and laboratory tests. The data were then used as a reference for drawing conclusions by using induction techniques based on the description in the discussion.

III. RESULTS AND DISCUSSION

Cocobers or corncobs crackers are produced through stages, such as the following:

1. Preparation of Equipment and Materials

The tools and materials prepared were grinder, knife, basin, frying pan, cutting board, tampah, tumbler, 1500 g corncobs, 500 g tapioca flour, 3 cloves of garlic, sufficiently clean sand, 150 ml of warm water, 1 tablespoon of salt, and seasonings sprinkle. Recipe comparison of ingredients was obtained from the basic formulation of ingredients for the manufacture of crackers [10].

2. Cleaning

Tools and materials to be used in production must be cleaned first in order to sterilize tools and materials, including corncobs. Corncobs that will be made into Cocobers are cleaned first by soaking them while cleaning them thoroughly. In addition, in this stage also selective selection (sorting) of corncobs, ie ensuring the corncobs used were free from dirt and fungi.

3. Refining

Corncobs that have been cleaned, then cut into small pieces. After being cut, the corncobs were put into a grinder for the flouring process. The flouring process was done as much as 3 times the flour, and after that, the flour also still needs to be filtered, in order to get a really fine flour.

4. Dough Making

After it has become flour, the next step was making the dough, by mixing tapioca flour, mashed garlic, salt, and warm water. The mixture of ingredients was stirred and kneaded until evenly distributed.

5. Steaming

After making the dough, the dough was formed into ovals, and then steamed. The time for steaming the dough was \pm 20 minutes. After that, the steamed dough was allowed to stand until it was cold and so that it was easier to slice the raw dough into crackers, it could be put into the freezer.

6. Drying

After the mixture was cold and hardened / stiff, the dough was thinly sliced into raw crackers. Then, raw crackers were cracked in the sun, in order to add crispness to the crackers. These were in accordance with the statement of Pertiwiningrum (1993) which states that the quality of a cracker can be assessed from several criteria, such as appearance, development, and crispness [11].

7. Frying/Grilling

Raw crackers that have been finished, then fried until fluffy cooked. However, besides fried raw crackers can also be roasted. Roasting or also known as frying through sand media can be applied to cocobers because it has various advantages. These advantages include crackers that do not have oil content so it is healthier and

not easily rancid, ingredients are easily available, and cost is cheaper [12].

8. Packaging

Crackers that have become ready must be packed immediately, these were due to the nature of crackers which are easily sluggish. To add flavor, before packaging, crackers can also be spiked with various spices, such as balado, barbaque, and so on. The packaging used must be closed, in this case the writer uses a plastic stand pouch as the packaging. Then, labeled the product on the packaging as product identity.

After the product was finished being produced, the next step is testing the Cocobers content. It was carried out at the Chemistry Laboratory, Department of Biology, Faculty of Mathematic and Sains, Universitas Negeri Semarang. That laboratory test was carried out with the aim to determine the nutrient content contained in Cocobers products, namely carbohydrates, proteins, fats, and crude fiber.

The laboratory test results related to the product content of Cocobers were as follows:

TABLE 1. NUTRITION CONTENT OF COCOBERS

Nutritional Substances	% N
Carbohydrate	26,924%
Protein	5,562%
Fat	2,440%
Crude Fiber	6,13%

N : The number of samples tested, It was 100 g

Carbohydrates contained in 100g Cocobers is 26.924%. Carbohydrates in the body are useful as the main source of energy. Some carbohydrates are broken down into glucose which is in the blood circulation for immediate energy needs. While some are also stored in the liver and muscle tissue as glycogen, and some others are converted into fat which is then stored in fat tissue that can be used as a body's energy reserves. Not only that, carbohydrates are also useful in launching the digestive system, regulating fat metabolism, and saving the use of protein [13].

The protein contained in 100g of Cocobers is 5.562%. Protein has various benefits such as an important role in the process of growth and maintenance, regulating water balance in the body, maintaining body neutrality, the formation of antibodies, transporting nutrients, and also as an energy source [13].

The fat contained in 100g Cocobers is 2,440%. Although fat is often associated with the phenomenon of obesity, fat actually also has many benefits. As with other macro nutrients such as carbohydrates and protein, fat is also useful as an energy source. In addition, fat is also useful as a means of transporting fat-soluble vitamins (Vit A, D, E, and K), saves protein, gives satiety, savory taste and delicacy, as a

lubricant and helps the expenditure of digestive leftovers, maintain body temperature, as well as organ protection [13].

The Coarse Fiber contained in 100g Cocobers is 6.13%. Which is included in crude fiber namely cellulose, hemicellulose, pectin, lignin and others. Dietary fiber is very important for digestion, but it can also improve glucose tolerance and reduce plasma insulin concentration in normal people [6].

IV. CONCLUSION

Cocobers is a food innovation by utilizing corncob waste which turns out to have some content that is good enough for health, such as dietary fiber, protein, carbohydrates, and fat. Cocobers are produced through several stages, namely preparation of tools and materials, cleaning, smoothing, making dough, steaming, drying, frying, and packaging. Test the nutrient content of Cocobers products, resulting that 100g Cocobers contain carbohydrates (26,924%), protein (5.56%), fat (2,440%), and crude fiber (6.13%).

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Construction of Sport Nutrition Instrument

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Abstract— *A Valid and Reliable instrument to measure Knowledge, Attitude and Behavior of Sport Nutrition among athlete is not construct yet in Indonesia. Sport Nutrition Behavior is one of the important aspect in sport performance. Thus, it's need to construct a sport nutrition instrument to support national sport performance. Aim of this research is to construct a Valid and reliable instrument to measure Knowledge, Attitude and Behavior of Sport Nutrition. A massive Survey of 78 athletes was conducted to test the validity and reliability of the instrument. Point Biserial Correlation and Corrected Item Correlation are conducted to test the Validity of the Instrument. Meanwhile, KR-20 and Alpha Chrombach are used to test the Reliability of Instrument. The Result of the data analysis shows that Instrument of Knowledge of Sport Nutrition consist of 21 items, Attitude of Sport Nutrition consist of 23 items and Sport Nutrition Behavior consist of 21 items.* (Abstract)

Keywords—*Sport Nutrition, Instrument Development, Elite Athletes.*

I. INTRODUCTION

The study of nutrition dates back to over 200 years; however, sports nutrition is relatively a new discipline involving the application of nutritional principles to enhance the athletic performance. Nutrition affects a sportsman in many ways. At the basic level, it plays an important role in achieving and maintaining health. Optimal nutrition can reduce fatigue, allowing a sportsman to train and compete longer or recover faster between training sessions [1]. Nutrition is an important component of any physical fitness program. The main dietary goal of active individuals is to obtain adequate nutrition to optimize their health and fitness or sports performance [2].

Indeed, nutrition affects almost every process in the body involved in energy production and recovery from exercise. To understand and apply the principles of sport nutrition, some basic understanding of nutrition is necessary. This includes the knowledge of biochemical and physiological processes that occur in different cells and tissues as well as how these processes are integrated throughout the body [3]. There are many reasons why nutritional advice is not followed. It may be due to the lack of knowledge or information, and interest of making a change in one's diet, or certain perceived or encountered barriers that may prevent people from eating healthier diets such as the lack of money (cost), lack of time (too busy with work) or taste [4]. Athletes may often rely on coaches for

nutrition guidance in certain sports. Therefore, when coaches are misinformed about nutrition, this becomes a potential problem for athletes, as well [5].

Adolescence is a very rapid period of growth and development; therefore, good food habits and nutrient intake is very important to ensure optimal growth and development during the later stages of life. Community-related sports such as school, family, coaches, athletes and even the mass media play an important role in influencing the behavior of athletes Sports Nutrition adolescents and young adults. Potgieter et al in 2013, stated that the planned nutrition program is also important to obtain and maintain the good performance of the athlete[6]. But Spronk et al 2014 study, found that a lot of athletes, both for recreational purposes and competitive have an imbalanced nutrition, despite having attention to nutrition but they are more concerned with physical fitness[7].

Food intake is very important, not only in terms of energy content in food, but also in terms of the quality of the diet. Research Naylor, PJ et al, 2015 found that the diet of athletes often contain high energy but low in nutrients such as eating candy, cookies, chips, protein bars, energy drinks and soft drinks[8]. Furthermore, McDowall, JA 2007, state that the athlete does not have any knowledge or perception regarding their nutritional status, so stuck in the use of supplements that become a necessity as it is driven desire for increased performance but could be the food intake is adequate[9]. This will impact on the development and body growth in the future

According to the researchers, in Indonesia a valid and reliable instrument for measuring the Knowledge, Attitudes and Behavior of Sports Nutrition to the National Athletes are not currently available. In fact one of the main components of Nutrition Athletes are important aspects of the national sports achievements. Therefore, it required a measurement tool valid and reliable to determine the Knowledge, Attitudes and Behavior of Sports Nutrition, which in turn have an impact on the status of the National Athletes Sports Nutrition is good so that national sports achievement can be achieved

The terms of nutrition and nutritional science in Indonesia only began to be known around the year 1952-1955. WHO defines nutritional science as the study of the processes occurring in living organisms to take food and processing solids and liquid from the food needed to

maintain life, the growth, the functioning of organs and produce energy [10].

Sports nutrition science is applied nutrition to athletes to be able to achieve optimal performance. Sports nutrition science is the study of the correlation between the management of food with physical performance is beneficial for health, fitness, child growth and development of sports achievements.

Dietary athlete oriented balanced nutrition is important, given the importance of the role of each nutrient for the body as a whole, especially for athletes. The nutritional needs of athletes will obviously vary with the nutritional needs of people who are not athletes, this is due to differences in physical activity and psychological conditions. Conditions of athlete's performance in Indonesia has not yet reached the optimal conditions, one of which is influenced by the imbalanced intake of nutrients. Imbalanced nutrition allegedly due to inadequate knowledge of coaches and sports trainers about the role of nutrition in improving the athlete's performance.

Dietary athletes adapted to periods of coaching athletes. In accordance with the period of athletes eating arrangements covering four main areas:

1. Improvement of nutritional status. Implemented in early development period is a general preparation phase. Athletes have a correction of nutritional status after having first assessment of the nutritional status, whether classified as undernourished or overweight or are already classified as normal. Athletes with malnutrition will do the process to measures increasing the reach normal nutritional status, on the contrary, to the athletes who have excess nutrients (overweight) or obese then will do the weight loss program.
2. Maintenance of nutritional status. Can be started from the beginning of training when nutritional status is optimal, if not, it started after optimal.
3. Competition. Dietary athletes needs to be done before, during, when the game is on, especially for athletes who play more than 60 minutes.
4. Transition. Dietary athletes after the game done intended to restore the physical condition of athletes and replenish glycogen stores are depleted after use in a match.

The nutritional strategy during ultra-endurance events is an important factor that athletes should plan carefully before the race. The amount and the source of energy intake, fluid replacement, as well as the ingestion of stimulants such as caffeine are important factors directly linked to sport performance in endurance events [11,12].

Other important issues during ultra-endurance events are both fluid replacement and caffeine ingestion. For instance, it is known that the consumption of beverages containing electrolytes and carbohydrates in a concentration of 6 - 8%

enhances performance compared to the consumption of plain water [13]. Consumption of caffeine has been also linked to an improved exercise tolerance [14]. Doses of between 1.5 and 3.5 mg/kg have been found to improve time-trial performances in laboratory studies [15]. The mechanisms to explain benefits of caffeine ingestion are based on an increased utilization of plasma free fatty acids and reduced oxidation of muscle glycogen [16], as well as favorable changes in the central nervous system [17]. However, there is a lack of data indicating the hydration pattern and caffeine consumption followed by cyclists during ultra-endurance team relay competitions.

II. MATERIAL AND METHODS

The optimization of instrument development is a key concern in any social science endeavor. Quantitative tools that are valid in their indented purpose and measure the concepts they are intended to measure possess the requisite psychometric properties to provide valid conclusions and to lead to advances in theory and practice [18]. This study was designed using a quantitative approach with descriptive methods developmental [19]. Whilst there is a massive literature on quantitative measures, indicators and scales, quantitative scholars insist on focusing whether the items represent the construct of concern as measured by reliability and validity scores disregarding the origins of questionnaire items[20]. The study design is a method of research aimed at developing a physical equipment also describe the findings of the research. In this case the physical equipment in question is a standard measuring instrument or tool (tested for validity and reliability) which will provide an overview of Knowledge, Attitude and Behavior of Sports Nutrition for Athletes and Coaches used to develop targeted training programs and comprehensive.

Procedurally, the research activities carried out include the following steps:

1. Development of a blueprint construct and instruments. These activities include the search concepts and theories related to the Knowledge, Attitudes and Behavior of Sports Nutrition and measurement, operationalization of variables and mapped into the lattice is subsequently made a draft blueprint for the National Athlete Sports Nutrition instrument.
2. The weighing expert (expert judgment) and practitioners, includes the activities of constructs and tools weighing instruments by three experts, the Sport Nutrition expert, Statistical Expert and Sport Measurement Expert. Two practitioners (trainers) field and with seven Athletes selected randomly for the sake of appearance of instrument validation (face validity).
3. Scoring system establishment. These activities include mapping the response quantification of sample into a scoring system for the second part of the instrument either the first (test) or format 2 (non-test). Especially for one format, scoring system also considers the level of difficulty of the questions.

4. Validity and reliability. The second test is done after the field test by spreading the instruments that have been developed to sample beginning with permit research into the various parties concerned. Validity and reliability by using KR-20 Correlation of items and Cronbach alpha reliability.
5. Preparation of norms or category. Norma or category was developed based on consideration of the level of development with the recapitulation of the sample response in the field of the instruments. Once this is completed, a final form of the instrument assembly.

III. RESULTS AND DISCUSSION

After analysis of validity and reliability obtained construction measuring tools sports nutrition consisting of instrument knowledge Sports Nutrition that has been validated and reliable as many as 21 questions from 35 question. 14 questions are excluded from the questionnaire. Every validated question in the instrument have Coefficient of Validity vary between 0.771 – 0.923 and reliability coefficient 0.927

The instrument Attitudes toward Sports Nutrition that has been validated and reliable as many as 23 questions from 35 question. 12 questions are excluded from the questionnaire. Coefficient of Validity vary between 0.413 – 0.612 and reliability coefficient 0.91

Instruments Behavior of Sports Nutrition that has been validated and reliable as many as 21 questions from 35 questions. 14 questions are excluded from the questionnaire Coefficient of Validity vary between 0.524 – 0.726 and reliability coefficient 0.915.

The similar research about instrument of of sport nutrition shown almost the result. After administering the questionnaire to the individuals and assessing it, a reliability test was applied. “Kuder Richardson”, the internal consistency coefficient, was calculated for the reliability of questionnaire, and the KR-20 value was found to be 0.71. For higher reliability, 9 dysfunctional questions were excluded from the 30items questionnaire and the questionnaire was evaluated considering the remaining 21 items. Accordingly, the “nutrition knowledge” scale was concluded as a reliable instrument. [21].

For nutrition and its associated disciplines, ethical considerations related to research are often complicated by factors that range from the use of experimental research designs that are overly holistic to inextricable links between nutrition research and marketing. Nutrition research questions are often multifaceted and require dealing with complex variables. In this regard, ethical principles and perspectives that have relevance to data acquisition, the publication and translation of nutrition research, and the marketing of nutritional products and concepts are highlighted. The direct interaction of the researcher with

commodity groups and the various research foundations that focus on nutrition needs to be continuously evaluated. [22]

Further more, to find a fit and good instrument to measure the condition of sport nutrition among athletes in Indonesia need a cooperative action among researcher. This research only a beginning in the field of Sport Nutrition studies that will be followed by another research to find the problems of sport nutrition among athletes and to find the most effective way to coping the problems.

IV. CONCLUSION

After analysis of validity and reliability obtained construction measuring tools sports nutrition consisting of instrument knowledge Sports Nutrition that has been validated and reliable as many as 21 questions .The instrument Attitudes toward Sports Nutrition that has been validated and reliable as many as 23 questions. Instruments Behavior of Sports Nutrition that has been validated and reliable as many as 21 questions.

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Empowering Rural Women with Sustainable Livelihood Programs

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Abstract - The purpose of this study was to describe and examine the lifestyle and physical activities of rural women in Region X of Northern Mindanao, Philippines and how it correlates with their health. Likewise, this study highlights the economic status of women living in rural areas. The result of the study shows that majority of women's physical activities were from household chores. Most of the respondents faced problems regarding accessible health education, health services, low income and high cost of nutritive foods in maintaining their health. Some of the research areas have no health facilities and personnels assigned. Researchers concluded that unless women are engaged in designed physical activities, have access on health services and have sustainable livelihood programs, the health status of women in rural areas will not be improved. It is then recommend that the physical educators and the government should have a strong commitment to provide a well-designed physical fitness program, health facilities and personnels as well to achieve good health for the people in their community. Further, this will empower women to be active physically and utilize all their potentials for economic development and sustainable development in the community.

Keywords: *Lifestyle, physical activity, rural women*

I. INTRODUCTION

Rural women globally face persistent gaps in access to health services, and education, all underpinned by persistent inequalities in rights. So, despite repeated public commitments to gender equality, governments have by and large failed to meet even the most fundamental targets. However, it has become widely accepted that promoting gender equality and women's empowerment through livelihood programs is essential in achieving sustainable human development, poverty eradication, and economic growth [1].

Likewise, by the help of livelihood programs, rural women will get better quality of life and projects, which will be helpful to increase the socially and economically women empowerment. Number of women, who are living below poverty line, are often have limited financial resources, endure social isolation, and have fewer community health resources than do women in urban areas. These factors may contribute to their lower rates of physical activity when compared to their urban counterparts [2][11][12][13].

On the other hand, women need to have some level of control over their own decisions and be respected within their communities [3]. Promoted strategies may include women's financial independence, running for elected positions in political offices or councils, sharing of household chores by men and women, building perceptions of autonomy and self-wellbeing, negotiating skills with husbands, and control over reproductive choices, among others. As the disempowered woman builds confidence and gains support from men and the community at large, she will be better able to make decisions that promote her own health and that of her children and improve their way of living [4]. Rural women of Region 10, Northern Mindanao Philippines are heterogeneous where problems vary in terms of access to medical privileges and engagement of physical activities [5].

The purpose of this study was to describe and examine the lifestyle physical activity behaviors (household, leisure, occupational) of rural women. Background characteristics included demographics, environment, social support, and health. Intrapersonal characteristics included motivation and self-efficacy [6]. The majority of the women's energy expenditure was from the household dimension. This research highlights the importance of household physical activity and the contribution of social support which may be important in developing interventions for rural women. With well-designed physical fitness program and government help through livelihood programs, rural women's economic standard be uplifted achieving sustainable human development and healthy life.

II. MATERIALS AND METHODS

A. Study design

A cross-sectional survey research design was used. Cognitive function was assessed during screening using four questions developed for women in the community. It includes quantitative and qualitative evidence for depicting the realities of rural women's lives in relation to their health and way of living. Structured and semi-structured interview was also done.

B. Sampling Procedures

The respondents of this study were the rural women of selected rural areas in Region X Northern Mindanao, Philippines who were in poverty level.

The researchers conducted entry protocol with the Municipal Mayor of the identified areas and negotiated with the President of their Women's Association. We made a negotiation as to the schedule of our survey. The President then contacted the members of the association and set a schedule to meet with the researchers. All women who responded to the call of their President and came during the scheduled meeting were given survey questionnaire with Secondary Sources as instruments of data.

C. Instruments

Structured survey questionnaire and interview were used to depict demographics profile, environmental condition, social support and current physical health of rural women.

D. Data Analysis

The gathered data were analyzed with the official statistics, data from secondary sources and background, annual reports from local and international organizations as well as civil society. All the gathered data were analyzed and presented in this baseline study.

The findings of the study shows that majority of women's physical activities were from household chores. Social support was positively associated with household chores to earn a living. Most of the respondents faced problems regarding accessible health education, health services, low income and high cost of nutritive foods in maintaining their health. Some of the research areas have no health facilities and personnel assigned in their area. Likewise, physical activity rates are lower for women than men as can be seen in the data and during the interview. The physical activities of the respondents were just household chores, leisure activities being with their friends; hence some of the respondents are suffering from common diseases, like diabetes, hypertension, etc.

Their occupational domains were referred to as lifestyle already, and physical activities. Majority of the women

reported that physical activity behavior resulted in feeling better overall and provided a sense of accomplishment, some felt more energetic when physically active. On average, these women reported confidence or self-efficacy in their ability to overcome barriers to physical activity. The most frequently identified barriers were lack of interest in physical activity and some dislike physical activity [7].

The most common household activities were sitting with light work such as cleaning their house and surroundings, as well as taking care and supervising children. The most frequently performed leisure activities were low-intensity activities such as talking with neighbors, while smaller numbers participated in stretching and walking for exercise.

Rural women are not engage in formally designed physical activities because of lack of knowledge on its benefits and lack of facilities. The respondents reported a low level of lifestyle physical activity, and most lifestyle physical activity behaviors were within the household dimension. Social support explained a significant portion of household physical activity behavior, and the proposed mediating variables made no further contribution to the explained variance. Psychological and physical health, as well as living within their area explained a significant portion of leisure physical activity behavior [8]. Those women with poorer psychological and physical health were more active during their leisure time.

Motivating factors explained a significant portion of the variance in leisure physical activity behavior over and above that which were attributed to background variables, but in an unexpected direction. Those women with more motivating factors were less active during their leisure time.

The women in our study with poorer physical health may have perceived a heightened risk for worsening disease and responded to this risk with increased physical activity in their leisure time [9]. The unexpected relationship between psychological health and leisure physical activity is not so easily explained and requires further study.

Briefly, the study shows that majority of women's physical activities were from household chores. Most of the respondents faced problems regarding accessible health education, health services, low income and high cost of nutritive foods in maintaining their health [10]. Some of the research areas have no health facilities and personnels assigned.

III. CONCLUSION

Their occupational domains were referred to as lifestyle already and physical activities. Researchers concluded that unless women are engaged in designed physical activities, have access on health services and have sustainable livelihood programs, the health status of women in rural areas will not be improved.

IV. RECOMMENDATION

The researchers would like to recommend that the physical educators and the government should have a strong commitment to provide a well-designed physical fitness programs, health facilities and personnels as well to achieve good health for the people in their community. Further, this will empower women to be active physically and utilize all their potentials for economic development and sustainable development in the community.

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Preventive Degenerative Disease through Gym at Sedentary Lifestyle

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Abstract - Degenerative disease is a disease condition that arises due to the chronic deterioration of body cells. Degenerative diseases continue to increase in sedentary lifestyle since early adulthood 15-25 years. The impact of degenerative diseases is the increasing burden of health financing, decreasing work productivity, competitiveness, and increasing economic burden. This study aims to find scientific ideas about the impact of gymnastics on degenerative diseases in a sedentary lifestyle preventive effort. The early adult group is a long life expectancy so it is necessary to prevent preventive degenerative diseases. The research method used is qualitative with the concept of analysis of gymnastic relations and degenerative diseases. The research data collection tool uses diagnostic survey methods with in-depth analysis. The results of the research obtained are the existence of gymnastic relations and degenerative diseases in preventive efforts. Gymnastics that are applied as a preventive measure for degenerative diseases are exercise with a time of 10-30 minutes in one day, carried out 3 times a week regularly, and experience regular use of calories. Habit of physical activity can avoid the big impact caused by degenerative diseases.

Keywords— Degenerative, Gymnastics, Sedentary Lifestyle

I. INTRODUCTION

The prevalence of symptoms of degenerative diseases, namely overweight and obesity in other countries such as the Asia-Pacific region, namely South Korea, data obtained from patients with symptoms of degenerative diseases are 20.5%, Thailand: 16%, China: 26.5%, Malaysia: 13.8%, and Japan: 5% -11%. Degenerative diseases also occur in America and Europe that occur due to imbalance in knowledge and awareness of nutrition, namely an increase in the economic income sector, high workload and promotion of trendy foods from the west, especially fast food. According to WHO data, Indonesia is in a row of 10 countries with the highest prevalence of degenerative diseases in the world with Myanmar, Thailand, India, Sri Lanka, Brutan, Nepal and Maldives [1]. Around the world there are around 972 million people or 26.4% of people worldwide suffer from hypertension (degenerative diseases), and this number will continue to increase to 29.2% in 2025 [2].

Data of the Basic Health Research (Riskesdas) of the Ministry of Health of the Republic of Indonesia in 2018 shows the prevalence of stroke (peril) diagnosis in residents aged > 15 years from 2013 to 2018 has increased by around 2-3%. The prevalence of diabetes mellitus based on a doctor's diagnosis in residents aged > 15 years from 2013 to 2018 has increased from 6.9% to 8.5%. The prevalence of hypertension according to a doctor's diagnosis, doctor's diagnosis or taking medication, and the results of measurements in residents aged > 18 years from 2013 to 2018 has increased from 25.8% to 34.1%. The proportion of central obesity in adults > 15 years from 2007 to 2018 has increased from 18.8% in 2007, 26.6% in 2013, and increased again to 31.0 in 2018 [3].

Degenerative disease is currently a trend of chronic diseases in the sedentary lifestyle, namely the early adult age group of 15-25 years with the main contributors are unhealthy lifestyles such as smoking, drinking alcohol, eating patterns and obesity, lack of physical activity, stress and environmental pollution [4]. Degenerative chronic diseases that commonly occur in Indonesia and become the main source of knowledge of these degenerative diseases are heart rate calculation, hypertension examination, and diabetes [5].

Analysis of the study of physical activity against the appearance of symptoms of degenerative diseases was obtained from the Adolescent Physical Activity and Recall Questionnaire (APARQ) questionnaire. Sedentary lifestyle behavior is associated with mild activity by issuing energy expenditure equivalent to 1-1.5 metabolic equivalent (METs). Data analysis shows that on average physical activity behavior is at risk for degenerative diseases, namely having mild physical activity with Equivalent of Task (METs) 577.56 MET / week, and vice versa for physical activities that avoid the risk of degenerative diseases is

physical activity medium and light with METs 785.65 MET / week. The analysis study showed risk factors for degenerative diseases with mild physical activity were 6.591 times more at risk than moderate and mild physical activity [6].

II. MATERIAL AND METHODS

Research with a qualitative approach has naturalistic characteristics, namely research that has an actual background as a direct source of data and researchers are key instruments. The word naturalistic comes from an ecological approach in biology. The researcher enters and spends time studying object researchers, and some people use recording equipment to help complete the data needed and obtain research data [7]. Based on the information above, the study was conducted by combining numerical data obtained from natural observations and then the results of the blend will be obtained results that can provide understanding and conclusions described in the language of words. Maintaining the Integrity of the Specifications

III. RESULTS AND DISCUSSIONS

Degenerative diseases have an impact on losing household income and decreasing the productivity of a country at the macroeconomic level. Even if viewed from the medical service for sufferers of the disease in a long period of time will result in increased need for equipment that is expensive. The Health Social Security Organizing Agency (BPJS Kesehatan) continues to suffer losses due to the high number of health BPJS users who suffer from the disease and must be treated in hospitals or in health services with various medical needs. The high condition of people with degenerative diseases raises concerns for the community about the emergence of the disease in themselves and family members.

Efforts made in overcoming the emergence of degenerative diseases obtained from countries that experience problems with degenerative diseases are by dieting and patterns of physical activity in achieving energy balance. A diet high in fat and high in calories and sedentary lifestyle are two characteristics that are strongly associated with an increase in the prevalence of obesity or symptoms of degenerative diseases throughout the world [8]. Degenerative diseases can be prevented by minimizing the risk factors for the cause. The main risk factors for degenerative diseases are unhealthy eating patterns, lack of physical activity, consumption of cigarettes, and increased stress and exposure to causes of degenerative diseases [9].

Data on the percentage of early adult behavior obtained based on observations in Medan City concluded that the low physical activity behavior. Data from 20 young adults (15-25 years) taken randomly showed 60.5% of people had a low habit of physical activity. The situation faced illustrates that

the sedentary behavior carried out by early adulthood in the city of Medan has the risk of degenerative diseases, so that it will lead to productivity at decreased life expectancy and will experience disparities in the economy and the development of Medan City Human Resources.

Physical activity is a preventive effort towards the existence of degenerative diseases in Indonesia which is packaged by the President of the Republic of Indonesia through the Germas Community Movement Program based on Decree Number: S-398 / MK.02 / 2017 [10]. Germas is a government solution in solving health problems facing Indonesia. The decision made is to require every unit of government agency to be able to run the program as a whole in realizing healthy goals for the community [11].

Degenerative disease is a condition with a decrease in the function of organs that causes deficiencies in the production of enzymes and hormones, immunodeficiency, lipid peroxide, cell damage (DNA) and blood vessels. Degenertaif is a process of decreasing the function of organs which generally occurs in old age, but also occurs at a young age, the result of which is a decrease in the degree of health which is usually followed by disease [12].

Degenerative diseases arise through the pressure experienced by blood in arteries when blood is pumped by the heart to all members of the body. Blood pressure consists of two pressures, namely systole and diastolic pressure. Systolic pressure is an upward pressure in the arteries due to the heartbeat or when the heart is beating or beating. Diastole pressure is the pressure when the heart rests between pumping. Blood pressure will increase if there is a narrowing of the blood vessels.

Disease prevention activities can be divided into three, namely first primary prevention aimed at reducing a person's chances of getting sick, such as health education, attention to personal hygiene and ways to avoid toxic substances. Second is secondary prevention including early detection of disease to determine intervention early, for example is screening for certain diseases to prevent disease transmission, while for non-communicable diseases in the community, tertiary prevention is carried out to limit the effects and prevention of disability further [13].



Fig 1. Health promotion model

French & Adams, 1986 offers a preventive hierarchy of degenerative diseases with a phase of self-reinforcement model that aims to improve individual autonomy (behavior). Model of self-induction phase Preventive or preventive measures of degenerative diseases carried out by physical activity are behavioral delivery carried out through initial medical studies. Based on the theory put forward it can be seen that behavior changes can change if there are cognitive changes (awareness, someone's knowledge of how to do) and social (there is support from family, friends, and environment). Knowledge, awareness and skills of physical activity as a preventive effort are found as relevant determinants beginning with the study of prevention of degenerative diseases through behavioral changes [14].

Measurement of physical activity is carried out by classification of work, behavior observation, use of motion sensor devices, physiological marking (heart rate) and the use of calorimeters. Physical activity can be described by using three aspects, namely work, sports, and leisure time so that using these aspects will be known as a description of one's physical activity [15].

Physical activity can be done by exercising as a fitness enhancer by fulfilling the requirements: 1) the intensity of the exercise is a measure that shows the quality (quality) of an stimulus or imposition. The intensity of physical fitness should be between 60-80% of maximum aerobic capacity. The recommended exercise intensity for health sports is between 72% and 78% of the maximum pulse rate. 2) The duration of the exercise is the length of time you practice in one training session. The duration of the exercise must reach the training zone which is 15-25 minutes. 3) Frequency of exercise is the number of exercises carried out in 1 week. The frequency of exercise is closely related to the intensity and duration of the exercise. Exercise is carried out regularly every day or 3 times a week for at least 30 minutes every time you exercise.

Sports that can provide structured movements to be used as physical activity or improve physical fitness as a deterrent to degenerative diseases are gymnastics. Gymnastics is a series of activities or movements carried out using music (rhythmic activity). Gymnastic activities consist of training, core and cooling exercises which cover all human movements carried out in rhythmic patterns so that they can be categorized as structured sports. Gymnastics can be used as a tool to develop gesture orientation, so that it has multilateral body abilities. Rhythmic activities include dancing in the process of forming the basis of motion to be able to express themselves through motion. Rhythmic activity relies on harmony between gestures and rhythms.

The structure of physical activity in the form of gymnastics can be carried out with movements consisting of locomotor, non-locomotor, and manipulative. Locomotor movements include: walking, running, hop, jumping skip (skipping), sliding, galloping, and leaping. Non-locomotor motion

includes: sway, swing, shrink / bend, stretch / straighten, and round. The manipulative movement consists of throwing and catching.

IV. CONCLUSION

Degenerative diseases arise through the pressure experienced by blood in arteries when blood is pumped by the heart to all members of the body. Medical testing shows that degenerative diseases occur due to metabolic disorders which are the onset of disease. The pattern of life when young greatly affects the occurrence of degenerative diseases which consist of two namely eating and motion. Behavior encourages individuals to accept healthy living behaviors. Behavior change is not only driven by individual factors, but also by the role of environmental factors. Physical activity that provides structured movements to be used as an increase in metabolic role activities and improve fitness can be done with gymnastics. Gymnastics that are applied as a preventive measure for degenerative diseases is a series of movements carried out in a period of 10-30 minutes in one day, carried out 3 times a week regularly, and experience the use of calories regularly. Habit of physical activity can avoid the big impact caused by degenerative diseases.

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Chess Sport Therapy as an Effort to Prevent Alzheimer's Disease in Old Age

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Abstract—There are 46 million people in the world who suffer from Alzheimer's, including 22 million of them in Asia. Indonesia is the one of countries with a high level of Alzheimer's sufferers, as evidenced by the data from the Ministry of Health that shows 1 million Alzheimers sufferers in 2013, in Indonesia and continues to increase. If this condition continues it will certainly get worse, even today many young people or adults who have suffered from Alzheimer's (snile). Therefore the author wants to make a therapy method that can train one's strength, memory, and brain concentration. By using the media of chess, which is basically a sport that as a whole uses the brain as its main component. Moreover, chess is much in demand both as entertainment and as a medium to look for achievements. The hope of the author in the future is to reduce the number of people with Alzheimer's by taking precautions that begin with the development of young people or adults. So that later in old age can still maintain the power of the brain with the aim of having a longer memory as proof of the results of training methods and therapy using chess media.

Keywords—*Alzheimer, chess, degradation brain, therapy brain*

I. INTRODUCTION

This disease was first introduced by a psychiatrist and neuropathologist from Germany named Alois Alzheimer in 1907[5]. Until now there are around 46 million people who suffer from Alzheimer's disease in the world, including 22 million of them are in the Asian continent[3]. Especially in Indonesia, which is still a developing country and is still less aware of the dangers of Alzheimer's disease, data from the Ministry of Health shows the number of sufferers of this disease has increased every year. According to his estimation in 2013 the number of Alzheimer's sufferers reached 1 million people and is expected to double by 2030 to 2 million, even though it is possible to continue to increase every year. Alzheimer's or commonly known as Alzheimer's Dementia is a physical impairment of the brain that affects

emotions, memory, and decision making or what Indonesians commonly call senile. More simply, Alzheimer's dementia can be defined as a memory

loss event that can occur along with symptoms of a person's behavior or psychological disorders[2]. Medically Alzheimer's is caused by degeneration or loss of neurons in the central nervous system. The loss of neurons occurs in various parts of the patient's brain, although the pathological changes were first discovered by Alois Alzheimer's only in the neocortex. Much cortical atrophy is accompanied by loss of neurons and synapses associated with astrogliosis[1]. There are intruding neurofibrils and senile plaq in the cortex, mainly in the association area. Substanceia alba can also be involved, perhaps partly due to the loss of neurons. Changes in blood vessels also occur, including amyloid deposition, changes in neurotransmitter receptors and other neurochemists[6]. In general, this disease or disorder occurs in older people as a result of the disappearance and dysfunction of some nerve parts in the brain usually occur at the age of over 60 years, but early detection of Alzheimer's disease can be seen in someone when they are young. Where in youth is a person experiencing various kinds of events that involve many thoughts, such as studying and working too hard, less nutritious food, smoking and alcohol habits, drugs and so on which trigger and accelerate the occurrence of nerve damage, especially in the brain. At that age, it can be indicated whether the condition of a person's brain is still good or not, if at a young age it has been damaged, how about later in life. A common problem in Alzheimers is cognitive decline and progressive also weak memory function[4], therefore it is necessary to hold therapy or training whose function is to strengthen memory, increase concentration, and always rejuvenate the nerves in the brain. This method is not only obtained by eating nutritious food but also with adequate exercise, especially sports that involve overall brain function.

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Therefore, the authors chose chess as a sport that can train the human brain to have higher memory, concentration, and catch power and to maintain their health even though they later enter old age which allows the degradation of neurons in the brain. At least there are preventative measures from within so that brain health is maintained. Chess itself is a simple and easy to understand sport, consisting of a chessboard in which there are 64 small boxes with white and black colors and arranged zigzags, there are 16 chess pieces consisting of 8 pawns, 2 horses, 2 launchers, 2 fortresses, 1 king, and 1 queen. This game is arguably simple because we are only asked to change formations when dealing with opponents so that all of our pieces stay alive and we win. The essence of this game is about thinking and continuing to arrange formation so that we can win.

Based on the background above, the problem that will be discussed is about how we protect our health and brain power from an early age by using the media of chess as an effort to overcome and minimize the high number of Alzheimer's sufferers, especially in Indonesia. The majority of the population is still less aware of the importance of health, especially in the memory or brain.

II. METHODS

This research is the initial stage of a design that the author designs in such a way as part of how to cope with high rates of disease and sufferers of Alzheimer's in Indonesia, namely by using chess sports therapy as an act of prevention. The research was carried out in the following stages:

- 1) Collecting data of people who have Alzheimer's (adults) and healthy people (young people),
- 2) Conducting the practice or therapy of chess in a period of time,
- 3) Comparing the composition and brain structure of healthy people who have been treated with those suffering from Alzheimer's,
- 4) Conducting further studies of this research so that in the future more effective and efficient in practice. Also this method is done so that the writer or researcher is able to find the best formula in maintaining one's brain health, while running this method.

III. DISCUSSION

Treatment or the initial stage of this therapy is by

1. Collecting data of people who suffer from Alzheimer's or not, usually Alzheimer's sufferers are mostly found in nursing homes or elderly people who

are in homes around the village, but at this time not close the possibility that many also suffer from Alzheimer's but are still young, that is to say, and can be found in many areas around the city center. Then the next stage is 2. Doing practice or therapy for people who are still healthy in their brain condition by asking them to play chess regularly, with intensity 3-4 times a week (the intensity can be added according to needs and hobbies) routinely for 3- 4 months. The hope of holding this therapy is so that we know the differences in brain structure between Alzheimer's sufferers and the brains of people who are still healthy especially when he has been trained or treated with chess. The pattern of this exercise can be done by playing with people who are already proficient in chess so that in addition to therapy the patient will also feel the excitement of playing (exercising) as a whole involving the brain. 3. Comparing the composition and structure of the brain between Alzheimer's sufferers and people who are still healthy, this step is done by looking at which parts of the brain are different, starting from the number of nerves, nerve structure, and components or composition.. Because basically when people experience Alzheimer's there must be a part of the brain that is degraded (disappeared) and damaged. The last 4. That is conducting further studies about this research, about the impact of what will be caused by this therapy, whether there are impacts or side effects in the application of this method. The author's hope with the existence of therapy methods like this is to reduce and minimize the level of Alzheimer's (nerve degradation of the brain) by providing fun training (chess sports) but still healthy. Especially for young people who do not rule out the possibility of early Alzheimer's.

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The Effect of Socialization on Attitude and Knowledge towards Leptospirosis

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Abstract—Leptospirosis is a disease caused by a spiral-shaped bacterial infection of the pathogenic genus *Leptospira* that can attack animals and humans. Leptospirosis is a neglected disease. Indonesia is one of the tropical countries with relatively high cases of Leptospirosis death, between 2.5% -16.45%, making it the third highest in the world. Leptospirosis death cases in Semarang City occurred fluctuatively and are above the CFR leptospirosis average in Indonesia. There were cases of death by Leptospirosis at Tlogosari Kulon village in 2019. **Objective:** to determine the effectiveness of the socialization of community knowledge and attitudes towards Leptospirosis in Tlogosari Kulon vilage. **Method:** This study used experimental studies with a pre-post test. The respondents are the people in the area of Leptospirosis death cases. The sample is a PKK (Pendidikan Kesejahteraan Keluarga) group, program at village level to educate women on various aspects of family welfare, in Tlogosari Kulon where there are cases of Leptospirosis death. Statistical Wilcoxon test is used for data analysis.

Keywords—leptospirosis, Tlogosari Kulon, effectiveness of socialization.

I. INTRODUCTION

Leptospirosis is a disease caused by a spiral-shaped bacterial infection of the genus *Leptospira* pathogen that can attack animals and humans. This disease is considered as a neglected disease. Indonesia is one of the tropical countries with relatively high cases of Leptospirosis death, between 2.5% -16.45%, and it is ranked third highest in the world. In Central Java Province, the number of cases and deaths due to leptospirosis every year is Highly increasing and spreading.

In 2002-2004, the distribution of leptospirosis cases was relatively limited in Semarang. In 2005-2006, the cases of leptospirosis were reported from Demak and Klaten Districts. In 2007, the cases of leptospirosis spreaded in Purworejo District. In 2007-2012, the cases of leptospirosis have been reported from Boyolali, Banyumas, Cilacap and Magelang Districts.

Based on Central Java Provincial Health, Leptospirosis death cases in Semarang City occurred fluctuatively, above the CFR leptospirosis average in Indonesia. Semarang is the

area most often found in cases of severe leptospirosis, accompanied by death compared to other districts. At present, the spreads and increases in leptospirosis cases in Semarang City are difficult to predict and control. Leptospirosis is still a health problem in the city of Semarang. In 2014 there were 73 cases with 13 deaths (CFR 18%), in 2015 there were 56 cases with 8 cases died (CFR 14%), in 2016 there were 42 cases with 8 cases died (CFR 19%), at year 2017 there were 55 cases with IR 3.47 / 100,000 population and the number of cases died 14 people (CFR 25.45%). January to June 2018 there were 40 cases with IR 2.43 / 100.000, CFR 28% (11death cases).

Puskesmas Tlogosari Kulon is one of the public health center with Leptospirosis deaths in two consecutive years. In 2018 the incidence of death due to leptospirosis occurred in Gemah Sub-District where the incident occurred in patients with families who had previously suffered from Leptospirosis, whereas in 2019 there was 1 case of Leptospirosis deaths in Tlogosari Kulon Village. Based on the results of a study conducted by Hapsari in 2013, as many as 66.7% of dead patients cases were declared due to late treatment. In the case of death, the critical problem was due to the delay in the patient in seeking the treatment and misdiagnosis (38.9%). This shows that the awareness of the patients to search for the treatment with perceived pain reactions is still low. Most of the respondents did not know that the symptoms of pain that were felt to be leptospirosis beforehand, they did not even know that these symptoms could endanger their lives later on. The absence of counseling on leptospirosis can have an impact on the lack of awareness of respondents in seeking a treatment to the health services.

A person's knowledge of the disease will affect one's judgment of a disease around them. Leptospirosis is a disease that is still common among people because the symptoms of this disease are similar to dengue fever, making it difficult for the community or health personnel to detect this disease [1]. A person's knowledge of a disease can also influence a person's attitude to take action or seek prevention.

Based on this motivation, the researcher was interested in conducting research with the title " The Effect of Socialization on Attitude and Knowledge towards Leptospirosis."

II. MATERIALS AND METHODS

This study uses experimental research with the pre-post test. The respondents are the communities in the area of leptospirosis death. The research sample was PKK (Family Welfare Empowerment group, which is a community organization that empowers women to participate in Indonesian development) in Tlogosari Kulon village where there were cases of leptospirosis deaths with 30 respondents. The data collection techniques are carried out by the questionnaire. The data were analyzed using the Wilcoxon statistic test.

III. RESULTS AND DISCUSSION

Table I shows there the samples of 30 respondents belong to the old adults are aged 26-65 years Based on the education level, most respondents (13 people) had Senior High School level (around 43.3%), while the smallest portion of the respondent (4 people) had University level (around 13.4%).

TABLE I. Characteristics of respondents

Characteristics of respondents	Sample = 30	%
Age		
Young Adult (18-25years)	0	0
Old Adult (26-65years)	30	100
The elderly (>65 years)	0	0
Education		
Primary School	7	23.3
Junior High School	6	20
Senior High School	13	43.3
University	4	13.4
Work		
Laborer	3	10
Hosewives	23	76.7
Private employees	2	6.7
Civil servant	1	3.3
Entrepreneurs	1	3.3

Based on the job, most respondents are housewives as many as 23 respondents (76.7%), while a small proportion of respondents worked as civil servants and entrepreneurs as many as 1 respondent (3.3%).

TABLE II. Effect of Socialization on Community Knowledge Towards Leptospirosis

Knowledge Category	Pre-intervention		Post-intervention	
	F	%	F	%
Poor (<55%)	27	90.0	2	6.7
Middle (56-75%)	2	6.7	5	16.7
Good (76%-100%)	1	33.3	23	76.6
Total	30	100	30	100

Based on Table II, the knowledge level of the community towards before being given the socialization is mostly in the poor category as many as 27 respondents (90%) and after being given socialization there is an increase in respondents knowledge became good (76.6%).

TABLE III. Effect of Socialization on Community Attitudes Towards Leptospirosis

Knowledge Category	Pre-intervention		Post-intervention	
	F	%	F	%
Poor (<50%)	7	23.3	0	0
Good(50%-100%)	23	76.7	30	100
Total	30	100	30	100

As shown by Table III, the level of attitudes from the community on Leptospirosis before being given socialization is mostly in the good category, as many as 23 respondents (76.7%), and after being given socialization there is an increase in respondents attitudes and became 30 respondents (100%).

TABLE IV. Difference of Mean of Knowledge and Attitudes in Community Pre and Post Intervention

Data	Knowledge		Attitudes	
	Mean	SD	Mean	SD
Pre intervention	1.13	0.434	1.77	0.430
Post intervention	2.70	0.596	2.00	0.000

Table IV shows that there was an increase in mean of respondents' knowledge before an after intervention, from 1.13 to 2.70. Besides, it shows that there was an increase in mean of attitude respondent before an after intervention, from 1.77 to 2.00.

TABLE V. Statistic Data Analysis of Knowledge and Attitude in Community

Data	Knowledge		Attitudes	
	Normality test*	Wilcoxon	Normality test*	Wilcoxon
Pre intervention	0.000	0.000	0.000	0.008
Post intervention	0.000		0.000	

*Shapiro Wilk Test

As shown in Table V, the results of the analysis showed that there was an influence of socialization on the respondents' knowledge about leptospirosis ($p < 0.05$). Moreover, the attitudes indicate that there is an influence of socialization on respondents' attitudes about leptospirosis ($p < 0.05$).

The analysis of the results of the pre-test and post-test showed that there was an influence of socialization on the respondents' knowledge towards leptospirosis ($p < 0.05$). The works that knowledge is one of the factors causing leptospirosis, knowledge and understanding of leptospirosis

need to be sought to be informed in order to become a stronghold in efforts to prevent leptospirosis. Knowledge is one of the drivers for someone to change behavior or adopt a new behavior.

Knowledge of leptospirosis is a factor that determines a respondent can change negative behavior to positive behavior in preventing leptospirosis. Knowledge can be obtained through experiences and learning processes, from both formal and informal education. Someone who is knowledgeable in health problems is expected to be able to behave in healthy behavior. Before someone adopts a behavior (new behavior), one must know in advance what the behavior or benefits of the individual and his family.

The results of the analysis on the attitudes indicate that there is an influence of socialization on the attitude of respondents about leptospirosis ($p < 0.05$). Attitude is a form of readiness or willingness to act and is not an implementation of certain motives. The output attitudes on each individual can be different, if you like or agree on an object then you will approach, find out, and join, otherwise if you do not like or disagree then will avoid or stay away.

There are several factors that influence the formation of a person's attitude, including the personal experience, influence of others, culture, mass media, and emotional factors.

Based on such reasons, the attitude of the community in preventing leptospirosis depends on the factors that influence the attitude of the community. If the factors that influence tend to be positive, the community will also have a positive attitude, but conversely if these factors tend to be negative, then the community will have a negative attitude. Attitude is a form of readiness or willingness to act, and not an implementation of certain motives.

From the post test results All Respondents have a good attitude, this can be seen from some respondents who have answered the questions well. This can be caused by several factors including the personal experience of someone who has been exposed to leptospirosis or a family whose family members have been exposed to leptospirosis so that they take a good attitude in preventing leptospirosis. Counseling would increase the knowledge and attitudes of the respondents. The

application of health education is effective in increasing respondents' knowledge for the prevention of Leptospirosis [2]

IV. CONCLUSION AND SUGGESTIONS

A. Conclusion

Based on the results of research on the influence of socialization on people's knowledge and attitudes about leptospirosis it can be concluded that: (i) characteristics of respondents were all respondents aged 26-65 years, most of them had Senior high school education and most were housewives. (ii) there is a socialization effect on community knowledge about leptospirosis, and (iii) there is an influence socialization effect on community attitudes about leptospirosis.

B. Suggestion

Health communities need to give public counseling on leptospirosis regarding both the symptoms of leptospirosis and the death factors due to leptospirosis carried out continuously and periodically so that people understand about the symptoms of leptospirosis along with risk factors and it is expected that the death rate from leptospirosis will decrease.

Society should not ignore the symptoms of leptospirosis casually. Seeking for treatments immediately to health services that are trusted to get appropriate treatment if clinical symptoms of leptospirosis arise, such as fever, chills, pain / headache, muscle aches, calve paint, redness in the eyes, yellowness in the eyes, weak body, stiff neck, abdominal pain, joint pain, no appetite, nausea, vomiting, diarrhea, reduced urination, brown urine, mucosal bleeding, reddish skin in some places, coughing, and confused thoughts or confused.

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The Effect of Love-Kindness Meditation Program on Subjective Well-Being in Upper Secondary Students at a Demonstration School

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Abstract—the purpose of this study were to develop the love-kindness meditation program for upper secondary students and evaluate the love-kindness meditation program on subjective well-being. This study was conducted in three stages, as follows: (1) study and review of subjective well-being from related documents and literatures; (2) analyze and synthetize of data gathered from the first stage, then create the components of a program, including justify the components of the love-kindness meditation program by 5 experts; (3) evaluate the program by compared the level of subjective well-being before and after with 29 upper secondary students whom were selected by purposive sampling and focus group. Data were analyzed using descriptive statistics and Paired Sample t-test.

The research showed that the teaching teachers taught the love-kindness meditation (i.e. loving-kindness, compassion, joy, and equanimity) throughout this program, which were bases for cultivating unconditional kind attitudes toward oneself and others. The teaching teachers emphasized how the participants can develop their potential of subjective well-being, including introduced the love-kindness meditation, which is the important principle in their actual mental development. However, after using the program, the students with middle subjective well-being level had higher score than before which showed no statistically significant difference ($p>0.05$).

Keywords—love-kindness mediation, subjective well-being, adolescence

I. INTRODUCTION

The most important goal of adolescences life is to be happy. Psychologists have recently emphasized the need for promoting adolescent well-being, beyond the existing focus on symptom reduction. Several scientific disciplines are interested in happiness to ease individuals accomplishing this goal. Happiness is being evaluated with subjective well-being concept in psychology [1]. Furthermore, adolescences have been marked as a period of rapid changes—physical, cognitive, emotional and behaviors. These people also face changing relationships with peers, new demands at school, family tensions, and so on. The ways in which adolescences cope with

these stressors can have significant short- and long-term consequences on their physical and emotional health. Difficulties in handling stress can lead to mental health problems, including anxiety disorder and depression. Thus, adolescence described as a time of “storm and stress” [2]. Moreover, there is consistent evidence that adolescence has negative emotion significantly related to the onset of mental health problems [3-5].

In short, negative emotion such as depression and anxiety deter the well-being of adolescents who grow up physically, psychologically and socially. Therefore, it is crucial to promote well-being among adolescents. Well-being is similar to happiness, life quality and mental health in meaning. A high level of well-being is a state in which one feels happy and one's spirit is healthy, divided well-being into two spheres: subjective and psychological [6]. In subjective well-being, well-being is related to happiness and is seen as satisfaction with life and subjective emotion evaluation. In psychological well-being, well-being is related to potential and is seen as a psychological function. Subjective well-being means a subjective psychological state in which one experiences one's life positively. Subjective well-being comprises positive and negative emotions. Positive emotions strongly experienced as happiness, pleasure, and joy. On the contrary, negative emotion is experienced as depression, sorrow, anxiety and envy. A high level of subjective well-being is a state in which one is satisfied with life and has more positive emotion experiences [7]. If adolescences experience positive feelings frequently and negative feelings rarely and highly satisfied from their lives, then they have a high level of subjective well-being.

Various forms of meditation practice, including mindfulness meditation and loving-kindness meditation, are increasingly recognized within clinical psychology as practices beneficial to mental health and well-being, including via the reduction of negative and improvement of positive emotion. Such as a study of Kim, Kim, and Ki [7] revealed that

subjective well-being (SWB) scores were significantly higher in experimental group 1 (who experienced art therapy combined with breath meditation) and 2 (who experienced only art therapy), than in the control group (who received no therapy). Similarly, the study of Hofmann, Grossman, and Hinton [8] showed that love-kindness meditation (LKM) and compassion meditation (CM) are associated with an increase in positive affect and a decrease in negative affect. In accordance with a study of Fredrickson et al. [9] demonstrated the long-term effect of LKM practices on increasing positive thoughts, overall life satisfaction, and reducing symptoms of depression, and a study of Hutcherson et al. [10] also established that a single short LKM can be effective in increasing social connection and explicit and implicit positivity toward oneself as well as neutral strangers. Including a study of Colzato et al. [11] also compared Buddhist monks, who were well practiced in LKM, to a control group on an experimental “Social Simon” task measuring participants’ degree of self-other integration based upon identification with a coactor. Colzato et al. found that the monks displayed much higher levels of self-other integration than the control group, suggesting that internal representations of “self” may expand to include or overlap more greatly with notions of “other” through the practice of LKM.

Loving-kindness meditation (LKM) involves intentionally associating oneself and others with good will, health, and wellbeing by reciting positive affirmations. This LKM technique is emphasized on mindfulness, concentration, and automatic self-transcendence or it can claim that it uses of a metta in such a way that it transcends one to an effortless state where there is no focused attention. Another technique of LKM is a special type of Buddhist meditation that aims to cultivate unconditional kind attitudes toward oneself and others [12]. Buddhism claim that LKM cultivates four sublime attitudes such as: (1) loving-kindness, which refer to gentleness, unselfish friendliness, and harmony; (2) compassion, which refers to having a sympathetic attitude to others and willingness to cease the suffering of the distressed one; (3) Joy, which refers to feeling happiness for other’s success or fortune and appreciate who you are and what you are on surrounding; and (4) equanimity, which refers to calm toward the fate of others based on wisdom [13]. It is significance noting that different sublime states are cultivated by special subtypes of LKM, which are different in their psychological operations; such as, practitioners imagine suffering people to cultivate compassion in “compassion meditation,” and imagine happy people to cultivate loving-kindness in “LKM” in a narrow sense. To avoid the confusion of having two meanings of the term “LKM,” this research is used “LKM” in its comprehensive sense, to refer to breath meditations, and refer to certain subtypes of LKM as interventions that focus on compassion, sympathetic, joy and equanimity.

More recently, there has been growing interest in using love-kindness meditation as an intervention to boost subjective

well-being [14]. The idea that, for example, ‘random acts of kindness’ can boost the well-being not only of the recipient, but also the actor, and could thereby provide a simple, effective, inexpensive and widely-available means of addressing social problems ranging from social isolation to more serious mental and physical health conditions, has been taken up and promoted by a large number of research groups, charities and government organizations. Besides, we found in our school that many upper secondary students/late adolescences (10% of total upper secondary students) are psychologically very uncomfortable due to worries or plans about entering universities or selecting occupations. They are highly distressed by their parents’ or teachers’ excessive coercion, expectation, and any strong disharmony between reality and ideal [15].

The existing literature strongly supports the significance of LKM in promoting aspects of psychological well-being. It is also recognized that there is a need for implementation of positive intervention programs aiming at training adolescents to become more self-compassionate when facing difficult situations. Those are caused of frustration and psychological conflicts, and threaten emotional stability. Especially while taking a passive attitude to avoid and reduce problems, they show mental problems such as aggressiveness, depression and anxiety or violence and suicide. Therefore, the current research therefore introduces the study of brief sessions of LKM to investigations of subjective well-being (life satisfaction, increase the positive emotion, and decrease the negative emotion. The researchers hypothesized that the practice of LKM would be associated with positive subjective well-being as assessed it via self-report questionnaire and experimentally. LKM program is combined with a short minute meditation and suppressing excessive behaviors, allowing them to express themselves properly, and promoting their subjective well-being which is the important principle in their actual mental development.

Thus, a present study aims to examine the effectiveness love-kindness meditation program on subjective well-being for upper secondary students at a Demonstration School.

II. LITERATURE REVIEW

A. Subjective well-being

Diener, Lucas, and Oishi [3] explain a subjective well-being (SWB) as a person cognitive and affective evaluations of his or her life. Similarly, Montserrat et al. [16] describe a SWB is a construct that includes cognitive components (overall life satisfaction or satisfaction with specific domains) and affective components (positive and negative affects). Satisfaction is an assessment made by individuals based on a long term evaluation of their lives. Therefore, SWB refers to how people evaluate their lives and includes variables such as life satisfaction, lack of depression and anxiety and positive moods and emotions. A person is said to have a high subjective well-

being if he or she experiences life satisfaction and frequent joy and only in frequently experiences unpleasant emotions such as sadness or anger. Contrariwise, a person is said to have low subjective well-being if he or she experiences little joy and affection and frequently feels negative emotions such as anger or anxiety. The cognitive and affective components of subjective well-being are highly interrelated [3].

The concept of subjective well-being includes three components: life satisfaction, alongside the presence of positive affect, and the absence of negative affect. All the three factors postulate that a positive self-concept, a sense of autonomy, good social support and an internal locus of control are important predictors of well-being [17]. Nevertheless, Bradshaw et al [18] argue that the concept of SWB has four components, i.e. life satisfaction or happiness, relationships, subjective education, and subjective health.

The component of subjective well-being used in research vary, but include measures of satisfaction with life, positive mood and affect, and absence of negative mood and affect. Well-being can be considered a global measure incorporating positive subjective evaluation of life satisfaction (past), positive emotions such as happiness (present), and optimism (future) [17]. Furthermore, research has shown that these different components each make a separate but important contribution to overall subjective well-being, and that it is therefore important to measure multiple dimensions to form a complete picture. In this study, the researchers measure subjective well-being using the three constructs of overall life satisfaction, pleasant and unpleasant affect.

B. Love-kindness meditation (LKM)

Loving-kindness meditation (LKM) involves intentionally associating oneself and others with good will, health, and wellbeing by reciting positive affirmations. LKM is cultivated positive thoughts and emotions. Within Buddhism, loving-kindness is defined as the wish for all sentient beings to have happiness and its causes. Compassion is defined as the wish for all sentient beings to be free from suffering and its causes. In conjunction with “joy” and “equanimity”, loving-kindness and compassion make up what are collectively known as the “four immeasurable attitudes” [19]. LKM, therefore, involves progressively directing feelings of loving-kindness to the mental images of selected people.

The process of LKM begins with the action of mentally directing warmth, love, kindness, and compassion toward oneself. This is the foundation of the practice. From there, the practice is typically expanded to include people for whom the meditator feels gratitude, then to family, friends, and other loved ones. Next, the practice is generally expanded to include neutral people (someone neither liked nor disliked by the meditator), then it is expanded to people with whom the meditator has difficulty, and ultimately to all beings on the entire planet. During the meditation, it is customary to silently

repeat phrases or intentions of loving-kindness [17]. The typical phrases are “May I be safe, may I be happy, may I be healthy, and may I live with ease.” While repeating these phrases, the meditator focuses on the intentionality and emotion behind them, attempting to generate the genuine desire that their loved one be well, happy, and free from suffering. In extended versions of this practice, the meditator progressively changes the object of focus from a loved one, to oneself, to a neutral figure, to a person that typically evokes negative emotions [20].

Previous reviews of LKM, for example, a study of Fredrickson et al. [9] proved the long term effect of LKM practices on increasing positive thoughts, overall life satisfaction, and reducing symptoms of depression. Hutcherson et al. [21] established that a single short LKM can be effective in increasing social connection and explicit and implicit positivity toward oneself as well as neutral strangers. Participants were asked to rate how positive they felt toward several strangers before and after going through a loving-kindness meditation or visualization training. Whereas participants in the meditation condition expressed more positivity toward the strangers after the training, participants in the visualization condition showed no changes. Additionally, a study of Galante et al. [14] conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) comparing the effects of “kindness-based meditation” on health and well-being in adult participants. A total of 22 studies (n=1,747) were included in the meta-analysis which reported that kindness-based meditation was moderately effective in improving the following: (i) self-reported depression (Hedges’s $g=0.6$), (ii) mindfulness (Hedges’s $g=0.61$), (iii) self-compassion (Hedges’s $g=0.45$), and (iv) positive emotions (Hedges $g=0.42$). Although the meta-analysis provided a robust estimate of the efficacy of kindness-based meditation and thus complimented the earlier narrative review of Zeng et al [3] provide a systematic review of 24 empirical studies (N = 1759) on LKM with self-reported positive emotions. The effect of LKM on positive emotions was estimated with meta-analysis, and the influence of variations across LKM interventions was further explored with subgroup analysis and meta-regression. The meta-analysis showed that (1) medium effect sizes for LKM interventions on daily positive emotions in both wait-list controlled RCTs and non-RCT studies; and (2) small to large effect sizes for the on-going practice of LKM on immediate positive emotions across different comparisons. Further analysis showed that (1) interventions focused on loving-kindness had medium effect size, but interventions focused on compassion showed small effect sizes; (2) the length of interventions and the time spent on meditation did not influence the effect sizes, but the studies without didactic components in interventions had small effect sizes. A few individual studies reported that the nature of positive emotions and individual differences also influenced the results.

Overall, a loving-kindness meditation involves mindfulness that help us feel connected to and grateful for the people in our lives. Doing this meditation can also help us feel filled with love, one of the most powerful positive emotions and reduce negative emotion e.g. anxiety and stress.

Based on the potential benefits of positive emotions through LKM mentioned in this manuscript, this research is used "LKM" in its comprehensive sense, to refer to breath meditations, and refer to certain subtypes of LKM as interventions that focus on compassion, sympathetic, joy and equanimity. The researchers propose that LKM may be a viable unpleasant affect reduction tool for students. Given the stress, emotional exhaustion, compassion fatigue, vicarious trauma, and potential for burnout and impairment faced by students, LKM is one component of a holistic wellness approach that appears to have support as an evidence-based practice.

III. METHODS

Experimental Design and Selection of Participants The present study had a pretest-posttest design, LKM program in our case. The participants were 29 upper secondary students of Srinakharinwirot University Prasarnmit Demonstration School (Secondary) in Bangkok, Thailand, which volunteered to participate in LKM, and had completed the LKM or complied with an attendance of 80%.

It is important to note that all of the eleven-grade upper secondary students who participated in this study had similar idiosyncrasies (culture, social level, income). In this way, 32 participants were registered in the Group, 29 finished the LKM, 20 of which were women and 9 were men.

Even though, this study has not passed an ethical committee, the researchers asked permission from all of the students who were invited to take part in the study after the research assistants had read and explained to them a short description of the study and of its possible effects, and then asked the students to sign a form of Informed Consent if they volunteered to participate.

A. Love-kindness meditation program

The love-kindness meditation (LKM) program consists of a total of six sessions, each session was approximately fifty minutes long, given two day/week on Monday and Wednesday for three weeks.

The LKM program starts with praying to calm the mind, then sitting meditation with focus on breathing. Meditation instructions were began by close the eyes, relax, and take deep breaths. After that, the LKM condition, the introduction was followed by instructions to imagine two loved ones standing to either side of the participant and sending the participant their love. Then, participants were told to redirect these feelings of love and compassion first toward their loved ones, then towards acquaintances, and finally towards the whole world.

Throughout the meditation, participants repeated a series of phrases wishing the targets health, happiness, and well-being.

The outline of the intervention was as follows: session 1: introduction to LKM; focus on self and friend; session 2 (retreat): continuing LKM, adding focus on benefactor; session 3: continuing LKM, adding focus on beloved person; session 4: continuing LKM, adding focus on neutral person and difficult person; session 5: continuing LKM, moving to all living beings; session 6: sharing experiences, review of progress, discussion of problems, and planning future. The content validity index of program had high validity--activities 1 and 2 were 0.80 and activities 3 to 6 were 1.00.

B. Instruments of Measurement

The Subjective Well-being Scale (SWB scale) was used to assess feelings of happiness, unpleasant/negative, and satisfaction with life. In this research, the subjective well-being adapted by Hills and Argyle [22]. This scale consisted of sixteen questions of the three element of SWB as the following: Section I: life satisfaction (5 items); Section II: pleasant/positive affects (7 items); Section III: unpleasant/negative affects (4 items). Each question has each presented as a single statement which can be endorsed on a uniform six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), and each negative question was scored in reverse order. The personal subjective well-being score was obtained by summing the scores of all questions, with a higher score indicating a higher subjective well-being. The reliability coefficient was determined to be Cronbach's = .826.

C. Procedure and Statistical analysis

The Subjective well-being questionnaire was applied to cases during the first day of class. The love-kindness meditation (LKM) was taught in the period of July-September 2018, twice a week, on Monday and Wednesday, between 1 p.m. to 2 p.m., in the Srinakharinwirot University Prasarnmit Demonstration School (Secondary).

Statistical analysis was conducted using the Paired sample t-test that was performed to determine the homogeneity of the pre-test and post-test on the subjective well-being of the upper secondary students.

IV. RESULTS

Three participants dropped out during the program, possibly due with illness (2), and preference for individual reason (1). So the participants were twenty-nine upper secondary students of Srinakharinwirot University Prasarnmit Demonstration School (Secondary) in Bangkok, Thailand.

A. Gernal information of the sample

General information of the sample who participated in the love-kindness meditation program found that the sample group was 20 female students (69%) and 9 male students (31%).

Most students have a cumulative grade point average of 2.51-3.00 (60%).

B. Affect of intervention

After completing the intervention, participants were asked to evaluate the program by answering three questions. First, they were asked what the most enjoyable/helpful part of the intervention was. Most of them identified love circle in third session (12), followed by watch VDO clip of a benefactor in second session (8) and sharing their experiences with others (5). Second, they were asked what was the least enjoyable/helpful in the program. Participants reported the following: nothing (24) and some parts of meditation (5). Third, they were asked in what way the intervention influenced their daily lives. Most participants (23) noted that they experienced positive affect (e.g. kindness, comfort, connectedness, or openness) to a greater degree than before. There were no unexpected adverse events over the course of the study. Furthermore, all participants understood the basic the love-kindness meditation technique and many of them reached the inner peace and peacefulness. They intend to meditate continuously.

The changes in outcome variables for the 29 completers are shown in Table 1. Pair Sample t-test using the pre-post-scores showed that after using the program, the students with middle subjective well-being level had higher score than before with no statistically significant difference ($p>0.05$). that is, a mean score of subjective well-being before participating in the program equal to 3.28, meaning having a moderate level of subjective well-being and a standard deviation of .22, after joining the program found that a mean score of subjective well-being is 3.46, meaning that subjective well-being is at a moderate level and the standard deviation is equal to .37.

TABLE I. PRE-POST SCORE OF SWB (n=29)

SWB	mean	S.D.	t	p-value
Pre-test	3.28	0.22	6.71	.056
Posttest	3.46	0.37		

C. Qualitative Analyses: Lessons Learned

Participants were asked what specific lesson(s) they would take from LKM Program. Responses ranged from perspective taking (“I learned how to listen and think about other people’s situations”), and love-kindness (“I learned about having love-kindness for myself and others”). One male participant stated he had learned that “your opponents can become your friends,” and another reported “forgiving people.” Another student reported that LKM program had helped him in “managing anger towards people”, and that meditation had helped him in “being focused, paying attention”. A female participant stated having learned that “having loving-kindness for others can lower negative emotion”.

LKM participants were asked to give an example of using LKM concepts in their daily lives. Eighty six nine percent (n = 25) were able to provide an example. Of the 25 respondents, 56% (n=14) of examples related to improved anger management—described using LKM to deal with anger when interacting with other, 20% (n = 5) related to coping stress, 8% (n = 2) related to concentration, empathy, and unspecified school/home conflict, respectively.

V. DISCUSSION

The finding of this study showed that the six-session LKM intervention was associated with increase in life stratification, positive emotion, and decrease in negative emotion as measured by the subjective well-being with no statistically significant difference ($p>0.05$). This was not consistent with our prediction that LKM leads to an increase in positive subjective well-being. This result might get influenced from several limitations. First, this was a three weeks study, and thus the obtained results could not demonstrate that the practice of LKM would be associated with positive subjective well-being. Second, the small sample size raised questions about how representative participants are of others engaged in similar educational context, and to establish the ubiquity of the present findings. Finally, the present study adopted self-reported instruments to measure SWB variables involved, and thus the common method variance (CMV) would be a considerable concern. Although the researchers have used the pre-control method including adopting the same instructions informing participants that there was no right or wrong answer and ensuring the anonymity of participants, which may reduce CMV to the extent, we still encourage future studies to adopt more appropriate designs and multiple approaches to reduce such bias such as changing scales types and arranging items in varying order [23].

However, the upper secondary students have slight increased the subjective well-being score after participating in the program because the students might eased and purified their emotions, and maintained positive mutual relations, while revealing their emotions by LKM program via expressing their completed works verbally. So they increased their self-understanding, self-reception, and recognized themselves positively. It can be said that positive self-recognition is caused positive changes in cognition and behavior.

The results of this research were consistent with the findings of Wangmanee [24]. The study of the Development of Happiness in Thai Adolescents by Self-help Program. The study indicated that Thai adolescents are overall happy at a high level and after participating in the happiness development program, it was found that the overall happiness score increased significantly at the level of .05. This corresponds to the studies of Sathuensirikul et al [25] conducted research on a relationship between positive thinking, happiness and anxiety in undergraduate students receiving Love Kindness Meditation practice, found that a positive thinking significantly positive

correlates with happiness ($p < .001$), a positive thinking significantly negative correlates with State anxiety and Trait anxiety ($p < .001$), and the positive thinking, Happiness, State anxiety and Trait anxiety score before practicing Loving Kindness Meditation significantly different with after practicing Loving Kindness Meditation. ($p < .05$)

As well as in line with international research, including a study of Fredrickson et al [9], the study indicated that the long term effect of LKM practices on increasing positive thoughts, overall life satisfaction, and reducing symptoms of depression. Similarly, the study of Hofmann, Grossman, and Hinton [8] showed that love-kindness meditation (LKM) and compassion meditation (CM) are associated with an increase in positive affect and a decrease in negative affect. In accordance with a study of Hutcherson et al. [10] also established that a single short LKM can be effective in increasing social connection and explicit and implicit positivity toward oneself as well as neutral strangers. Also a study of Colzato et al. [11] also compared Buddhist monks, who were well practiced in LKM, to a control group on an experimental “Social Simon” task measuring participants’ degree of self-other integration based upon identification with a coactor. Including found that the monks displayed much higher levels of self-other integration than the control group, suggesting that internal representations of “self” may expand to include or overlap more greatly with notions of “other” through the practice of LKM.

Besides, the present study considered SWB as the outcome variable, and adapted by P. Hills, and M. Argyle [22]. This model of SWB measure in positive affect, negative affect, and life satisfaction because of its wide acceptance and well-established generalizability. It is suggested that for better understanding of multi-facet constructs of well-being and its relations to LKM program, future research should adopt some other models of well-being such as Ryff and Keyes [26] model of Psychological Well-Being (PWB)—the 42-items and measures six aspects of wellbeing and happiness: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance, respondents rate how strongly they agree or disagree with 42 statements using a 7-point scale (1 = strongly agree; 7 = strongly disagree). Or Seligman [27] suggests five components of well-being, and developed a new model of well-being which he called PERMA—the 56 items and measure five following elements: Positive emotion, Engagement, Relationships, Meaning and Accomplishment. respondents rate how strongly they agree or disagree with 42 statements using a 7-point scale (1 = strongly agree; 7 = strongly disagree).

The positive feedback from participants and our results suggest that LKM is a promising program for adolescents. LKM’s emphasis on mindfulness, concentration, and automatic self-transcendence or it can claim that it uses of a metta in such a way that it transcends one to an effortless state where there is no focused attention. LKM enabled the subjects to increase positive thoughts, overall life satisfaction, and reduce

symptoms of negative thoughts and to observe any change in behavior. Additionally, LKM was effective in improving subjective well-being by promoting self-reflection and self-growth. The voluntary participation by the subjects increased their degree of activeness and concentration. Breath meditation helped maintain inner peace by drawing attention and changing relax insight and attitude gradually. In addition, breath meditation was effective in improving subjective well-being by expanding self-insight, increased self-acceptance and promoting self-potential.

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FULL PAPER-POSTER PRESENTATIONS
Topic 1. Sports Science

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The Effect of Small Sided Game Training on Game Performance based on the Level of Intelligence of Player

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Abstract_Background : There are still few studies that examine the effect of SSG on game performance based on the intelligence of players. so that it becomes an attraction thus the purpose of this paper is to determine the effect of SSG on game performance based on intelligence levels. **Method :** A total of 20 people with ages ranging from 16-19 years went through the level of categorization of intelligence by conducting intelligence tests. 10 people with high intelligence and 10 people with low intelligence. The treatment given was in the form of SSG training and coerver training as a control group. Game performance is measured using GPET (*Game Performance Evaluation Tools*). Processing and analyzing the data using SPSS 20. In this study the calculation technique uses the *Anova Two way test, Kolmogorov-Smirnov and Levene statistical tests*. **Result:** The average SSG training is 76,436 and the control exercise (Coerver) is 78,627 and the error rate is 0.582. with a significance of $0.000 < 0.005$, there is a significant effect between SSG training on playing performance based on the level of intelligence of high and low players. The interaction between the training and the level of intelligence of the player who has a value of sig. 0.005, then the significance value is obtained 0,005 values smaller than the alpha value of 0.05. **Conclusion:** This study shows the impact of SSG training on playing performance by looking at the player's level of intelligence and the interaction of the exercise and intelligence of the player.

Keywords : *Small sided Game, Game performance, intelligence*

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I. INTRODUCTION

Small-Side Games (SSG) is widely used as a methodological strategy in teaching games and sports (Serra-Olivares, García-López, & Calderón, 2016). SSG are played in reduced field areas, often using modified rules and involving fewer players than actual soccer (Hill-Haas, Dawson, Impellizzeri, & Coutts,

2011). the main characteristic of the SSG is that it is characterized by modification of field size, number of players, rules of the game, manipulation used to form the main task boundaries that players must fulfill in practice (Ometto et al., 2018). This exercise is also very popular for players of all ages and levels (Hill-Haas et al., 2011).

In modern football, the speed of the game is very high. Often, players score after fast and effective dribbling or after winning a duel heading (Radziminski, Rompa, Barnat, Dargiewicz, & Jastrzebski, 2013), it means that it takes the right decision making and performing skills possessed efficiently to win the match. Other findings show that the results of experienced soccer players have a more detailed cognitive knowledge base that allows rapid identification and regulation of game patterns (Williams, Davids, Burwitz, & Williams, 1993). Much in team sports depends on the ability of players to identify appropriate environmental situations so as to provide opportunities for appropriate action (Travassos, Gonçalves, Marcelino, Monteiro, & Sampaio, 2014). In appearance, players who have good skills tend to show more regular movement behavior, when their physical performance begins to decline (Coutinho et al., 2018). Players who have high experience will be better at exploring information when getting a ball and responding to time faster as a result, making the right decisions and anticipating opponents (Tedesqui & Orlick, 2015).

The decisions of soccer players in the field depend on situational development of matches (eg dynamic movements) and broader external contexts of matches (eg static movements) (Levi & Jackson, 2018). Motor activity, and especially coordinative capacity training, can be one of the factors that contribute to increasing the potential for cognitive development (Galdi, D'Anna, Pastena, & Paloma, 2015).

From the explanation above the tightness of ingenuity in game performance, especially in the sport of football, so it attracts attention of researchers. Thus the purpose of the study was to determine the effect of SSG training on playing performance based on the level of intelligence of the player. And how does the influence of high intelligence and low intelligence in playing football play. There are two hypotheses from this study. First, there is an influence between SSG training on playing performance based on high and low intelligence levels. Second, there is an interaction between SSG training on game performance based on high intelligence groups and low intelligence groups

II. METHOD

A. Participant

The population in the study amounted to 40 people aged 16-19 years. then the APM intelligence test was carried out to determine the level of intelligence. Then the criteria are made to get high and low intelligence. How to draw samples refers to (James & Tangkudung, 2015) by dividing 27% of the upper group and 27% of the lower groups, players who are not included in the sample group will be returned to the population. Thus the number of samples was 20 people with the treatment of 10 high and low intelligence people with SSG and 10 other people with coerver. The trainer in the study is the daily trainer of the sample. Observer in the study there were 3 observers to get accuracy in decision making on research results.

B. Variable

This study was an experimental study that used a control group in the study as a comparison to the experimental group. The control group in this study was Coerver training.

Thus the Independent variable in this study is the SSG and Coerver training. Meanwhile appearance plays as a dependent variable as well as in research (Travassos et al., 2014) Appearance in many team sports depends on the player's ability to identify appropriate environmental cues that provide opportunities to act appropriately. Meanwhile intelligence is a complex cognitive construction, especially when applied to certain fields such as the appearance of athletes (Konter, 2010).

The general assumption of intelligence is that it comes from a variety of interacting abilities. Subtests like as Information assess specific areas of a person's knowledge range and are related to general intelligence (Groth-Marnat, 2006). Thus the attribute variable in the study is the level of intelligence.

C. Measure

In measuring performance playing Game Performance Evaluation Tools (GPET) is presented as a research instrument. GPET is an instrument that evaluates game performance from the tactical side and executes according to the problem that the tactical subject should solve (López, Villora, Gutiérrez, & Serra, 2012). Appearance is measured from the context of decision making, thus giving value to a team that is mastering the ball in a tactical situation.

D. Procedure

Pretest. The game is recorded using a camera with a duration adapted from (*Laws of the Game*, n.d.) Adult games are limited by official football rules each in two parts, 45 minutes each, with a 15-minute break. Youth league can range from two to 20 minutes. divide by two to 45 minutes, depending on the age level. All youth leagues need a half time break. Thus at the level of young age playing time is reduced from 45 minutes per day. so the nature of this study is that playing performances are recorded using videos with 30 minutes playing time per round.

E. Treatment

The treatment program is made according to each exercise. The SSG treatment program given to the program trainers was adapted from (High Performance Unit PSSI, Putera, Sidik, & Prahara, 2017) inside is an SSG program. While the coerver training program was adapted from ("Coerver Intro Course – Coerver Coaching," 2018) where coerver training is made part of each program. As in the study by (Harvey, Cushion, & Massa-Gonzalez, 2010), the training program was developed over three sessions, each lasting one and a half hours.

F. Posttest.

Similar to the pretest game recorded by using a camera with a duration of 30 minutes every kick off. Then each video was analyzed by the three observers, either pretest or posttest.

G. Statistical analysis

After the data is collected, the next step is to process and analyze the data using SPSS 22. In this study the calculation technique uses a two-way ANOVA test. (Clemente, Wong, Martins, & Mendes, 2014). The testing steps are started with the *Kolmogorov-Smirnov test* and *Levene statistical test*

(Serra-Olivares et al., 2016). If the data is normally distributed and then homogeneous is a two-way variance test for the average difference test, and the

III. RESULT

The results show in Table 1 that there are differences in the mean between the SSG training group and the coerver exercise control group. With SSG 78,627 training values and control exercises (Coerver) 77,742. then to test the first hypothesis can be seen table 2 testing the effect of the two exercises on game appearance based on the level of intelligence of high and low players. The statistical hypothesis H_0 = there is no difference in the effect of SSG and Coerver and H_1 is accepted. Thus it can answer the hypothesis that there is a significant influence between SSG training on game performance based on the level of intelligence of high and low players.

TABLE 1 DESCRIPTIVE STATISTICAL GAME PERFORMANCE

Estimates				
Dependent Variable: Game Performance				
Training	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
SSG Training	78.627	.582	77.393	79.861
Coerver Training	77.742	.582	76.508	78.976

TABLE 2 DATA ON THE SIGNIFICANCE OF SSG AND COERVER EXERCISES ON GAME PERFORMANCE

Dependent Variable: Game performance					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	258.959 ^a	3	86.320	25.480	.000
a. R Squared = .827 (Adjusted R Squared = .794)					

To answer the second hypothesis can be seen in table 3 in looking at the SSG training interactions and controls (Coerver) on playing appearance based on the level of intelligence of high and low players. The results of the analysis show that there is an interaction between Coerver Training and the level of intelligence of the player can be seen in table 3, then the significance value is obtained by the value 0,005 smaller than the alpha value 0.05 meaning that there is an interaction between SSG training and Control (Coerver) with the level of intelligence on playing

calculation of interactions between the independent variables and attribute variables

(control) training on game performance based on the intelligence level of high and low players, H_1 = there are differences in the effect of SSG and Coerver (control) training on game performance based on high and low players' intelligence. The decision criterion is a significance value > 0.05 , H_0 is accepted and the significance value is < 0.05 , H_0 is rejected. In table 2 shows the corrected model significance value, which means that the effect of both SSG training and coerver (control) has a significance value of $0.000 < 0.005$. meaning that H_0 is rejected performance based on the level of intelligence of high and low players. This result is reinforced by Figure 1 which shows the existence of a line that is not parallel. but there is a crossing of the line between Exercise and the level of intelligence of play.

TABLE 3 SSG AND COERVER EXERCISE INTERACTION DATA

Tests of Between-Subjects Effects					
Dependent Variable: Game performance					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intelligence player	220.116	1	220.116	64.973	.000
Intelligence player * Training	34.927	1	34.927	10.310	.005
a. R Squared = .827 (Adjusted R Squared = .794)					

Fig.1. SSG and Coerver Exercise Interaction on game Performance

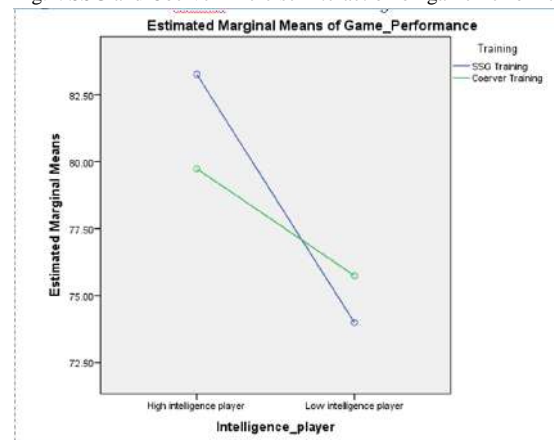
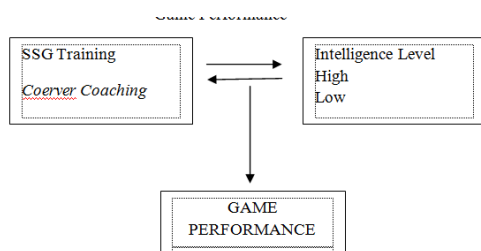


Fig.2. Pattern of SSG and Coerver Interaction Exercise Interaction on Game Performance



IV. DISCUSSION

Based on the results of the calculation of the data, overall without grouping with a score of the level of intelligence of SSG training it is more helpful for players to improve the appearance of play. This has been proven by the research conducted by (Vaeyens, Lenoir, Williams, & Philippaerts, 2007). In football, the best performances are found characterized by faster decision times and more accurate accuracy of responses, supported by the right decision makers using a search strategy that is more goal-oriented than feeds to colleagues who are less strategic to provide feedback. SSG training provides a stimulus in the form of a reduced field so that the field situation is almost the same as the situation in the actual match.

Facts on the ground by applying the SSG method can pressure players to think quickly and get along because when a player is late he thinks the possibility of possession can be detached from his team. In line with the research conducted by (Vilar, Duarte, Silva, Chow, & Davids, 2014) entitled *The influence of pitch dimensions on performance during small-sided and conditioned soccer games* explain how the effects of manipulating the field dimensions of SSG games can increase opportunities for acquiring certain movement skills and decision making.

Interactions that occur between SSG training and control (Coerver) can occur because in both exercises it requires fast decision making especially in the context of the game. In line with (Kinrade, Jackson, & Ashford, 2015) the ability to make a decision to play an important role in success with highly skilled players is often needed to make the right decisions under extreme time pressure.

With the interaction between practice and the level of intelligence, it is increasingly clear that intelligence plays a role in game performance. (Ometto et al., 2018) explaining there has been evidence to show the importance of designing practices to improve understanding of tactical behavior in football, but the lack of information about how trainers can manipulate these tasks is an obstacle to supporting tactical learning. From this research the trainer can make the

SSG as a means of overcoming the obstacles to physical learning support during training.

V. CONCLUSION

This study shows the impact of SSG training on game performance by looking at the level of intelligence of players. Data shows a significant value found in SSG training on game performance. Players who have a high level of intelligence play an important role when given an SSG program because in SSG training provides a situation for players to understand the tactical situations that occur during the game.

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Application Method for Psychological Skills Training Relaxation – Imagery Increase Referee in Leading Performance Game Football

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Abstract— The purpose of this study is to know the whether the application of psychological skills training methods such as relaxation-imagery can provide a significant effect on performance improvement in leading the football match referee. Research conducted on the referee PSSI Subang, and methods in research is an experimental method to the design of one group pretest posttest design. Instruments to collect in this study is the referee assessment form. This assessment form is an official form issued by FIFA and is used by the PSSI to measure the performance of the referee in a football game lead. The conclusion of this study is a method of psychological skills training such as relaxation exercises -imagery significant influence on the performance of the referee in a football game lead. Suggestions for PSSI and the referee commission, in order to provide psychological skills training in every session, because the psychological skills training is crucial to improve the performance of the referee in a football game lead.

Keywords—*relaxation,imagery,referee leadinggame football*

I. INTRODUCTION

Football is one of the popular sports in our society. As one of the collective games, football requires a good collaboration between all components to produce a real togetherness. Football matches involve many important components that cannot be abandoned, so that the competition can be carried out well. Among these components are players from both teams, coaches, officials, supporters, medical officers, security officers and match apparatus which includes the referee and match supervisor. This is in accordance with the official rules in the competition regulations issued by the *Football association indonesia* (PSSI).

Referees as the judges who judge the way the match and case inside. Referees in English are called umpire or referee, referee commission of West Java Province Yuli (2008, p. 30-

32) describing referees is: "a) Enforcement or mediator, b) Determinant or leader, c) Separator, separator, conciliator (between disputants)". PSSI (2007: 12) explains referees are:

The mediator and judge who has full authority to enforce the game law in relation to the match in which the referee is assigned, must move to the ball and the game and the referees' decisions regarding the facts relating to the game are final, insofar as a result of the relevant game.

The mass media often preach the referee who led a match, even make it as a hot issue related to the attitude of the referee in the match. Referees are often targeted by players dissatisfaction, officials, and supporters when they feel dissatisfied with the performance of the referee, especially when the squad is in a losing position. Moreover, in these conditions the referee often does not control his emotions when he is treated improperly.

Based on these cases, the referee should manage their emotions well and could work accordance with the rules and roles as referees. The case above in one of a problem that made players, official teams or supporters were not satisfied with the leadership of the referee on a match. Those problems are the background the author need to conduct research, so the author can analyze what factors influence the performance of referees on a match so there is no more news about referees violation, and in the future the referee would lead a match as good judges, leaders, and enforcers, who respected by players, officials and supporters.

Factors that affect a person's performance are very complex. This is consistent with the opinion of Tjiono and Anatasia (1996, p. 215) that:

3 factors: (1) ability factors that are equipped with capabilities and demographic background, (2) organizational factors which include: leadership resources, structural imbalances, job design, (3) psychological factors, personality, learning and motivation.

Based on the description above, a person's performance is a result of work achieved and influenced by several factors. One of them is psychological factors. Psychological problems that are often faced by referees in matches include emotional problems that occur as a result of the treatment of players, officials or supporters who often interfere the referee, so that the referee is often not controlled emotionally and repay their actions that should not be done by the referee.

As Efforts to solve this problem are necessary to apply psychological skills training methods so that referees can control emotions and other mental problems. According to Valey (in Komarudin, 2013, p. 17) explained that there are four psychological skills training techniques, namely "Imagery, goal-setting, thought management and physical relaxation / arousal regulation". the psychological skill method is a relaxation-imagery combination. Relaxation according to Setyobroto (1989, p. 105) is "Circumstances marked by inactivity and tension. If someone in a state of inactivity (silent) and feel comfortable (not tense), then it can be called that person in a relaxed state. Imagery training according to Hidayat (2011, p. 180) is "A mental process that occurs when someone imagines an object, event, or certain motion experience through multimodality, such as visual, auditory, kinesthetic, and others".

According to this explanation imagery training is a technique to help someone visualize or mentally train related to the activities to be carried out, here a person is given the freedom to imagine using his mind to see and imagine all the possibilities that can occur during a match.

To do a psychological skill, the more effective the person who will be treated must be relaxed, because it will have an impact on better results and can improve skills results rapidly. As per practical instructions do imagery exercises according to Syer & Cannolly in Setyobroto (1989, p. 144) that: "Start with relaxation, if you are learning certain skills that are considered difficult and you have long worked on, then relaxation exercises in the right time and in a short time will provide rapid improvement and progress" The authors examine a combination of psychological skills in the form of relaxation with imagery can improve the performance of referees in leading football matches. Based on these explanations, the authors are interested in proving the theory of psychological skills training in the form of relaxation-

imagery combination exercises to improve the referee's performance in leading football matches.

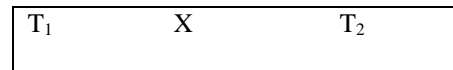
II. RESEARCH METHODOLOGY

The research method used in this study is the experimental method.

The research design is One Group Pretest-Posttest Design, with the grouping of research variables as follows:

- a. The independent variable in this study is psychological skills training in the form of relaxation-imagery (X).
- b. The dependent variable in this study is the performance of the referee in leading a football match (Y)

The design of the study can be seen in Figure 3.1.



Research Design *One Group Pretest-Posttest Design*

Source : Maksun (2012 : 97)

Chart description:

- a. (T₁) Pretest of the referee's performance in leading a football match.
- b. (X) Treatment of psychological skills training in the form of relaxation-imagery exercises.
- c. (T₂) Final test of the referee's performance in leading a football match.

This research was conducted for 7 weeks (21x meetings) held every Wednesday, Saturday and Sunday from April 20 to June 7, 2014. The treatment was carried out on the basis of the opinion of Sheard and Golby (in Birrer & Morgan (2010, p. 79) that "Showed with 36 elite swimmers as a significant post-PST performance enhancement after a 7-week PST imagery and relaxation training".

Based on the study, treatment of imagery training, relaxation, and relaxation-imagery has an effect on performance during the period of 7 weeks. The study shows that psychological skills training in the form of relaxation, imagery, and relaxation-imagery is expected to have a significant influence in improving the referee's performance in leading football matches.

Research Location

This research was conducted in the Subang District of West Java. Giving treatment in the form of relaxation, imagery and relaxation-imagery exercises is carried out in one of the rooms in the Subang PERSIKAS stadium, which is

located at Jln. Pulau Bali No. 10 Subang. Observation of the performance of the referee was carried out when the referee led a football match in Subang.

Population and Samples

The population in this study were PSSI football referees in Subang Regency totaling 10 people. In this study all members of the population were used as research samples.

Research Instrument

Determination of measuring instruments to assess the performance of the referee, the author uses From the referee's judgment used in PSSI. This form is an official form issued by FIFA that is used by PSSI to measure the performance of football referees when leading matches. Important things in this referee appraisal form are referring to all important components that exist during the competition, namely 1) official position and mechanism, 2) game control, 3) referee signals / signals, 4) courage, character, and concentration, 5) the accuracy of decision making. This instrument no longer needs to be tested for validity and reliability, because this instrument is already standard issued by FIFA and is often used by PSSI to assess the performance of referees.

III. DATA ANALYSIS

Processing data in a study is a very important and absolute thing to do. Data collected from the field, then processed using statistics that match the problems obtained. The purpose of the processing is collected data that has meaning and can draw conclusions. Processing data in this study contains the calculation of the average value, standard deviation, normality test, homogeneity test, related sample T test and significance test.

Data on Referee Performance Assessment Results Before Treatment and After Treatment Relaxation, Imagery and Relaxation-Imagery

Variabel	Treatment Rileksasi-Imagery	
	pretest	Posttest
The referee's performance in leading a soccer match	6.05	6.95
	6.05	6.95
	6.10	7.00
	6.10	7.00
	6.10	7.00
	6.05	6.90
	6.05	6.95
	6.10	6.90
	6.00	6.90

	6,30	6,70
Total	60,90	69,25
Standar deviation	0,080966	0,088976
Average	6,09	6,925

Based on the results of calculations, that the data are normally distributed, before the relaxation-imagery treatment the significance value (p) value is obtained at $0.322 > 0.05$, because the value is significant (p value) > 0.05 then H_0 is accepted, meaning that data is taken from a distributed population normal. Because the results of the data are **equally normal** in analyzing the data using parametric statistics.

Based on the calculation results, obtained a significant value (p) value of $0.723 > 0.05$ from the results of the relaxation-imagery homogeneity test, then H_0 is accepted, meaning that the variance in the relaxation-imegery data group is the same (**Homogeneous**).

From the results of calculations with SPSS for Window obtained a significance value (p) value of $0,000 < 0,05$ because the value is significant (p value) $> 0,05$, then H_0 is rejected, meaning there is a significant increase between the value before the relaxation-imagery treatment and the value after relaxation treatment -imagery.

IV. RESULT OF STUDY

The implementation of relaxation-imagery exercises has a significant influence on the performance of referees in leading matches, because to do a psychological skill, more effective people who will be treated with imagery must be relaxed, because it will have an impact on better results and can improve skills results with rapidly. As per practical instructions, do imagery exercises according to Syer & Cannolly in Setyobroto (1989, p. 144) that: "Start with relaxation, if you are learning certain skills that are considered difficult and have long been studied, then relaxation exercises in the right time and in a short time will provide rapid improvement and progress." So in addition to researching relaxation and imagery on improving referee's performance in leading soccer matches, the authors also examined a combination of psychological skills in the form of relaxation with imagery that can improve the referee's performance in leading soccer matches. psychological skills in the form of relaxation-imagery training, the referee can control his emotions when he gets pressure from players, officials or spectators so that it will affect the performance of the referee when leading the match.

V. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of processing and analysis of data in this research, the authors can draw the conclusion that: The application of psychological skills training methods in the form of relaxation-imagery exercises have a significant influence on the performance of the referee in leading soccer matches.

Based on the results of the research that the author has done, the author suggests a number of suggestions as follows: suggested to PSSI, to increase the resources of a good referee not only pay attention to the physical, but pay attention to the psychological referee as well, because psychological exercises are as important as other exercises, commissions are advised Regional referees, in providing training, can combine physical training and psychological skills training, the aim being that the referee is more prepared and resilient in facing high-tension matches when assigned to the level of West Java or National. It is recommended for the referee, improving the referee's performance is not enough just to do physical training, but the referee must realize that psychological skill training is very important to improve the referee's performance while leading the match.

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FULL PAPER-POSTER PRESENTATIONS
Topic 2. Physical Education

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Physical Activity and Classroom Management in Physical Education

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Abstract- Background. This study aimed to compare physical activity (PA) outcomes associate with classroom management of Physical Education (PE) in Junior high school. Literature and empirical data mention the level of physical activity of adolescent in the category of less active. While physical education is expected to increase the level of physical activity of adolescents. Provisionally, one of the factors that influence the success of PE learning is classroom management. The present study examined the association between PA level and Physical Education through its management factor. **Method.** SOFIT (System for Observing Fitness Instruction Time) was used for observation of PE lessons. We explore MVPA of junior high school student associated with teacher instructions. **Result.** PA outcomes were positively associated with motor ability, classroom management. Meanwhile, PA outcomes associated negatively with other factors (transition time, PE knowledge and class size).

Keywords: *Classroom Management, MVPA, physical education, physical activity*

I. INTRODUCTION

Physical activity is considered important in preventing health problems among youth such as obesity, hypertension. According to Dennis Bier in William T. Basco[1] ‘over 9 million children age 6 and older are now considered obese. Since the 1970s, obesity has increased in all school age groups. The prevalence of obesity has doubled for children aged 2-5 years and for children aged 12-19 years. But even more significant is the fact that obesity has tripled in prevalence for those aged 6-11 years.’ Another benefit of physical activity is [2][3][4][5]that it can improve cardiorespiratory fitness, build strong bones and muscles that kids have to be compelled to exercise to avoid losing bone density through inactivity, control weight, promote higher emotional health and get more energy and endurance for daily activities. Physical activity will also preventing

various health conditions[6]: reduce symptoms of anxiety and depression, and reduce the risk of developing health conditions; reduced risk of Type 2 Diabetes; lower blood pressure; a healthier heart; reduced risk of cancer.

Numerous systematic reviews[8] were trying to discover various methods to increase the level of physical activity of adolescents. Mura et al. [9] found that ‘most literatures aimed to prevent obesity and cardiovascular risks among youths. While few studies showed a decrease in BMI, positive results were achieved on other outcomes, such as metabolic parameters and physical fitness.’ To increase the level of physical activity, researchers and practitioners are specifically interested in identifying which factors influence the level of physical activity of adolescents[10][11][11] , and what interventions can be modified to increase physical activity into a habit. These interventions become very important and will continue to be carried out and maintained into adulthood. For this reason, adolescent is the most crucial period and high-risk aged for forming habits for long life well-being and preventing diseases due to lack of motion from an early age.

Physical education (PE) is essentially an educational process that utilizes physical activity to produce holistic changes in individual qualities, physically, mentally, and emotionally. Physical education treats a child as a whole, a total human development.

Regular physical activity in childhood and adolescence is important for promoting lifelong health and well being such as being, rather than just thinking of him as someone who is separated from his physical and mental qualities.

In fact, physical education is a very broad field of study. The focus is on increasing human motion. More specifically, PE relates to the relationship between human motion and other areas of education: the relationship of the development of the body to the mind and soul. The focus on the influence of physical

development on the area of growth and the development of other aspects of human beings is what makes it unique. There is no other single field such as physical education with an interest in the total development of human beings.

The learning environment is often not in accordance with teacher's planning and expectation. Any misleading and inappropriate behavior can be grouped into misbehavior in physical education learning. Classroom situation, among others, depends on how the teacher arranges the lesson, how classroom management is applied by the teacher. According to Blue, classroom management [12] refers to all of the things that a teacher does to organize students, space, time, and materials so that instruction in content and student learning can take place. It includes all of the things that a teacher must do toward fostering student involvement, cooperation, and a productive working environment.

Theoretical Framework.

The human body is designed for activity, based on at least three evidences that: first, humans as living things can adopt various physical demands imposed by work and training; second, spending excessive amounts of time in a transient state and low levels of physical activity have been linked to poor general disease profiles, loss of functional capacity and premature death; third, early humans could not have survived in a life threatening environment without having adequate motor skills and the ability to make choices that required physical activity [13]. Furthermore, Bouchard et al. defines physical activity as any body movement produced by skeletal muscle, which results in an increase in metabolic rate during energy expenditure. Life or daily life in this world can never be separated from various forms of physical activity, both activities that require a lot of energy or little. Mulyono [14] conclude, activity means action or liveliness, so everything that is done or activities that occur both physical and non-physical, is an activity". Activities are all activities carried out either physically or spiritually. Thus, activities are activities carried out both physically and non-physically. Physical education in high school is essential to the development of motor skills and the enhancement of reflexes. Hand-eye coordination is improved, as well as good body movements, which helps in the development of a healthy body posture. Physical education teaches students the importance of physical health. Physical education occurs in a wide variety of settings and classroom situation making effective teaching and management difficult.

Understanding context is a key to management, and the context of physical education is unique and variable. Beyond the obvious factor of students moving in a large space, the context is influenced by variability in teaching

sites, poor acoustics, a diverse student population, large class sizes, and the need to safely incorporate simultaneously moving bodies, implements, and objects. Teachers rarely credited their university programs with preparing them for successful classroom management and instead gave the most credit to trial and error, students. Classroom management goal is to maximize student opportunity to learn; thus understanding how teachers use their time. Any misbehavior in PE classroom, include not using equipment properly and appropriate sports clothing. In the second case, students exhibit antagonistic behavior or talk to each other during the lesson. The third group is students who speak and laugh out loud. The fourth group includes the two most frequently encountered behaviors, students behaving in an undisciplined manner to seek teacher attention. It is also directly proportional to the results of filling out the questionnaire and observing students' attitudes in physical education lessons, as well as how the Physical Education Teacher applies discipline in physical education classes to encourage students to actively move. From the results of this questionnaire it is known that students who are active in moving, tend to like physical education lessons and with the encouragement of physical education teachers in delivering the material, they will be eager to perform the tasks given (On-Task Behavior). While students who are less active in moving will choose not to do the assigned tasks, even though they are still present in the field (Off-task behavior) and other misbehavior.

Off-task behavior is a disruptive behavior caused by the inability of a physical education teacher to encourage students with low physical activity to do the task of motion. The most common disruptive behavior in physical education classes is disinterest, followed by indiscipline and combined disinterested behavior plus indiscipline [15]. The role of the physical education teacher is very important in disciplining students. López Jiménez et al. [15] mentioned that there is a close relationship between some disturbing behaviors and some behaviors related to teacher's hours and actions. Disruptive behavior and off task behavior can also have an impact on not achieving the objectives of Physical Education lessons, among others on the development of motor skills, physical abilities, student knowledge. Which causes interference or increases the likelihood of it occurring. The teacher's attention to students also influences the level of physical activity during Physical Education learning. Students who attend schools with a low teacher-student ratio have more learning time and are involved in high-level physical activity during class time. While access to adequate physical education equipment and facilities is positively related to student activity levels. [16].

Present Study

With the present study, we simultaneously collect data on student activity levels, the lesson context, and teacher behavior. The main outcome variable is student physical activity levels, and these can be reported in number of minutes and provision lesson time spent in MVPA (moderate-to-vigorous physical activity); VPA (vigorous physical activity); lying down, sitting, standing, and walking; and estimated energy expenditure per lesson (kcal/kg). Teachers' self-efficacy in their classroom management capabilities is thought to be an important factor in teachers' overall judgments of their teaching self-efficacy. Low self-efficacy in classroom management has been linked to teacher attrition and burnout, and reduced student-learning outcomes. Classroom management as a factor in the construct of teacher's self-efficacy.

II. METHODS

Sample. Cross-sectional design was used to study the association between physical activity, motor ability, classroom management, and time in transition, class size and PE knowledge sample of students from a junior high school in East Jakarta. It is one of the research designs (social research methodologies) by involving more than one case in one attempt and also involving several variables to see the pattern of relationships.

From SOFIT Protocol, Thomas L. McKenzie[17]. developed SOFIT (System for Observing Fitness Instruction Time) is a comprehensive tool for assessing physical education (PE) classes and coaching settings by providing for the simultaneous collection of data on student/athlete activity levels, the lesson/practice context, and teacher/coach behavior. Physical activity engagement is one of the main health-related goals of physical education and sports and it is needed in order for participants to become physically fit and physically skilled. Participation in moderate-to-vigorous physical activity (MVPA) during class/practice is highly dependent upon how the subject matter is delivered (i.e., lesson/session context) and the instructor delivering it (i.e., teacher/coach behavior). SOFIT is a three phase, momentary time sampling, interval recording, validated direct observation method designed to measure student MVPA levels, lesson context, and teacher behaviors.[18].

SOFIT has been validated [19][20]so and it can be used reliably in diverse instructional settings, frequently used as direct observation measurement system to provide both objective baseline and intervention data. Stuart et al.[21] concluded that teacher practices during high school PE lessons are significantly related to students' participation in MVPA. SOFIT+ is a valid and

reliable tool to examine relationships between PE teacher practices and student MVPA during PE. **Outcome variables.** 1. Student physical activity levels: number of minutes and % lesson/session time spent in MVPA (moderate-to-vigorous PA); VPA (vigorous PA); lying down, sitting, standing, and walking; estimated energy expenditure per lesson (kcal/kg); and estimated energy expenditure rate (kcal/kg/min) **Process variables.** 1. Schedule of PE: Frequency of lessons/sessions and adherence to schedule (i.e., cancelled lessons); duration of scheduled and actual length of lessons 2. Lesson Context: Minutes and % of lesson/session time spent in management, instruction, fitness, skill drills, game play, and other 3. Instructor Behavior: Percentage of lesson intervals a teacher/coach spent promoting activity and fitness during and out-of-class time. The data collection procedure is using 4-minutes observe for 12 variable. For Classroom management, we develop an instrument of student perception, Questionnaire on Classroom Management in High School Education-*Student Perception* (QCMS_{SP}) consisted of 4 domain: planning & preparation; classroom environment; instruction; professional responsibilities. The scale used is 0-10 to state the importance/necessity of each item of statement. this instrument adopted OECD PISA 2018 questionnaire framework:[22] Student-reported factors: learning time (previous education, learning time at school, enrichment/remedial education, after-school lessons), teacher-student relationships, disciplinary climate, teacher's stimulation of reading engagement [23].

III. RESULTS AND DISCUSSION

Descriptive analyses were conducted variables of interest were calculated to better understand physical education environment conditions. The sample included 32 students, almost evenly split by gender (56.25% male). Students ranged in age from 13 to 14 years old ($M = 13.3$ yrs.', $SD = 1.2$ yrs.').

A group of four students were randomly targeted prior to the start of the lesson. The student activity level, lesson context, and teacher promotion of physical activity behavior were simultaneously every 10 seconds observed-10 second recorded. The data yielded 2688 intervals totaling 888 minutes. On average 111 intervals were observed per lesson ($SD = 9.4$). All PE lessons observed were outdoor activity.

The quality physical education is associated with the percentage of lesson time students are engaged in MVPA, the proportion of intervals students were sedentary, moderate, and vigorous were calculated. Student activity (i.e., lying, sitting, standing, walking, and vigorous) proportion of time was sitting 7&, standing

21% walking/moderate 24% and the greatest proportion of time vigorous 48%. Student grade 8 were assessed Across the PE lessons, average was 8 PE lessons in 5 days, 32 students, 56.25% were male and two PE teachers. PE lessons that include students in engagement in MVPA (sum of walking and vigorous) was 72% of the time that translated to 79 minutes or 1,33 hours of MVPA or 59% MVPA of total lesson hour (2,25 hours).

The proportion of lesson contexts (i.e., management, knowledge, fitness activity, skill practice, game play and other) was 'Game play' was the dominant lesson context (43%) followed by skill activity (23%). During each lesson context, teacher appeared to provide students with opportunities to engage in MVPA, while doing 'game play' (G), 'fitness activities' (F) and 'skill practice' (S) students engaged in MVPA 65%, 45% and 60%.

MVPA and sedentary behavior during PE lessons were recorded during 'management' and 'knowledge'; students were mostly sedentary (81%) and 79%. Meanwhile, lesson time when the primary focus is on student motor engagement, students were 40% sedentary and 60% MVPA. During 'Skill Practice' and 'Game play' category, student were engaged MVPA 76% and 95%, Further, 'management' and 'skill practice' were strong positive correlation with student sedentary behavior ($r = 0.794$ and $r = 0.744$). Meanwhile, 'Fitness' and 'Game play' were strong positive correlation with student MVPA ($r = 0.656$ and $r = 0.68$). 'Knowledge' was weak positive correlation with student sedentary behavior ($r = 0.35$). The coefficient value of physical activity to classroom management is 0.268 with a t_{count} Of 3.78. Since the value of t is greater than the table value at $dk = 33$ for $\alpha = 0.05$ of 2.03 then hypothesis that there is an association between PA and classroom management is accepted, which means there is a positive direct effect of physical activity variables on classroom management variable.

Findings from this study were related to the physical education lesson context (including classroom management) and intensity of student physical activity. We found that physical education lessons were 18,3% (22 minutes) shorter than the scheduled lesson time with the mean lesson time of 100 minutes. That is the education and environment challenge, we have set the lesson time and we reduced the actual time, McKenzie[17] claimed physical education is "the pill not taken". One plausibly reason is transition time (between other lessons and changing clothes). A study of middle school physical education found transition time to change clothes and transport to and from instructional areas may have reduced student opportunities for participation in physical activities. This study showed that students have more academic achievements in a well-managed

classroom environment and linear with previous study [24]. Effect of physical activity on classroom management, with a coefficient of 0.268, means that there is a positive direct effect of physical activity on classroom management.

The results of this study also evidenced that physical activity has a positive and significant direct effect on classroom management. This shows that physical activity is very important to stimulus improvement in classroom management. Integrating physical activities into teaching and learning activities especially classroom management will provide opportunities to instill useful activities during school hours. Physical activity in class helps activate the brain, improve behavior in doing work, and increase the level of daily physical activity at school. This is linear with previous study; kinesthetic perception and physical activity are positively correlated with on-task behavior in thematic learning and with academic performance in math and reading[25]. Class teachers have the potential to influence children's healthy behavior and become the basis of their lifestyle, by incorporating physical activity into the overall learning experience and reducing sedentary behavior. Classroom management creates activity patterns that vary according to conditions. Teachers will create conditions and maintain them so individuals can utilize their rational, creative talents for challenging educational tasks. This is an effective classroom management, which includes the selection of methods that are appropriate to the situation [26].

IV. CONCLUSION

There were some limitations in this study by many factors related to student motor characteristic, classroom and school environment, and teacher instructional goal setting. For further study it will more interesting to examine Student' physical activity, classroom management in controlled study environment.

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FULL PAPER-POSTER PRESENTATIONS
Topic 3. Health and Environmental Sciences

2019

THE 5th INTERNATIONAL CONFERENCE ON
PHYSICAL EDUCATION, SPORT, AND HEALTH

Effect of Massage Effriction Therapy on Decrease Pain at Shoulder Injury

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I. INTRODUCTION

Sports is one of the activities that are very popular with the wider community, namely from children to the elderly. Exercising positive effects to improve health and fitness, but exercise also has a negative effect that is the possibility of injury. The risk of cdera if an injury occurs is called a sports injury. According to Hardianto Wibowo (1995: 11) what is meant by sports injury (Sport Injures) is all kinds of injuries that arise, both during training and during sports (matches) or after matches. According to Garisson (2001: 320) the factors that cause sports injuries are: (1) intrinsic factors which include: tissue weakness, flexibility, overload, biomechanical errors, lack of adjustment, body size, performance ability, playing style poor coordination of muscles and joints, size of limbs that are not the same length, imbalance of antagonistic muscles. (2) Extrinsic factors which include: wrong equipment, other athletes, playing surfaces, weather. Graha et al (2009: 46) reveal that one sign of injury is a functional disorder or decreased range of motion (ROM).

The causes of sports injuries can come from outside such as hard contact with opponents in body contact sports, because of collisions with sports equipment such as stick hockey, balls, rackets, and others. It can also be caused by uneven field conditions that increase the potential of sportsmen to fall, dislocate, or even fracture. There are two types of injuries that are often experienced by athletes, namely acute trauma and Overuse Syndrome. Acute trauma is a severe injury that occurs suddenly, such as ligament tears, muscles, tendons, or sprains, or even fractures. Acute injuries usually require professional help. Overuse syndrome is often experienced by athletes, starting from the existence of a force that is slightly excessive, but takes place over a long period of time. This syndrome sometimes responds well to self-medication.

Sports injuries can be classified as minor injuries if the tears that occur can only be seen under a microscope, with minimal complaints, and do not interfere with appearance significantly. Examples that can be seen are bruises, abrasions,

and mild sprains. Moderate injuries are characterized by tissue damage that is real, painful, swollen, reddish, hot, and has a malfunction. Signs of inflammation such as tumor, rubor, heat, dolor, and functiolaesa are seen in whole or in part. Examples of this injury are partial tearing of muscles, tendons, and ligaments. In severe injuries a total or almost total tear occurs, and fractures can also occur. This injury requires complete rest, intensive treatment, or even surgery.

Based on observations on December 8, 2018 in the massage therapy section at the therapy center in the Department of Sports Education and Training, Semarang State University. Data can be obtained as follows:

No.	injury case	Total
1.	Knee	44
2.	Hips	10
3.	Elbow	4
4.	Engine	40
5.	Waist	24
6.	Neck	0
7.	. Finger	3
8.	Shoulder	28
9.	Broken bones	0
10.	. Wrist	1
11.	. Hamstring	2
Total		120

Based on the above data, it can be concluded that out of a total of 120 injuries, 36.7% were knee joint injuries, which were 44 cases of injury from 120 cases of injury. In addition Hardianto Wibowo, (1994: 12) states that the knee has the largest percentage of injuries which reaches 22.5% because it functions double, which is as a driver and retaining weight, so the possibility of injury

increases. Therefore it can be concluded that the injuries most often experienced by people and sportsmen are knee joint injuries. But other injuries cannot be ruled out and only knee injuries or ankle injuries are dealt with.

With various types of injuries each injury has different characteristics and different treatments even with the same massage technique. According to Tommy Fondy, (2014: 56) there are 3 levels in shoulder joint injury, namely 1) Level 1 (mild): a mild level of injury is characterized by knee damage to the ligament muscle and pain, small swelling, and slight bleeding but there is no abnormal laxity (joint instability). 2) Level 2 (moderate): at a moderate level of injury a large ligament damage will occur, but not until a complete break occurs. Shoulder injuries can occur in both the bones and muscles, but harder bone structures cause the most frequent injuries to the muscles. For minor shoulder injuries can be overcome by stretching and maximizing shoulder work through physiotherapy. As for injuries due to inflammation of the muscles can be overcome by rest, use ice packs to relieve pain, provide analgesics, and therapy to help the shoulder recovery process. For shoulder injuries with certain conditions, such as muscle tearing or shoulder dislocation, patients need a more comprehensive diagnosis and treatment.

It is not uncommon for a person to exercise to experience shoulder pain because the shoulder is a joint that has the largest range of movement in the body so that it is quite vulnerable to injury. Most cases of shoulder pain are caused by muscles that are interested, although sprained joints and shoulder dislocations are quite common. Athletes certainly need to recover from joint pain quickly and completely so they can return to exercise. An athlete can treat shoulder pain at home, but advice and care from a professional health professional is always useful and often needed to heal quickly.

If your shoulder pain is caused by lifting weights while exercising, chances are your exercise is too aggressive or with the wrong posture. Although the shoulder does need to be rested for several days, it is not recommended to use ambin if you experience a minor injury. Ambin will make the shoulder "freeze" (adhesive capsulitis). The shoulder still needs to be moved gently to facilitate blood flow and stimulate healing. Pulsating shoulder pain usually indicates muscles that are interested, while sharp pain is often caused by joint / ligament injuries. Shoulder joint pain usually gets worse at night when lying in bed with pain due to muscles being attracted. Certain inflammatory conditions (eg bursitis) can also aggravate joint pain at night

Massage or tissue massage aims to relieve muscle tension and firmness, increase flexibility, and cure inflammation. Everything will relieve pain

in the shoulder. This massage is most beneficial for muscles interested in mild to moderate, but it is not recommended for more serious shoulder injuries (as mentioned above). A massage session might "cure" pain in the shoulder, but it may also take several additional sessions.

II. METHOD

The study design used was experimental research with 1 treatment group.

A. Population and Samples

The research population can be divided into target populations and affordable populations. The target population is the population which is the final target of applying the research results. While affordable populations are part of the target population that can be reached by researchers.

B. Sample Large Estimation

The calculation of the sample size used in this study is the calculation of sample size for the different mean of the two groups. Calculation of sample size used is a calculation for hypothesis testing of the average of two independent populations. Large sample counts are two independent populations

C. How to do Effriction

Effriction is a combination of eflurage and friction. Rubbing (effleurage) is the way to use the palm of the hand to rub or stroke the area of the body that has muscle stiffness. The goal is to facilitate circulation of blood and lymph fluid. Rubbing will cause venous return of blood to return to the heart faster. Blood flowing rapidly from venous back to the heart will also speed up the process of disposal of metabolism. The benefit of combining friction and eflurage is that it can help eliminate myoglosis and reduce muscle tension. This process will restore the muscle to its original position and will help launch the rest of the metabolism, including lactic acid (Graha and Priyonoadi, 2012: 9).

The main observation in physical therapy examinations is to identify certain types of joint injuries to the body can be seen through the joint surface by comparing the anatomical position of one joint with another (Bourgeois, 2008: 3)

D. Pain Check

Pain testing in this study used the Numeric Rating Scale (scale 0–10). Pain checks are carried out before treatment of effusion massage.

Before the pain examination is carried out, all subjects are instructed to move the shoulder joint, then hold for 15 seconds. After making a rotating motion at a certain point the subject will stop the movement and hold for 15 seconds, the subject is asked to mention one number 0 to 10 according to

what he feels when making a move around the shoulder. Number 0 indicates that the subject feels no pain at all. Figures 1-3 mean that the subject feels mild pain. If the subject mentions numbers 4-6, then the subject feels moderate pain. Figures 7-9 means that the subject feels pain that is quite severe and number 10 means that the subject feels very painful.

III. RESULTS AND DISCUSSION

A. Description of Research Subject Description

The subjects of this study were sportsmen both sports for achievement and sports for health who suffered shoulder injuries during training and competition. The number of research samples is 10 people given massage treatment

Based on the data obtained in the field, the age of the study subjects ranged from 19 years to 22 years, the subjects taken were students. at that age is adolescence where emotional factors, confidence and activity are high. This is in agreement with Sarlito (2008), in his research stating that at the age

TABLE 3. RESULTS OF DESCRIPTIVE ANALYSIS OF PRETEST DATA AND POSTTEST MASS TREATMENT

	<i>Pretest</i>				<i>Posttest</i>			
	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Std. Dev</i>
Nyeri	5,0	8,0	6,5	0,85	3,00	5,00	4,10	0,74

In table 3 it can be seen from the mean or all of the data can be seen that there is a decrease in pain perception after massage therapy, an increase in ROM can occur due to massage treatment which has increased physiological effects by relaxing muscles, increasing blood flow and reducing pain

TABLE 4. COMPARISON OF THE PRETEST AND POSTTEST MEAN VALUES OF TREATMENT

No		<i>Pretest</i>	<i>Posttest</i>	Peningkatan/penurunan	Presentase (%)
	Nyeri	6,5	4,10	-2,4	32,79%
Rata-rata Prosentase					25,416%

Massage is used to handle or rehabilitate shoulder injuries using massage techniques such as scour (friction), gosokan (effleurage) using the thumb and withdrawal (traction) and returning the joint to its position (repositioning). Supported by the opinion of [3] mentioning frirage is done by combining the scour technique (friction) with gosokan (effleurage) technique that uses the thumb to relax or eliminate muscle tension, making it easier to make traction and return (repositioning) the joint in place. Strengthened by the results of a study from [4] stating that massage and exercise combination therapy had a significant success rate in handling range of movement (ROM) in finger

of 20 years is the peak of motor development. The histogram of age distribution of research subjects can be seen in

Based on the above data it can be seen that the maximum age of the subject is 23 years and the minimum age of the respondent is 19 years. The average value of the subject's age is

B. Description of Research Data

Research data was observed based on pain perception. The data was observed as many as two measurements, namely before and after the application of massage treatments were analyzed descriptively with the aim to provide an overview of research data and to facilitate the presentation of research data. The results of the descriptive analysis on each research data are as follows:

C. Description of Masage Treatment Data

Description of data on the effects of massage are observed using pain. Data of massage treatment amounted to 30, which is from 10 subjects of massage therapy are as follows.

[2]. But this has not been maximized because ROM and pain perception have not approached normal levels.

Comparison of the mean scores of the posttest pretest in the massage treatment can be seen in the following table.

injuries with a success rate of flexion movements of 11.33% and extensions of 30, 67%.

Results of Research Data Analysis

Test Data Analysis Requirements

Analysis requirements that must be fulfilled in hypothesis testing using t-test include normality test and homogeneity test. The test results of the requirements for research data analysis are as follows.

a. Normality test

The normality test is done to test whether the research data analyzed has a distribution that is normally distributed or not. Data normality test was carried out using the Kai Square (Chi Square) test with the following results.

Massage Treatment Data

Norm test results

TABEL 4. HASIL UJI NORMALITAS DATA PERLAKUAN TERAPI MASASE

Pengukuran	ROM	χ^2	db	χ^2	P	Ket.
<i>Pretest</i>	Nyeri	0,381	3	7,815	0,944	Normal
Post test	Nyeri	2,854	2	5,991	0,396	Normal

Homogeneity Test

Homogeneity test was used to test the similarity of variance of replication observation data at the pretest and posttest. The statistical test used to test the homogeneity of variance is the F-test, which

compares the largest variance with the smallest variance. The results of the homogeneity test are shown in the following table.

1) Mass Treatment Data

TABLE 5. DATA HOMOGENEITY TEST RESULTS FOR TREATMENT OF MASSAGE THERAPY

Data ROM	Test	Varians	F hitung	F tabel	p	Ket.
Nyeri	<i>Pretest</i>	0,722	1,327	4,38	0,340	Homogen
	<i>Posttest</i>	0,544				

Based on the Wilcoxon Singed Rank Test test in table 18, the magnitude of the p-value that assesses the difference in posttest and pretest therapy, massage, sequentially is 0.005, the value is <0.005, thus it can be concluded that there are significant differences between pretest and posttest on treatment,

Anova Test Results

ANOVA test was conducted to compare between the three treatments whether there were significant differences or not. The results of ANOVA test data can be seen in the following table. Pain degree data were analyzed using the Kruskal Wallis test, can be seen in the following table.

TABLE 6. KRUSKAL WALLIS TEST RESULTS DATA PAIN TREATMENT PAIN TEST

Data	Perlakuan	χ^2	χ^2 tabel	p	Kesimpulan
Nyeri	Masase	25,690	5,991	0,000	Signifikan

Based on the mean value of the mean results of massage therapy, so that it can be interpreted that massage therapy has better success in dealing with shoulder injury.

Discussion of Research Results

The results of the study prove massage therapy, has a significant effect on healing chronic shoulder injuries in sportsmen. The healing can be seen from the level of pain that decreases after massage therapy and exercise therapy are given. These results can be seen from the results of the t-test and the Wilcoxon signed rank test which produced a

significant difference between before and after being given treatment.

Many shoulder injuries are experienced by sportsmen Shoulder injuries often occur because of excessive exercise and ability limits, and can also be caused by a lack of warm-up before exercise. Reinforced by [5] mentions injuries are soft or hard tissue damage that is correct, technical errors and physical activity that exceeds the load limit. Shoulder injuries experienced by sportsmen can be an obstacle to carrying out sports activities and for daily activities so that it requires handlers to use the

right methods so that injuries are quickly handled and not prolonged.

The results of statistical analysis prove that massage therapy has a significant effect on healing chronic shoulder injuries in sportsmen ($p < 0.05$). These results can be explained because in massage therapy there are actions that serve to deal with shoulder injuries. Management of shoulder injury massage therapy using effusion massage is done in various positions so that it effectively cures shoulder injuries. Handling of effusion massage is done in a sitting position with a pronation arm, sitting position with supination arm, sitting position on the back of the body and traction position and repositioning in the shoulder joint. Handling in each of these positions further maximizes the manipulation of the massage on the shoulder that has been injured.

There is a scour and rubbing technique that will relax, reduce muscle tension and be able to facilitate blood circulation. Handling injury using massage effusion is also given manipulation of joint withdrawals and returns that will restore the joint to its original position so that chronic shoulder injuries can be handled properly. Supported by the opinions of [6] who mentioned techniques carried out on shoulder joint injury rehabilitation using scour technique, rubbing to relax and eliminate muscle tension and withdrawal and return of shoulder joints. This is what causes massage therapy to function effectively in dealing with chronic shoulder injuries.

Healing of shoulder injuries as a result of treatment of massage therapy can be seen from the decrease in the level of pain as large as the results of giving massage reduced by 32.79%. These results can be explained that handling shoulder injuries using massage therapy is able to relax so that it will reduce the degree of pain, reduce muscle tension, improve blood circulation and restore joints in position.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

Based on the results of the data analysis and discussion in the previous chapter, the conclusion in this study is that massage therapy reduces the perception of shoulder joint pain in sportsmen in a specific way ...

B. Suggestions

Based on the results and conclusions of the study, the suggestions that can be given are as follows:

1. For Sportsmen

Using the right type of therapy when experiencing a shoulder injury is that you can use nasase therapy for more effective results.

2. For the Development of Sports Science

The results of this study can be applied in handling shoulder injuries. The results of the study can also be used as reference material to develop other studies related to handling shoulder injuries.

3. Advanced research that can know the chronic effects of massage therapy.

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ABSTRACT ONLY-ORAL PRESENTATIONS
Topic 1. Sports Science

2019

THE 5th INTERNATIONAL CONFERENCE ON
PHYSICAL EDUCATION, SPORT, AND HEALTH

Conservation of Cultural Achievement through Atlet Community Program in FIK Goes to Public

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Abstract—This community service is in collaboration with the Dinas Sosial of Central Java Province. This community service has the aim of increasing the public's understanding of cultural conservation of achievement through the field of sports, introducing several excellent sports branches owned by Universitas Negeri Semarang (Unnes), increasing public knowledge about the basic techniques of sports that will be displayed, inviting people to live healthy by exercising. This community service activity uses lecture and practice methods. The lecture method will be given by giving understanding to the community through verbal means regarding the conservation of cultural achievements, the culture of healthy living through sports, and the basic techniques of several sports that will be displayed. The Pratik method will be given by showing the basic techniques of the flagship sport FIK Unnes and inviting the people who attended this activity to try to practice it accompanied by experts in the sport. Sports that will be displayed include sports, martial arts, precision sports, and racquet sports. The sports branches that will be shown are basketball, volleyball, futsal, and sepak takraw. Martial arts sports that will be shown are pencak silat, taekwondo, and karate. The precision branch that will be displayed is petanque and wood ball. The racquet sports that will be displayed are badminton and tonis.

Keywords— *Conservation of Cultural Achievement, FIK Goes to Public*

Differences in Ball Velocity and Accuracy between Jump Shot and Standing Shot among Handball Players

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ABSTRACT

There are different possible strategies to shoot for a goal and succeed in a handball game. A simple as fast as possible shot without any intention to aim accurately can be done as the objective of this type of shot is to surprise the goalkeeper with the speed of the incoming ball. Another strategy is to shoot the ball as accurately as possible at targeted area of the goal post where it's difficult for the goalkeeper to reach. Therefore, this study aims to investigate the differences in ball velocity and accuracy while performing the jump shot and standing shot techniques. Ten UiTM handball players had a mean age of 22.3 ($SD = 1.17$) with ~3-5 years playing experience participated in this study. Three trials of jump shot followed by 3 trials of standing shot was recorded using one video camera Nikon D1800 (30fps). Means of ball velocity and accuracy was analysed in Kinovea version 0.8.25. The Independent T-Test revealed that a significant difference ($p < 0.05$) was seen in both of the shooting technique for ball velocity. However, no significant differences was seen for the accuracy of jump shot and standing shot ($p < 1.00$). These findings indicated that the ball velocity is affected by the ability of the players to produce or generate power and rely on the momentum performed. This study also provided guidelines for the coaches to train their players with variables strategies depending on the situation and the timing to make a goal.

Keywords: accuracy, jump shot, standing shot, handball

Effectiveness of Sport News Presenter Training

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Abstract—At present, athletes have many opportunities to work in the field of sports, not only as a coach but also in other sectors, that is sport news presenter that has not been explored. One reason is the lack of knowledge about how to make a career as a sports news presenter and make them less confident. Seeing these problems, it is very necessary to hold a training that serves to provide knowledge and experience as a sports news presenter. However, how effective the workshop is in increasing their interest in becoming a sports news presenter is still unknown.

Keywords—*sport journalism, sport news presenter, sport management*

Does Fatigue Influence Jump-Landing Mechanics and Functional HQ Ratio in Youth Soccer Players? Implications for Anterior Cruciate Ligament Injury Risk Assessments

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Abstract

Background: The high prevalence of non-contact Anterior Cruciate Ligament (ACL) injuries in youth soccer players can be considered a potentially career-threatening injury. This study aimed to investigate the effect of soccer-specific fatigue on jump-landing mechanics and muscle strength imbalance markers of ACL injury risk in youth soccer players. **Methods:** In a single-group repeated measures design, seventeen ($n = 17$) male recreationally trained youth soccer players (age: 16 ± 1 years; body mass: 54.3 ± 7.0 kg; height, 1.6 ± 0.1 m) completed a 5 min high intensity soccer specific fatigue simulation developed for youth players (YSFS⁵) twice. Prior to simulation (time 0 min), immediately after simulation (time 5 min), 15 min (time 20 min) and 30 min (time 35 min) post-simulation players were tested for either five trials of jump landing task assessed using the Landing Error Scoring System (LESS), or five maximal dominant limb isokinetic contractions for concentric quadriceps (Q_{con}) and eccentric hamstrings (H_{ecc}). **Results:** A significant increase in total LESS score were observed over time ($F_{1,7, 27} = 56.2, P < .001$), and only at time 5 min for H_{ecc} ($P = .019$) contraction. There were no significant changes in Q_{con} and functional HQ ratio after simulation. **Conclusion:** These findings suggest a greater risk of ACL injury in male youth players during fatigue as a consequence of improper jump-landing mechanics and eccentric hamstrings strength impairments.

Keywords: anterior cruciate ligament, jump-landing, eccentric, soccer, youth

Clarifying Terminology in Movement Classifications: Fundamental Versus Functional Movement

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Abstract— Confusion exists regarding the use of fundamental and functional movements as both terms have been used differently and interchangeably by experts from Physical Education, and Sports and Exercise Science. Fundamental movement skills are defined as basic learnt movement patterns that do not occur naturally and are suggested to be foundational for more complex physical and sporting activities, and are classified as locomotor, manipulative, and stability skills. In contrast, functional movement has been described as the ability to perform locomotor, manipulative, and stabilising actions while maintaining control along the kinematic chain and includes fundamental movements and weak links or functional limitations in the human. In more recent documents and studies, the two terminologies have been used in ways that confuse most readers and researchers alike. A lack of consistency in terminology can lead to problems when trying to replicate and compare results across studies, increasing the likelihood of misinterpreting conclusions. Therefore, the objective of this concept paper is to clarify the definition for both terms, and discuss the appropriateness of current assessment methods for both fundamental and functional movements. The following databases were searched for relevant articles: Scopus, SportDiscuss, ScienceDirect, ERIC, Springerlink, and PubMed. There was no specific timeframe and each search was conducted to include all possible years of publication specific to each database. Key terms for the search included “fundamental movement skill”, and “functional movement in physical activity and sports”. Searches were conducted using single and combined terms. Relevant journals and articles, and reference lists were also manually searched. It can be concluded that Physical Education experts seem to favour “fundamental movement skills” and have utilised this term for a long time, while experts from Sports and Exercise Science employed the same term later but used it to represent fitness components and to assess for movement limitations in order to individualise rehabilitation and conditioning programmes. As for assessment methods, instruments such as the Movement Assessment Battery for Children 2, the Bruininks-Oseretsky Test for Motor Proficiency 2, and the Korper Kōordinations Test für Kinder are currently in use but the Functional Movement Screen is currently being investigated by a number of investigators as the main instrument for functional movements.

Keywords— *movement, fundamental movement, functional movement*

Development of Android Based Petanque Sports Score Recording System

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Abstract—The purpose of this study is to make an application about the android-based petanque sports scoring system. This type of research is development research. This development research method is using the development method of research and development Borg and Gall. This research will be carried out in Jawa Tengah. This research requires 8 months of completion time. this research involved experts in the field of sports management, members of the Jawa Tengah province federation petanque sport organization, arbitre petanque sports, petanque sports athletes, petanque sports coaches, and android application maker experts. This research is a new and unprecedented study, and an application that will be created has never been used in a petanque sports competition system. This android based scoring application is expected to be the first step in how to manage a match in petanque sports based on online and android.

Keywords— *Live Score, Petanque Tournament.*



ABSTRACT ONLY-ORAL PRESENTATIONS
Topic 2. Physical Education

2019

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The Difference of Gross Motor Development among Martial Arts

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Abstract—The purpose of this study is to identify the level of development of motorized children in martial arts, silat, taekwondo and karate in Selangor. **Method:** The study was ex post facto involving 90 subjects (Silat = 30, Taekwondo = 30 and Karate = 30) from six to 10 years 9 months. Ulrich (2000) gross motor development test was conducted to measure the rate of development of children's gross motor in martial arts for locomotor and manipulative skills. Raw scores are transcribed to obtain locomotor standard scores (SPL), manipulative standard scores (SPM), locomotor age equivalence scores (AEL), manipulative age equality score (AEM) and Gross Motor Development Quotient (GMDQ) scores. These scores were analyzed using ANOVA software to compare min achievements of children according to martial arts. The findings show that there is a significant difference in mean AEM score between martial arts [$F(2, 87) = 6.814, p < .05$]. For Post Hoc Test analysis, there was significant difference between AEM score between silat and karate ($p = .02$) and between silat and taekwondo ($p = .007$). While there is no difference between AEM score between taekwondo and karate ($p = 0.99$). There is no difference between AEL score [$F(2, 87) = 0.37, p > .05$] and mean score of GMDQ [$F(2, 87) = 0.034, p > .05$] between silat, taekwondo and karate. **Discussions:** Studies show that there are deviation of rough motor development in manipulative skills of children between martial arts. Based on the findings of the study, there is a gross motor development for every child according to martial arts but their development is still in line with their chronological age. The GMDQ score shows that the development of children's gross motorbike in silat, taekwondo and karate is still at a low level.

Keywords— gross motor, martial arts, locomotor age equivalence, manipulative age equivalence, GMDQ score

The Use of ICT to Enhance Learning via the Repricoral Teaching Style

Chua Wei Guang

Abstract- Objective : This study examined the impacts of enhancing Mosston's repricoral style of teaching with Information Communication and Technologies (ICT). **Methods :** In a pre-/post- test design, 72 secondary school students (40 boys and 32 girls) were assessed on their basketball free throw technique using skills assessment rubrics at the start and the end of a 2 lesson module. They were assigned to an experimental and a control group, with both groups exposed to the reciprocal style of teaching. The experimental group students' teaching were complemented with ICT. Two samples t-test were used to analyse group differences in students' basketball free throw technique while paired sample t-test were used to analyze the pre and post test scores of the groups. In addition, selected students of the experimental group were surveyed regarding their perceptions towards the usage of ICT in their PE lessons, using semi-structured interviews. **Results :** he effects of ICT on Mosston's repricoral style of teaching were inconclusive as both the control group and the experimental group showed significant improvements in their performance. However, qualitative findings revealed that 1) Students enjoyed learning at their own pace. 2) Students felt more discussion and feedback were generated during the ICT sessions compared to normal PE lessons. 3) Students took the novelty of using ICT in a PE setting.

Sitting is the New Smoking

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Abstract—In today's society, the deteriorating rate of physical activity is a rapidly increasing concern amongst the population. This is due to the fact that physical inactivity is a leading cause of non-communicable diseases, such as cardiovascular diseases, diabetes and obesity. Additionally, the damaging impacts of these sedentary lifestyles in which lacks bodily movements, is equivalent to the act of smoking. The health of today's children is at serious risk from the complications of obesity and physical inactivity provoked by modern lifestyles that required less movements. Technological advancement which help to simplify many tasks will bring humanity into an era of excessive sitting. Studies had reported that by reducing total sitting time by 50% from sedentary behaviour activity, one could see a 2.3% decline in all-cause mortality. Traditionally, the aims of physical educators and exercise scientists are to encourage individuals to participate in health-enhancing exercise, especially during their leisure. They recommend a duration of 30 minute per day or 150 minute per week as the minimum amount of activity required for achieving health benefits. However, recent studies had suggested that this might be not good enough if the individual spend most of his remaining time in a day just by sitting. Studies have suggested that sitting more than six hours or more hours a day could cause 19% more likely to die over the next two decades than those who spent less time of sitting. New exercise prescription that emphasis on less sitting and more standing up plus move more often should be consider seriously. Further in-depth study should be carried out in particular to gain more insights into the risk associated with excessive sitting in individuals who meet the physically active recommendations and yet sit for most of the day for example the university students, who need to spend most of their time sitting especially when attending classes and doing revision. Excessive sitting carry health risks that are independent of physical activity levels needed to be addressed carefully. If the data shows a positive correlation, future physical activity guidelines may need to include recommendations addressing daily sitting time as part of their investigations when implementing study related to physical activities. This study will investigate the current scenario in Malaysia universities and compare the differences of sitting time profile among them.

Perceived and Observed Competence of Pre-Service Teachers in Teaching PE in Singapore Primary Schools

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Abstract—The purpose of this study was to investigate pre-service teachers' (PTs) perceived and observed competency in teaching PE in schools in Singapore during their five-week teaching practice (TP) while undergoing Physical Education Teacher Education (PETE). 23 first year PTs from the Postgraduate Diploma in Education program in NIE, specializing in teaching PE in the primary level, were recruited. PTs perceived competence and observed competence were assessed using an adapted Perceived Competence Scale questionnaire and the 'Assessment of Performance in Teaching' (APT) form respectively. PCS were collected before PTs embarked for their TP. A total of three APT forms were collected from PTs three lesson observations that was observed by their cooperating teachers (CTs) and NIE supervisor (NIES). The findings suggested that there was a significant difference (p -value < 0.05) between their PC and OC for the process of 'Positive Classroom Culture' (PCC) with their PC being much lower than OC. This were mainly attributed to lack of opportunities to implement learnt strategies on how to establish PCC, personality of PTs paired with negative past experiences when interacting with students in a school context and/or the daunting task of creating a PCC in a short period of time. In conclusion, PTs were prepared to teach in schools competently despite still undergoing the PETE program suggesting that the 'Physical Education Teacher Education' (PETE) program in NIE sufficiently equip PTs with the necessary skills they require.

Keywords—*Perceived competence, observed competence, pre-service teachers, positive classroom culture, physical education teacher education.*



ABSTRACT ONLY-ORAL PRESENTATIONS
Topic 3. Health and Environmental Sciences

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Community Perception toward Implication of Green Infrastructure of Sports Facilities in Semarang City

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Abstract—The relationship idea between sport and environment began during the 1994 Winter Olympics in Lillehammer, Norway when the first issue about the negative impact of the sports facilities' construction on the environment was discussed. With the development of this thought, there was also a change in building construction. This can be seen from the change of Gray Infrastructures construction into the construction of Green Infrastructures. The aim of this study was to assess the community perception toward implication of green infrastructure in sport facilities. This quantitative descriptive study uses a questionnaire to 90 respondents who live around the facility as its research instrument with four indicators, namely ecology, health, socio-cultural, and economics. After processing the data, researcher found that community agree if there were implication of green infrastructure on sport facilities infrastructure derived with a percentage of 68.17%, while 31.83% said they disagree. However, when we see on each indicator shows 50.70% of the public disagree if there is an application of green infrastructure in ecological indicators.

Keywords—*Sport Management, Sport Facilities, Green Infrastructure.*

Effect of Community-Based Exercise on Blood Pressure in Workplace: A Retrospective Study

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Abstract—It has been reported that exercise intervention is an effective method to control blood pressure. Hence, physically active lifestyle is highly recommended to prevent chronic diseases from developing among office workers. The primary aim of this study was to determine the effectiveness of community-based exercise in improving blood pressure among office workers. This retrospective study examined data from office workers with sedentary lifestyle (N=84). Thirteen male and seventy-one female office workers (age; 37.15 ± 7.8 years old) participated in the community-based exercise intervention for 12 sessions within 3 months. Community-based exercise intervention involved both aerobic and resistance training. Paired T-test ($p < 0.05$) was used to compare the participant's blood pressure, pre and post community-based exercise with the participant's baseline blood pressure. There was statistically significant reduction in systolic blood pressure (SBP) from week zero (125 ± 14 mmHg) to week 12 (121 ± 14 mmHg) ($p < 0.00$). There was also a statistically significant reduction in diastolic blood pressure (DBP) from 83 ± 10 mmHg (week zero) to 81 ± 10 mmHg (week 12th) ($p < 0.031$). Therefore, community-based exercise intervention should be recommended for the maintenance of blood pressure among office workers as part of a preventive method for chronic diseases in the workplace.

Keywords— *Community-Based Exercise Intervention, Sedentary Office Worker, Blood Pressure*

Knowledge, Attitude and Practice of e-Cigarette among FSR Students

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ABSTRACT

E-cigarette which commonly known as vaping has gain popularity among youngsters. It is to provide similar smoking sensation as cigarette but without having to burn tobacco. The purpose of this study was to compare knowledge, attitude and beliefs, and the reasons that influence e-cigarette use among FSR students. A total of 228 students (male, $n = 125$; female, $n = 103$) participated in this study. Participants were required to answer a set of questionnaire. Results indicated there is no significant difference on knowledge of e-cigarette between males ($M = 2.817$, $SD = 0.4870$) and females ($M = 2.745$, $SD = 0.4569$; $t(226)$, $p = .25$, two-tailed, (mean difference = $.072$, 95% CI : -0.52 to 0.197). Significant difference were found in attitude and belief between males and females, male ($M = 2.9080$, $SD = 0.64253$) and females ($M = 3.4282$, $SD = 0.70285$; $t(226)$, $p = .000$, two-tailed). Males participant tend to show positive attitudes toward e-cigarettes compared to females. Males accounted for 79.2% ($n = 99$) of e-cigarettes users and 20.8% ($n = 26$) male participants responded never use or try e-cigarette even one or two puff in their life. A total of 71.8% ($n = 74$) female participants claimed had never used e-cigarette. Variety of flavored offered by e-cigarettes (83.3%), e-cigarettes looked cooler than conventional cigarettes (57.0%), e-cigarettes were cleaner than conventional cigarettes (53.9%) are the reasons for the students to use e-cigarettes.

Keywords: E-cigarettes, knowledge, attitudes, beliefs, practices

Immediate Effects of Foot Massage on Renal Blood Flow and Heart Rate Variability in the Elderly

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ABSTRACT

Currently, the number of patients with chronic kidney disease is increasing. The main problem in chronic kidney disease patients is the reduction of blood flow to the kidneys. In the elderly, it is found that blood flow to the kidneys is decreased too. The purpose of this study was to compare the effects of renal blood flow and heart rate variability before bed rest, after bed rest, and after the trial in the elderly. The 27 healthy elderly volunteers were divided into two groups: foot massage group (14 persons) and control group (13 persons). All of them were received bed rest for 15 minutes and then got a foot massage or bed rest for 15 minutes. Volunteers were measured for renal blood flow and heart rate variability for 3 times. The results found that renal blood flow was not significantly different from the pre-treatment and no difference between groups. In massage group, found that the standard deviation of the normal-to-normal intervals (SDNN), the square root of the mean squared differences of successive normal R-R intervals (RMSSD), and low frequency (LF) were significantly increased ($p < .05$). The control group found only RMSSD was significantly increased ($p < .05$). However, there was no difference between groups comparison. Conclusion, the foot massage, and bed rest could increase the heart rate variability by increasing the activity of the parasympathetic nervous system. But it does not affect the renal blood flow.

Keywords: Foot Massage, Renal blood flow, Heart Rate Variability, Autonomic Nervous System



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