

# ISPHE 2022

Proceedings of the 6th International Seminar on Public Health  
and Education

Semarang, Central Java, Indonesia  
29 June 2022

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# **Proceedings of the 6<sup>th</sup> International Seminar on Public Health and Education**

29 June 2022, Semarang, Central Java, Indonesia

*ISPHE 2022*

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## Preface

Universitas Negeri Semarang are delighted to introduce the proceedings of the 6th International Seminar on Public Health and Education 2022 (ISPHE 2022) with the theme “Active, Healthy, Productive, and Sustainable Community through Post Pandemic Recovery”. This conference has brought researchers, educators and practitioners around the world.

The 6th ISPHE 2022 Proceedings contains 32 articles. Consisting of 11 applied technology in sport and health-themed articles, 2 health education-themed articles, 12 physical education-themed articles and 7 public health-themed articles. The 6th ISPHE 2022 collaborates with ACPES and several leading Indonesian universities in the fields of applied technology in sport and health, health education, physical education and public health. The 6th ISPHE 2022 aims to gather all knowledge and transformation to post pandemic recovery in the fields of applied technology in sport and health, health education, physical education and public health.

Finally, we would like to express our gratitude and appreciation for all committee and the reviewers who helped us maintain the high quality of manuscripts included in the proceedings published by EUDL. Also, we are thankful to all the authors who submitted papers, because of which the conference became a story of success.

Conference Chair,

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# The Role of Social Media to Attract Virtual Basketball Championship's Participant during Pandemic Era

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**Abstract.** The Corona Virus originating from China entered Indonesia in March 2020. Regarding the number of infections caused by the Corona Virus in various parts of the world, the spread of this virus can be said to be a Pandemic. The pandemic has also caused public facilities and infrastructure to be temporarily closed, such as sports arenas, stadiums so that these things affect various activities, for example organizing sports events. Those statement showed that innovations related to organizing sports events are starting to emerge by involving technology in its implementation or it can be called virtual championships. With this condition, organizing committee needs to use technology for promoting their sport events, one solution that can be occurred is using social media. The purpose of this study was to measure the role of social media in attracting participants in a virtual basketball championship during a pandemic. This research is a quantitative research with a non-experimental research design. This study used survey methods and questionnaire sampling techniques. The sample used was 30 respondents. Social media variables include social media as a medium of information, product reviews, brand equity and brand attitude. Data processing using IBM SPSS 25 software. The results of this study found that the role of social media in attracting participants was categorized as strong and social media had a 48.9% influence in attracting participants. It can be concluded from this research that social media has a strong role to attract participants in the virtual basketball championship.

**Keywords:** Sports management, sports event, sports marketing, social media, virtual.

## 1 Introduction

Corona virus originating from China entered Indonesia in March 2020. This virus has another name, namely severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which attacks the immune system through direct contact and human respiration. Symptoms given by this virus are fever, cough, headache, diarrhea, often feeling tired, no appetite, and others [1]. With this virus, the activities carried out by humans have undergone many changes in order to reduce the spread of the virus, such as the use of masks, maintaining distance between individuals, limiting



activities carried out with many people, and others [1]. An example of limiting activities from the virus is limiting the holding of the championship that will be carried out.

In general, the implementation of sports championships is attended by many people or groups who participate, either as supporters who support or individuals/teams who compete. This causes many people to flock to the venue at the time of implementation [2]. This is in contrast to the state of the pandemic which requires individuals to keep their distance and limit activities that involve large numbers of people. With this, many sports championships have to be postponed or even canceled [3]. Judging from this incident, innovations are starting to emerge regarding the implementation of sports championships, namely by involving technology in its implementation or can be called virtual championships.

In a pandemic, many championships have been held using virtual methods, one of which is basketball. Virtual championships can also be held in other sports, for example e-sports [4]. There are several examples of basketball championships being held virtually in Central Java, such as Pantasi Basketball 2021 and Sekawan Cup 2021. Organizing this virtual championship has a good opportunity because it still shows the existence of competition even though it is presented in a virtual theme [5]. Virtual championships can be another option for organizers if they cannot carry out offline competitions [4]. However, in the virtual implementation process, the event organizer as the organizer cannot be separated from disturbances and problems, such as the implementation of promotions, inaccurate broadcast times, to participant saturation due to the championship duration being too long [6].

According to Indika and Jovita (2017), promotion has a big influence in the implementation of the championship [7]. However, the pandemic situation causes the promotion (dissemination of information) of the championship through pamphlets and others to also be carried out using a virtual method, so that the use of social media as a promotional medium is suitable to be carried out during a pandemic. The use of social media as a promotional media is very suitable to be applied to the implementation of virtual championships [8]. Even more so if the target participants of the championship are teenagers who usually have gadgets/smartphones that can access social media. However, currently, various studies only discuss the application of social media to promotions to attract the attention of viewers and companies to provide sponsors [9]. Until now there has been no research that discusses the extent to which social media plays a role in attracting participants in a virtual basketball championship. In fact, by knowing how big the role of social media is to attract participants, this can be useful as information for event organizers who want to hold virtual championships.

### **1.1 Objectives**

Based on backgrounds, the purpose of this study was to determine the role of using social media in attracting participants to take part in a virtual basketball championship.

## 2 Literature Review

The ease of communicating and finding information can be supported by technological developments supported by globalization. With the influence of globalization, information can be found easily through mobile phones, gadgets, and computers connected to the internet. Information needs can be used as a reason for someone to use social media on their device. The use of social media cannot be separated from information that is currently being discussed, or other important information. The content of the information posted on social media mostly comes from the writings of the social media users themselves. Social media can also be interpreted as a journalistic forum for its own users.

Social media beats electronic media and print media such as television, radio, newspapers and tabloids as a medium of information for the public. In addition to being easily accessible, social media is also quick to disseminate written news. This makes social media the main source of information and other media supporting information. With globalization, social media has become the foundation for finding all information because it is easy and fast to use. The main information media was taken over by social media with a number (65.6%), followed by other media (25.4%), and responses that referred to places (9.0%).

Social media is a means of interaction from individual to individual or individual to other groups by using network-based applications and using an internet connection. Social media is a means to get along with online which makes it possible to communicate remotely [10]. Social media can also allow users to share messages in the form of text, images, videos, and audio [11]. The use of social media has become important and needed with globalization [12].

The dynamic impact of globalization has resulted in many individuals having their own smartphones connected to the internet. Of internet connection users from all over the world, around 70% of them are active users of social media [13]. Apart from smartphones, social media can also be accessed via computers, laptops, tablets, and others. Common examples of social media that are often used are facebook, twitter, instagram, tiktok, and whatsapp [14]. Besides being used to interact with other individuals, social media can also be used to do business, support learning activities, information/news media and others. Social media makes it easy for humans to interact and exchange information [15].

The number of social media can be grouped according to how they are used, what functions, and platforms that social media can be used on. Social media has its own uniqueness to attract users to use social media [16]. Social media can also be popular with its uniqueness and the number of individuals who use social media. According to Puspitarini and Nuraeni (2019) types of social media have 6 major categories, namely [8]:

### Social Networking

Social Networking is social media that aims to interact between users in a virtual world through an internet connection. The use of social media makes it possible to form new networks of friends. The connection of users with new friends can be grouped through the similarities of social media interactions used between users, for example the similarity of hobbies, likes, and followed accounts listed on social media.

### Blog

Blogs can be interpreted as a user facility in social media activities, such as uploading photos and videos, sending comments, providing and getting information from web links. Blogs can also be used as a means of exchanging information and so on in social media activities.

#### Microblogging

Microblogging almost has similarities in function with blogs. The difference is that microblogging can facilitate media users with writing. Users can upload by writing activities and can write their opinions. This type of social media can be associated with the popular Twitter social media by facilitating its users by writing only at the first appearance.

#### Media Sharing

Media Sharing allows its users to store and share media such as documents, audio, photos, videos with online storage. This allows saved files to be accessed anytime and anywhere without having to save files that have been saved to online storage. Examples of media sharing are Google Drive, YouTube, Facebook, and Flickr.

#### Social Bookmarking

Social Bookmarking or social bookmarking is a social media that is used to store, manage, and search for information and news online. Social media is a site/website that can be accessed to get news as well as write news. An example is reddit.

#### Wiki

Wikis can be categorized as content media in the form of sites where the uploaded content is the result of the collaboration of more than 1 content creator. Every user who has access to content has the right to change content that has been published on social media.

Social media can have a lot of influence on the marketing of a product, one of which is product reviews conducted through social media. Product reviews can be interpreted as consumer reviews about the products they buy and use. Products used by consumers can be in the form of goods/services. Many consumers will write reviews along with pictures and their responses regarding the use of products to related social media [17]. With the use of social media, many consumers choose to shop online. That way, reviews related to products posted on social media are an influential factor for millennial buyers [18].

A review is a summary of a review carried out on objects or services that have been used by the author. The summary of this review can be in the form of images, comments, and videos. According to [19], the review method is a method that is categorized as formal in assessing and providing a thorough description of a question. Reviews are widely used on social media to get comments, feedback, opinions, and criticisms of a product used. The good and bad of the comments on the product can influence the customer's choice of that product. Another way to find out whether a product is good or bad is to look at the reviews of the product itself [20].

In terms of promoting with the online system, there are several supporting factors [21], including:

Transactions/Fees

Transactions and costs are the main factors for consumers to buy goods. Surely consumers are tempted by goods that have a price below the market price. By shopping online, consumers can easily choose the goods they want.

#### Intensive Program

Online shopping has several programs that are in the application / website. Programs provided to consumers must be intensive and sustainable. The program in the application is an updated program (up to date) so that consumers know what goods are good and good at this time.

#### Website Design

Display in the application also determines the choice of consumers. Consumers prefer an easy-to-use and understandable interface when looking for goods/services using an application. Consumers also choose an attractive appearance on the website/application they use. After all, the appearance is the face of the website/application, so the attractiveness of the appearance is a big influence on consumer selection.

#### Interactivity

Feedback from sellers to buyers or vice versa is also an important influence in online business. Although not face to face, interactions between sellers and buyers can be through chat and applications on social media. Just like the buying and selling process in general, good feedback from sellers and buyers can influence consumer choices on the products sold.

### **3 Methods**

This research is a quantitative research with a non-experimental research design (descriptive research) using survey method. Collecting research data using a questionnaire with a Likert scale which has variables, including the role of social media, manager interaction with social media users, interaction between social media users, brand equity, brand attitude, and participant decisions. Respondents filled out the questionnaire by using a google form. The research was conducted on 15-19 February 2022 virtually by distributing questionnaires through google form. The population is the participants of the 2021 Sekawan Cup Basketball and Pantasi virtual basketball championships. Using purposive sampling, there are 30 respondents who fulfill the inclusion criteria, such as willing to be respondent, participant of Sekawan Cup or Pantasi, and person in charge for registration.

### **4 Data collection**

The data obtained from the respondents were calculated using a Likert measurement scale. According to [22] the Likert scale is used to measure attitudes, opinions of a person or group towards social phenomena which are then used as research variables. To facilitate tabulation, the answers contained in the questionnaire were modified quantitatively by assigning a number (score) to each statement item.

**Table 1.** Likert Scale Score

No	Answer	Score
1	Strongly Agree	4
2	Agree	3
3	Disagree	2
4	Strongly Disagree	1

## 5 Results and discussion

The data obtained through the questionnaire has respondents with an age range of 14-19 years in the category of teenagers. Teenagers often interact and get information through social media [23]. This has caused many championship organizers, especially virtual ones, to promote their championships through social media to get more interest from teenagers to take part. Social media promotion can influence many participants who want to take part in the championship [24]. Promotion also has a role to play in making the successful holding of a championship.

Social media has several properties that can be used as promotional media. These properties are examples; social media as a medium of information, product reviews, brand equity and brand attitude. This can be a unified variable and associated with social media variables that have an influence on the participants' decision to take part in virtual championships. Both variables must be calculated to find the relationship in order to be investigated for research. Analysis of the relationship between the two variables was calculated using product moment correlation analysis with IBM SPSS 25 software is showed in table 1 below:

**Table 2.** Result of Correlation Analysis between Social Media and Participant Decision

<b>Correlations</b>		
	Social Media (X)	Participant Decision (Y)
X Pearson Correlation	1	.699**
Sig. (2-tailed)		.000
N	30	30
Y Pearson Correlation	.699**	1
Sig. (2-tailed)	.000	
N	30	30

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Based on table 1 above, the product moment correlation analysis test using the Pearson correlation, a value of 0.699 is obtained, then the relationship between social media and participant decision to join the event has a strong relationship. Besides, the researcher also conducted the R square test to determine how much social media affecting participant decision to join the event. From the table 2, it is found that the adjusted R Square obtained is 0.489, which means that the effect of using social media as marketing tool on participants' decision is 48.9%.

**Tabel 3.** Result Analysis of Social Media Influence to Participant Decision

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699 <sup>a</sup>	.489	.471	.30326

a. Predictors: (Constant), X

With the analysis of the data above, it shows that social media and attracting participants in the virtual basketball championship have a strong relationship. This is supported by previous research that describes the results of promotions carried out using social media that can attract participants' interest [25]. This statement is also supported by several studies which state that the use of social media has a positive and significant effect on purchasing decisions made by consumers. This is because social media is a type of media that is often used by potential consumers and has the advantage of being easy to access and use.

Many companies and groups use social media as a promotional medium to introduce their products to consumers. Besides being easy to use, their reason for using social media is that many target consumers use social media in their daily lives using their mobile phones. Like teenage consumers who have left print media such as magazines and newspapers as a medium for seeking information, they tend to use social media to follow current trends [16]. Social media is considered faster in getting information and can be accessed anywhere.

In the demographic data of researchers in Sekawan Cup 2021 and Pantasi Cup 2021, championship participants are in the age range of 14-19 years with the category of teenagers using WhatsApp (34%), Instagram (31%) and Youtube (23%). The use of social media in Indonesia has a high number for adolescent users. This is supported by Adhitomo (2017b), with the statement that the use of social media whatsapp and instagram is widely used by teenagers among teenagers [11]. On this basis, the virtual championship organizing committee uses social media as a promotional and communication medium for participants and potential participants.

Social media such as Instagram are used as promotional media by virtual championship organizers to more easily communicate with potential participants and participants. With easy communication, organizers can use it to get input, such as criticism and suggestions to complaints. However, indirect marketing also occurs offline by word of mouth. If the organizers can combine online and offline marketing models, the products/services offered will be faster and easier to accept. Social media has the advantage of being easy to use, has a wide reach, and has various types of content such as images and videos to make promotional media acceptable to potential participants by just looking at the social media used.

The use of social media technology as a promotional media must be as much as possible given the restrictions/lockdowns that apply to the Covid-19 pandemic which do not allow crowds to gather. This statement is highly recommended for virtual championship organizers to manage promotional media as well as possible in attracting participants to take part in the virtual championships they organize. The results of this study are in line with previous research which stated that consumers in choosing products/services will seek information through social media to consider in purchasing [26]. Social media has the advantage of a wide reach so that organizers can determine locations on a large scale in capturing potential participants. Prospective participants in remote locations can only view content created by the organizers on social media

to consider whether or not to take part in the championship. Inside the content there is a column containing comments and reviews about how the championships have been held previously.

Reviews in social media such as forums, comments, and social media accounts can affect the purchase of a product/service made by consumers. Like on Instagram and YouTube social media, there is a comment column from consumers that can be seen by anyone who accesses the account. From the comments column, you can see whether the responses are good or not from the products offered.

## 6 Conclusion

Participants of the Sekawan Cup Basketball 2021 and Pantasi Virtual Basketball Championships 2021 are teenagers who use social media in their daily lives. Social media that is used as a promotional medium by the organizers of the virtual championship has an important role in attracting championship participants. Besides being able to cover a wide area, social media can be easily accepted in promotions for teenagers as target participants. Teenagers who often interact through social media are easier to understand and often see promotional content distributed through social media. The influence of content packaging is also influential in getting the attention of teenagers to see promotions on social media.

Content on promotional media may include photos and videos that can attract interest from potential participants. In addition to photos and videos, there are comments or reviews given by participants who have participated in the related basketball virtual championship. Reviews from participants who have participated in the championship can give potential participants an idea of the championship they will participate in. Indirectly, potential participants can find out whether the championship is good or not just by reading reviews on social media.

In the virtual basketball championships of Sekawan Cup Basketball 2021 and Pantasi 2021, the organizers make good promotional media through social media. This is evidenced by social media which has a strong influence in attracting virtual championship participants.

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# Analysis of Anthropometric, Flexibility, and Endurance of Athletes in Puslatkab Jepara

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**Abstract.** This study aims to determine the level of anthropometry and physical condition, such as flexibility and endurance, of Jepara district training center athletes (Puslatkab). The method used in this study is quantitative with a descriptive approach. The population used is 59 athletes of Puslatkab Jepara and the sampling technique used is total sampling. Data collection was carried out at Gelora Bumi Kartini sports center. The instruments used are 1) height and weight test 2) sit and reach test; 3) 2.4 km running test and Multistage Fitness Test (MFT). The data were obtained from tests and measurements on athletes at Puslatkab Jepara and then analyzed by the IBM Statistic SPSS version 25 application and Microsoft Excel 2010. The data analysis used was descriptive quantitative analysis with percentages. Based on the data analysis, the results showed that: 1) the average anthropometric size was in the acceptable category of 23.83 kg/m<sup>2</sup>, 2) the average flexibility in the less category was 13.24 inches, 3) the average endurance in the less category was 29,91 ml/kg/min. The recommendation for future research is to discuss the relationship between physical condition and nutritional status to complete the athlete coaching process.

**Keywords:** Anthropometric, flexibility, endurance, Puslatkab Jepara.

## 1 Introduction

In 2020 the Jepara Regency Government officially launched a training center to improve sports performance in Jepara Regency. Athletes that join the training camps are athletes who previously had achievements in various provincial, national, and international championships. One of the training center programs in the Jepara Regency is monitoring the physical condition of athletes. According to [1], every athlete must have physical conditions such as strength, endurance, muscle power, speed, coordination, flexibility, agility, balance, accuracy, and reaction. Performing an analysis of physical conditions can provide information related to the previous level of physical fitness to be a benchmark for the preparation of different coaching programs. This study aims to determine the results of the anthropometric analysis, flexibility, and endurance of Puslatkab Jepara's athletes which can be used as a basis for coaching every athlete in the future. The author hoped that this study could provide information for coaches and athletes to be used as a factor to improve performance. It helps the athletes to achieve optimal

performance in every sports competition. In addition, this research is expected as additional information for further research.

## **2 Literature Review**

The role of sport today can be used to build a spirit of nationalism by building a national spirit. It can be shown when an athlete in a sport achieves optimal performance in a match, it will create a sense of pride for the people in a country. To help improve the athletes' performance, sports coaching needs that are carried out regularly and well structured [2]. One way to do sports coaching is to maintain physical condition. Physical condition is one element that cannot be separated from the sport. The better the physical condition of an athlete will affect performance when competing [3]. Physical condition is one of the factors that determine the performance or appearance of athletes so low physical conditions will result in non-optimal skills [1]. The components of physical condition consist of strength, agility, power, flexibility, speed, coordination, reaction, balance, endurance, and accuracy [4]. According to [5], optimizing some processes of improving and developing the physical condition of an athlete, it can be done according to the characteristics of each sport. Components of the excellent physical condition need to be owned by every athlete, to be able to maintain and improve performance [6][7]. Some anthropometry things that support performance in some sports include good height, weight, arm length, and leg length [8][9].

Flexibility is a person's ability to maximally perform movements in the joint space. Some sports such as Martial art requires a relatively high level of flexibility [10][11]. Following the opinion expressed by [12], where flexibility (flexibility) is one factor that influences kick results in the sport of taekwondo to achieve the right target. In addition, increasing muscle flexibility can help athletes prevent muscle injury [13]. Endurance is a condition where the body can do work/activity for a long time and does not experience excessive fatigue (Hughes et al., 2018). Sports that last for a long time and varied movements can be categorized as sports that require high endurance [14][15][16].

Factors that affect achievement other than physical condition are body structure and posture. Body structure and posture consist of 1) body height and length measurements; 2) large size, width, and weight; 3) body shape (somatotype). Body anthropometry also cannot be separated from each characteristic of each sport. This is supported by research conducted by [17], that the elements of posture and body shape or anthropometry support the formation of motion according to the sport being developed. According to [18], each sport has its criteria that aim to optimize performance. Considering several factors that have been discussed, achievement development must be carried out early and structured.

## **3 Methods**

The type of research used in this study is quantitative with a descriptive analysis approach that only describes or explains the results of anthropometric measurements, flexibility, and endurance of athletes at the Jepara district sports center. The variable in this study is a single variable, namely the results of anthropometric measurements, flexibility, and endurance of athletes at the Jepara Regency Center. Samples are part of a group of populations taken with

specific procedures that can represent several populations [19]. The sample taken from this study was the entire population of Jepara Regency Puslatkab athletes as many as 59 athletes, so the sampling technique used was total sampling.

#### 4 Data collection

The data collected is primary data through tests and measurements on each variable. These tests and measurements include anthropometric, flexibility, and endurance measurement tests in athletes. Anthropometric measurement tests in the form were collecting sample's weight and height to fill the data. The analysis data is processed through the process of entry, coding, processing, and analysis. Entry is the process of entering age data and measurements of weight and height into a table that has been prepared. Then, from the weight and height measurements, the respondent's body mass index was calculated using the formula:  $BMI = \text{Body Weight (kg)} / \text{Height (m)}^2$ . Coding is the provision of codes in the form of numbers to facilitate the analysis. After data collection, the average result is calculated for each anthropometric test participant. The results of the respondent's BMI calculation will then be categorized. Data from the flexibility test results using the sit and reach test instrument and aerobic endurance using the 2.4 km running test and the Multistage Fitness Test (MFT) were also processed through the process of entry, coding, processing, and analysis. The test results are then categorized based on the table below: The type of research used in this study is quantitative with a descriptive analysis approach that only describes or explains the results of anthropometric measurements, flexibility, and endurance of Jepara district training center athletes (Puslatkab). The variable in this study is a single variable, namely the results of anthropometric measurements, flexibility, and endurance. Samples are part of a group of populations taken with specific procedures that can represent several populations (Siyoto & Sodik, 2015). The sample taken from this study was the entire population of Jepara Regency Puslatkab athletes as many as 59 athletes, so the sampling technique used was total sampling.

**Table 1.** Category Body Mass Index (BMI/BMI)

BMI	Disease Risk	Classification
<18.5	increased	Underweight
18.5–21.99	Low	Acceptable
22.0–24.99	Very Low	Acceptable
25.0–29.99	increased	Overweight
30.0–34.99	High	Obesity I
35.0–39.99	Very High	Obesity II
≥40.00	Extremely High	Obesity II

**Table 2.** Sit and reach categories

Fitness Category	Score (inches)	
	Men	women
Excellent	≥17.25	≥17.00
good	15.25 – 17.00	16.00 – 16.75
Average	13.75 – 15.00	14.74 – 15.75
Fair	11.75 – 13.50	12.75 – 14.50
poor	≤11.50	≤12.50

**Table 3.** Cardiorespiratory Fitness Category According to Maximal Oxygen Uptake (in ML/kg/min)

Gender	age	Fitness Category				
		poor	Fair	Average	good	Excellent
Men	29	≤24.9	25 – 33.9	34 – 43.9	44 – 52.9	≥53
	30 - 39	≤22.9	23 – 30.9	31 – 41.9	42 – 49.9	≥50
	40 - 49	≤19.9	20 – 26.9	27 – 38.9	39 – 44.9	≥45
	50 - 59	≤17.9	18 – 24.9	25 – 37.9	38 – 42.9	≥43
	60 - 69	≤15.9	16 – 22.9	23 – 35.9	36 – 40.9	≥41
women	29	≤23.9	24 – 30.9	31 – 38.9	39 – 48.9	≥49
	30 - 39	≤19.9	20 – 27.9	28 – 36.9	37 – 4.9	≥45
	40 - 49	≤16.9	17 – 24.9	25 – 34.9	35 – 41.9	≥42
	50 - 59	≤14.9	15 – 21.9	22 – 33.9	34 – 39.9	≥40
	60 - 69	≤12.9	13 – 20.9	21 – 32.9	33 – 36.9	≥37

## 5 Results and discussion

The results of Anthropometry, flexibility and endurance of athletes at the Jepara Regency Center for Training can be described as follows:

**Table 4.** Statistical description of the physical conditions

	N	Minimum	Maximum	mean	Std. Deviation
Anthropometric	59	17.00	39.00	23.8305	4.11118
Flexibility	59	.00	26.37	13.2475	7.72215
Endurance	59	.00	41.00	29.9119	6.35654
Valid N (listwise)	59				

The following is a graphic illustration of the physical condition profile of the athletes of Jepara district training center athletes (Puslatkab), which consists of 1) Anthropometrics, 2) Flexibility, 3) Endurance.

### 5.1 Anthropometric

Based on Figure 1 below, it can be seen that the BMI of athletes at the puslatkab Jepara training center is in the underweight category at 33.90%, the acceptable category at 62.71%, the overweight category at 27.12%, the obesity I category at 1.69%, the obesity II category at 5.08%, and the obesity III category at 0%.

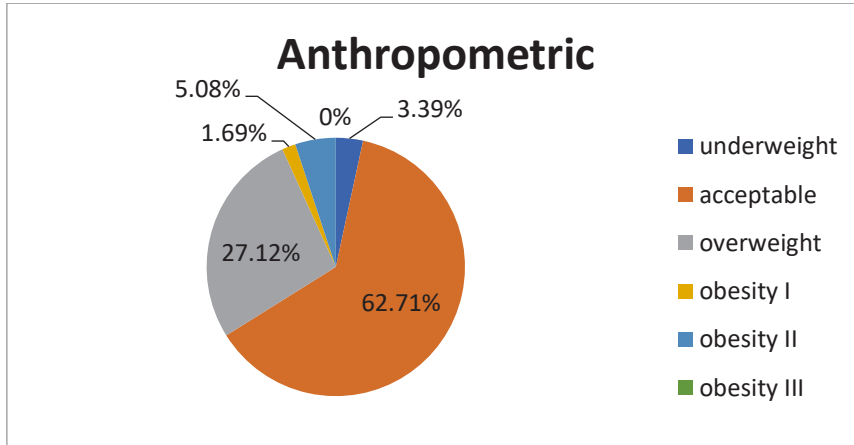


Fig. 1. BMI Graph of Athletes of the Jepara Regency Puslatkab Athletes

### 5.2 Flexibility

Based on Figure 2 below, it can be seen that the flexibility of Puslatkab Jepara athletes is in the very poor category at 0%, less category at 21%, moderate category at 58%, and good category at 16%, and very good category at 5%.

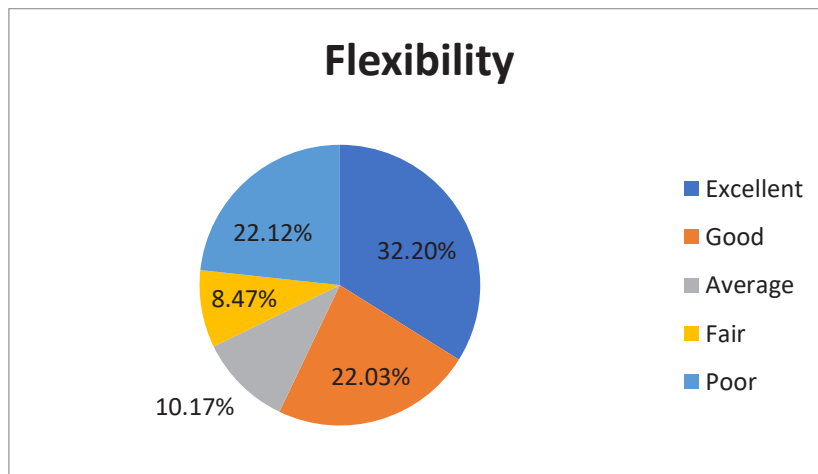
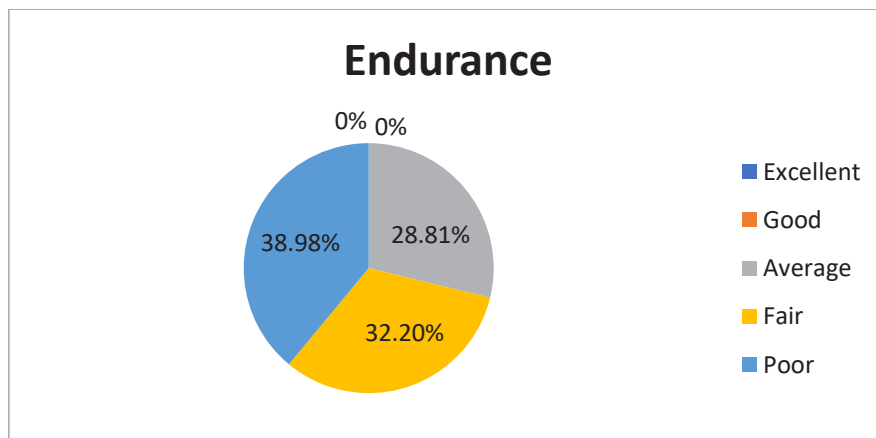


Fig. 2. Flexibility Graph of Jepara Regency Puslatkab Athletes

### 5.3 Endurance

Based on Figure 1 below, it can be seen that the player's arm muscle strength in pushing is in the very poor category at 0%, less category at 21%, moderate category at 58%, good category at 16%, and very good category at 5%.



**Fig. 3.** Endurance Graph of Jepara Regency Puslatkab Athletes

## 6 Conclusion

Based on the data analysis, it can be concluded that: 1) the results of the anthropometric analysis have an average that is in the acceptable category, 2) the results of the flexibility analysis obtain an average that is in the less category, 3) The cardiorespiratory endurance analysis results showed that the average was in the less category. So there is a need for improvement and preparation of training programs that can assist in increasing the level of physical condition in athletes, so athletes can achieve optimal performance.

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# Organizational Management of The Indonesian National Sports Committee (KONI) Kebumen Regency

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**Abstract.** The purpose of this study was to determine sport good governance, the role of KONI management, and the impact of KONI in regional elite sports development. The approach taken in this study was a qualitative descriptive method. The informants are the general chairman, secretary and head of related fields, trainers, athletes and the community using organizational management interview instruments, and using the Action for Good Governance in International Sports Organization (AGGIS) Sports Governance Observer developed by the Danish Institute of Sports Studies, Copenhagen-Denmark. In this study, the researchers used sports good governance observations rubric and interviews with KONI management as the research data while Miles and Huberman theory was applied as technique in analyzing data.

The results of the study state that the indicators of sport good governance at KONI Kebumen Regency have mostly been implemented well, such as Democratic Process, Checks and Balances, and Solidarity, but there is one indicator that has not been implemented like Transparency because there is no official website for KONI Kebumen Regency. For the management of sports organization, KONI, Kebumen Regency, in general, has referred to the theory of sports organization management. KONI of Kebumen Regency seemed to have inadequate facilities and infrastructure as well as having a small budget in the case of sport development.

It is summed up that all indicators of sport good governance have one indicator that has not been implemented in the form of transparency which shows that KONI Kebumen Regency has not been fully maximized in providing information through social media, because there is no official website for KONI Kebumen Regency. This research is expected to be the beginning of the extent to which the sport good governance of KONI Kebumen Regency. The suggestion that can be given is that the KONI of Kebumen Regency should immediately have a website to provide information quickly and accurately and also increase organizational openness. In addition, a good management function can be seen from the existence of planning, organizing, mobilizing, monitoring, and evaluating, which is expected to be a spirit to continue to advance sports in Kebumen Regency.

**Keywords:** sport good governance, sports organization management, KONI

## 1 Introduction

According to De Sensi, Kelley, Blanton, and Beitel in Harsuki (2012), sports management is a process to organize all activities to achieve certain goals within a certain group with the

functions of planning, organizing, directing, leadership, and supervising related to sports or sports. physical activity[2].

The success rate of elite sports is highly dependent on the effectiveness of its management. The more effective the management, the better the quality of the athletes produced because of the clear, concise and structured management pattern of planning and qualified human resources. In this case good management is needed in an organization.

The 2nd President of the Republic of Indonesia, Suharto, at the opening ceremony of the 4th National Sports Conference in 1981 announced that Indonesia has a slogan to promote sports activities in the community and has the motto "Socializing Sports and Exercising the Society". Since then, sports activities for the people have been planned[3].

Law of the Republic of Indonesia Number 3 year 2005, Chapter VIII dealing with Sports Management, Article 38 Paragraph (1) concerning the National Sports System that sports management at the Regency/City level is carried out by the Regency/Municipal Government with the assistance of the Regency/City Sports Committee.

KONI is a sports organization that has been running for more than 20 years in Kebumen Regency. KONI Kebumen Regency is still less than optimal in its organizational management pattern, making year-to-year achievements unsatisfactory. The goal of this study was to determine KONI Kebumen Regency's level of good governance and organizational management. The Indonesian National Sports Committee of Kebumen Regency will not grow and develop if it adheres to traditional governance that is not oriented toward the needs and desires of athletes and the community. As a result, it must be directed to the principles of modern and communicative management in order to meet the challenges of an increasingly advanced era. In this case, a general concept that can aid in the implementation of good management by the KONI of Kebumen Regency is the application of good governance that has been applied in the agency as a reference for a field for achieving the vision and mission of the agency itself, because in good governance, the relationship between the organization and its members must be based on the principles of transparency, accountability, responsibility, independence, and fairness while The goal of good governance is to foster positive relationships between shareholders and stakeholders so that organizations can be properly managed and public accountability is established[6].

Some of the principles of good governance according to the UNDP (United Nation Development Program) in Safrijal et al., (2016) including: participation, rule of law, transparency, responsiveness, consensus orientation, equity, efficiency and effectiveness, accountability, strategic vision[11].

The researcher uses sports good governance indicators, such as Transparency, Democratic Process, Checks and Balances, and solidarity taken from his book Action for Good Governance in International Sports Organization (AGGIS) which was developed by the Danish Institute of Sports Studies, Copenhagen Denmark (Action for Good Governance in International Sports Organization, Danish Institute of Sports Studies: 2013).

The dynamics of sports development is one element that will not be forgotten and will become a parameter of skills in sports, namely competition. Sport competition is very important to encourage the development of sports achievements in various sports. The success of the

athletes in winning every match is part of the target of KONI Kebumen Regency as an organization that is responsible for improving regional sports.

All sports that are under the auspices of KONI Kebumen Regency are prioritized as sports that can produce achievements. These sports include Athletics, Silat, Taekwondo, Volleyball, Futsal, Football, and others. In this case the researcher was interested and chose several sports such as Athletics, Silat and Volleyball as the object of research. For this reason, these sports has become a reference for researchers in digging up information because these sports belong to sports that KONI hopes to produce competitive athletes. In managing regional sports, KONI Kebumen Regency also involves the surrounding community. The process of community involvement in regional sports development is realized by providing information on sports activities even though the information submitted has not been fully conveyed to the general public.

The results of initial observations show that KONI Kebumen Regency does not yet have good governance, work programs are not structured, human resources are not as needed, some sports do not have achievements and lack of information and public knowledge about KONI activities in Kebumen Regency. Therefore, there is a need for improvement considering the importance of KONI for the people of Kebumen Regency to develop performance sports in the area in accordance with the mandate of Law No. 3 of 2005.

Based on the results of observations and the background of the problem, the problems formulated in this paper are how to implement sport good governance in the KONI of Kebumen Regency, how is the organizational management pattern of KONI in Kebumen Regency, and the impact of fostering the achievements of the Indonesian National Sports Committee (KONI) in Kebumen Regency.

## **2 Method**

The method used in this research is descriptive qualitative. Qualitative descriptive is a term used in qualitative research for a descriptive study. Qualitative descriptive has been identified as important and appropriate for research questions that focus on finding the who, what, and where of events or experiences and to gain insights from informants about phenomena that need to be understood[5]. The research was carried out during the period from August 10 to August 25, 2021. The research location is at the office of the Indonesian National Sports Committee (KONI) in Kebumen Regency. The secretariat itself is still occupying a room at GOR Chandradimuka Kebumen which is located on Jalan Gedung GOR Gembira, Jl. Youth, Panjer, Kec. Kebumen, Kebumen Regency, Central Java 54312.

In this study the researcher used an instrument, namely interviews and the respondents were the chairman, secretary, KONI Kebumen members, coaches, athletes and the community. The sampling method in this study uses non-probability sampling because this technique allows it to not provide equal opportunities or opportunities for each element or member of the population to be selected as samples[12]. Then after the data is collected, the validity of the data in this study is tested, namely the credibility (credibility) by using the triangulation technique. Triangulation is in testing credibility, in this case it is defined as checking data from various sources in various ways, and at various times[12].

Then the data collection techniques used in this study were observation, interviews, and documentation. In this study, there are four independent indicators, namely: transparency, democratic process, checks and balances, and solidarity. As for the dependent variable, namely the sport good governance of KONI Kebumen Regency, where the level of sport good governance is highly dependent on the level of the independent variable.

This study uses the Action of Good Governance in International Sports Organization (AGGIS) Sport Governance Observer instrument developed by the Danish Institute of Sport Studies, Copenhagen Denmark. And analyzed using the theory of Miles and Huberman[12].

### **3 Results and Discussion**

Results and discussion of research on the application of the pattern of sport good governance, management organization, and the impact of developing KONI's achievements in Kebumen Regency. Researchers have conducted research and get the following results.

From the results of research through observations, interviews, and documentation conducted at KONI In August 2021, Kebumen Regency received data from sports good governance , namely 1) Transparency 2) Democratic Process 3) Checks and Balances 4) Solidarity.

Transparency is information that allows the public or the public to monitor openly an organization. Transparency is the foundation for an organization to gain the trust of the wider community. If there is a lack transparency, it can have an impact on the lack of trust from the public. This shows that the public does not know about KONI, one of which is due to the lack of openness of KONI. The Kebumen Regency KONI organization does not publish laws on its website and the organization does not publish sports regulations on its website.

Until now, KONI Kebumen Regency does not yet have a website, but KONI Kebumen Regency already has social media accounts such as Facebook, Instagram, Youtube. So far, social media, especially Facebook and Instagram, are still active, only providing information related to daily activities or big day celebrations. The absence of media access in the form of a website makes it difficult for the general public to easily, quickly and accurately find relevant information about the vision and mission, organizational structure, sporting regulations, organizational strategic plans, and annual budget of the organization. Elin Marlina, S. Pd. as the head of planning and budgeting said that there are no internal human resources capable of making websites and if buying requires a large budget, it requires a large budget.

In an organization the system used is an open system where the organization gets a very large influence from the community. We can see that transparency is the main value to make an organization democratic and accountable. shows that the information provided by the organization to the wider community through online media is still less open, to the people of Kebumen Regency because there is no media access, especially websites to accommodate all information that should exist in an organization in general.

According to Elin Marlina as the Head of Program and Budget Planning, said that this is the beginning of management after the reorganization, there is no KONI management who has the expertise to create a website, while making a website with assistance outside of KONI requires a lot of money.

Then the second is that the democratic process is one of the elements of sport good governance. KONI Kebumen Regency in the application of the democratic process for the election of the chairman in an open and transparent manner, making work programs, and making decisions are always carried out by deliberation. The general chairman election for 2020-2024 is carried out in accordance with clear and detailed procedures. Every decision taken by the KONI of Kebumen Regency always comes from deliberation and mutual agreement with various fields, not from a group or part of people. KONI Kebumen Regency limits the transfer of athletes, because it emphasizes regional athletes and reduces the amount of the budget.

Furthermore, the third checks and balances in a good organization has rules that need to be obeyed, has a code of ethics and integrity for all its members. Which is where the Kebumen Regency KONI organization recognizes and complies with the World Anti-Doping Code (WADA).

Finally, a good sports organization solidarity must have a great responsibility for the welfare of all members and community involvement. Moral support is very important in the running of an organization so that the management can carry out their duties with love. Because the organization provides training and education to its members in terms of organization and management through workshops. During the 2021 management, there will be no discrimination against each other to make the organization good.

All of the above indicators of sport good governance have been implemented, except for the principle of transparency which has not been implemented at KONI Kebumen Regency so that there is no openness to sports regulations, organizational structures, strategic plans, process openness, and regulatory frameworks that guarantee transparency. Transparency is not only important in the implementation of the Kebumen Regency KONI work system, but also in the implementation of public services and also a situation where all aspects related to the Kebumen Regency KONI must be open and can be known easily by the public (public).

According to Tjokroamidjojo (in Syafalevi, 2011) planning is a way to achieve an organizational goal that requires good coordination. The results of interviews related to the planning function at KONI Kebumen Regency were compiled by all members, with the approval of the general chairman. Planning at KONI Kebumen Regency consists of long-term and short-term programs. All members of the Kebumen Regency KONI always hold regular meetings at least once every 3 months, but when approaching big events such as Porwil Dulongmas, PON, PORPROV, KONI Kebumen Regency will hold meetings every day.

Terry stated in Paturasi, (2012) that organizing is an act of seeking effective behavioral relationships between humans so that they can work together effectively and gain benefits in certain tasks under certain environmental conditions [7]. In organizing, including in the KONI of Kebumen Regency, the existence of an organizational structure is very much needed. Organizing is a group of people who come together and have the same spirit, dreams and goals, which need to be regulated in the division of tasks and authorities so that there are no disputes and overlaps in carrying out tasks. Preparation of organizational structure at KONI Kebumen Regency in accordance with expertise in their respective fields.

Mobilization is the provision of motivation to move all personnel or resources who are given the task and authority in order to carry out their duties as well as possible to achieve the goals

that have been set [1]. Kebumen to agencies such as the district government of Kebumen, youth sports and tourism (Disporapar) Kebumen district is carried out at least once a year.

It is unfortunate because of the pandemic of activities at the Kebumen Regency KONI, one of which is that the training must be postponed first, in fact there are many training activities but in conditions like this, the Kebumen Regency KONI has not been able to carry out training seminars on sports on the grounds of avoiding activities that cause crowds.

According to Siagian, (2015) that "supervision is the process of observing the implementation of all organizational activities to ensure that all work being carried out goes according to a predetermined plan". For supervision of every task given by the general chairman of KONI Kebumen Regency is always followed up with maximum results then submitted to the general chairman such as when from the field of organization holding a meeting with the sports branch from the results of the meeting there are several inputs from the sports branch then the secretary gives a report to the general chairman KONI Kebumen Regency.

In Rawe's opinion, (2018) evaluation is an activity to collect information about the progress of something, which is then used to determine the right alternative in making decisions[10]. Evaluation is a process to implement what work has been carried out and correct it with the intention that the implementation of the work is in accordance with the original plan.

According to what happened to the Kebumen Regency KONI, for example, the Kebumen Regency KONI also always held evaluation meetings related to achievements, for example, after a sports championship, they usually received medals or those who represented Kebumen Regency then did not match what was expected, it had to be evaluated.

The impact of the coaching carried out by the KONI of Kebumen Regency according to sports until now the sports branch is inadequate in terms of facilities and infrastructure as well as a small budget. Researchers also found that in the field there are sports that are still constrained by facilities and infrastructure as well as budget, where facilities and infrastructure are part of achievement development. Then physically, KONI also controls the field of achievement development for all sports branch managers under the auspices of KONI, Kebumen Regency.

Recruitment in sports in each district of Kebumen is different. The leading branches, namely athletics, silat and volleyball, have the same recruitment. In athletics, namely by attracting athletes who excel from activities such as O2SN, POPNAS (national student sports week) does not start from trouble. Then in the silat and volleyball sports the same, namely: looking for athletes to excel through the achievements achieved by athletes or it can mean not starting from mass production. Sports experts agree on the need for stages of coaching to produce good sports achievements high, namely through the stages of massing, breeding and achievement [8]. All these sports are highly accepted by the general public, especially parents who want their children to get achievements in the field of sports.

Media promotions carried out by KONI Kebumen Regency to look for potential athlete seeds, currently do not use websites or social networks but by collaborating with schools through various sports to be able to reach a wider reach to find seeds of athletes who excel.

Coach for athletics, silat and volleyball. For athletics, silat and volleyball coaches, some already have a coach license. KONI itself has a role to provide coaching education so that coaches also have a broader insight about the training system in each sport they are engaged

in. In addition to KONI which provides a coaching education system, they free all trainers to take part in trainer training at the regional or provincial level. For coaches who have never attended coach education, they are required to participate because until now at least the coaches can know how to train their athletes in a method that doesn't burden the athletes and also they can know about effective training without wasting a lot of time. -drain. For this reason, there is a need for coaching education because education in coaching has a very important impact when training.

According to the KONI of Kebumen Regency, at least each sport has a licensed trainer, but it is sufficient because it can be maximized for training. It's just a matter of how athletes can make good use of it.

A good training program can consider these aspects, including: athlete potential, age, gender, level of ability of athletes, funding infrastructure, time available, coaching staff and environmental factors [6]. Before compiling a training program, a coach must first carefully define the goals to be achieved for his athletes so that in the competition they can display their abilities. The exercises carried out are not far from training skills or abilities, physically and mentally. These three basic exercises are always present in the method the trainer gives. The training program given certainly aims to improve the quality of athletes. If the quality of the athletes is good, the coach can optimistically expect victory from them. Although the athletic exercise program in Kebumen Regency is an unwritten program, the training program is adjusted based on the strengths and weaknesses of the athletes, in other words, the training program adapts to the athlete's needs. Although the training program was not written, the training activities continued to run well.

To support the achievement of course required the support of adequate facilities and infrastructure. Facilities and infrastructure are very important in influencing the quality of athletes in competing. Complete existing facilities will increase the sense of enthusiasm in athletes.

Sports facilities are everything that can be used and utilized in the implementation of sports activities. Meanwhile, infrastructure is something that facilitates or facilitates tasks and has a permanent nature. Facilities and infrastructure help improve physical abilities and make it easier for athletes to exercise. Facilities and infrastructure also play an important role in the development process. The condition of good and complete facilities and infrastructure can certainly make the process of coaching run optimally. Facilities are all the facilities needed in a good learning process, movable or immovable so that the achievement of goals in sports runs smoothly, regularly, effectively and efficiently [4].

Funding is obtained from funds that have been budgeted by DISPORA (Kebumen Regency Youth, Sports and Tourism Office) then the budget is submitted to KONI Kebumen Regency after which it is distributed to all sports.

An organization or sports management requires large funds to develop the coaching process in order to produce athletes who are superior in their fields. The funds are used to meet the needs during training, both in the realm of facilities and infrastructure. The funds that have been plotted to each athletic branch manager will be used to meet needs during training or anything else that has to do with the coaching process for athletes. Regarding the budget, it has been

determined using grant funds for a full year and each sport receives a different amount, which is influenced by achievements and the number of athletes.

Budget is a fundamental problem for developing sports in the district of Kebumen. for the 2019 budget is IDR 888,295,000 in 2020, IDR 900,000,000 in 2021, IDR 1,000,000,000. These funds are very small compared to KONI agencies in other areas, then the funds are entered through the Kebumen Regency KONI account. With a total of 34 sports, shaded by KONI Kebumen Regency. Finally, the entire budget source comes from grant funds Kebumen district budget.

KONI Kebumen Regency does not have access to relationships with companies that support sports activities. KONI Kebumen Regency also does not have a relationship to get support for coaching funds for athletes who excel and have not been able to mobilize companies and donors to fund the development of outstanding athletes.

The impact of the coaching carried out by the KONI of Kebumen Regency according to sports until now the sports branch is inadequate in terms of facilities and infrastructure as well as a small budget. Athletes in sports are taken through championships, not from mass. Motivation is also obtained from the coaches who always support him during training, according to the KONI of Kebumen Regency, at least other sports have license trainers but that is enough because it can be maximized for training, the training program is made by the coach himself and the athletes have implemented it well, Facilities and infrastructure owned by the sports branch is inadequate, the budget has been determined using grant funds in a full year and each sport gets a different amount influenced by the achievements and the number of athletes.

#### **4 Conclusion**

The results and discussion of the research contained in chapter IV can be obtained several conclusions, which can be described as follows:

The results of this study indicate that the KONI of Kebumen Regency is related to sport good governance from four dimensions, namely: 1) Transparency 2) Democratic Process 3) Checks and Balances 4) Solidarity. Of all the sports good governance indicators, there is one indicator that has not been implemented, namely transparency which shows that the KONI of Kebumen Regency has not been fully maximized in providing information through social media, because there is no official website of the KONI of Kebumen Regency. So there is a need for a more oriented policy push in the policy.

The pattern and role of the Kebumen Regency KONI organization in terms of organizational management functions, in general, has referred to the theory of sports organization management which has five stages, namely planning, organizing, mobilizing, monitoring, and evaluating.

The impact of the management of KONI in Kebumen Regency in fostering sports achievements according to sports until now the sports branch is inadequate in terms of facilities and infrastructure as well as a small budget. And physically provide control over the shaded sports.



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# Identification of Leadership Style in Sport Organizations

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**Abstract.** Sports organizations cannot be separated from various problems such as corruption. This causes dissatisfaction with the management of sports organizations, even though job satisfaction is an important factor that must be created in improving organizational performance, where leaders played a role. Good organizational performance is an embodiment in achieving organizational goals. If organizational goals can be achieved, then an organization is said to be effective. The effectiveness of an organization in carrying out its duties is influenced by several factors, including political conditions, physical and mental health, finances, education level, internal and external relations, including leadership style. Looking at the sentence, it can be seen that leaders have an important role in realizing good organizational performance. The role of the leader is influenced by his leadership style. This was also conveyed in several previous studies which stated that leaders have the ability to motivate and encourage the performance of organizational members by using an effective leadership style. Through this quantitative research, it is expected to identify the leadership style that is most widely used by organizational leaders in sports, especially in Central Java, which was chosen because the pattern of sports coaching focuses on priority sports. Using a survey method that has indicators of leadership styles that often appear in sports organizations such as humanistic, transformational, participatory, and service leadership styles, this questionnaire was distributed to respondents who were selected using a purposive sampling technique. The results showed that 98.07% respondents feel their leaders are mostly using Humanistic Leadership Style. This style is focusing on communication and openness.

**Keywords:** sport management, sport organization, leadership style, central java

## 1 Introduction

Humans are creatures that developed communication during their evolutionary journey. Communication in its development is strongly influenced by the early culture and social attitudes possessed by humans. Social relationships that begin with the goal of survival, become more complex over time. According to Fay in [1], social relations have an increasingly specific goal of making individuals gather according to their goals to form something that will later be known as an organization.

Organizations in sports themselves consist of achievement sports organizations and recreational sports organizations. In accordance with the Regulation of the Minister of Youth and Sports of the Republic of Indonesia Number 21 of 2017 concerning the Guidance and Development of

Regional Leading Achievement Sports Branches (2017), official achievement sports organizations located in the regions, provinces and nationalities in Indonesia are under the auspices of the Sports Committee Indonesian National Committee (KONI), while recreational sports organizations are under the auspices of the Indonesian Community Recreational Sports Committee (KORMI) [2]. If we look at the statement, the parent sports organization is an inseparable part of the sports organization where it is in charge of fostering, developing, and coordinating sports. This is in accordance with Article 1 of Law no. 11 of 2022 concerning Sports (2022) [3]. Also added by Mr. Dr. Tommy Soenyoto, S.Pd., M.Pd., as the Daily Chair of the Central Java Indonesian Gymnastics Association (PERSANI) Central Java, who was interviewed on March 30, 2022, stated that the main sports branch organization should be a center for sports development so that later it can emerge. love for the sport, not only from the coaches and athletes, but also from other administrators, and this is influenced by the leadership role.

However, sports organizations cannot be separated from various problems such as corruption, collusion and nepotism [4]. This is due to the emergence of dissatisfaction with the management of sports organizations, even though job satisfaction is an important factor that must be created in improving organizational performance, where leaders have a role in it [5].

Good organizational performance can be said as an embodiment in achieving organizational goals [6]. If organizational goals can be achieved, then an organization is said to be effective [7]. The effectiveness of an organization in carrying out its duties is influenced by several factors, including political conditions, physical health, mental health, finances, education level, internal relations, external relations and leadership style are factors that act in influencing the achievement of an organization's goals [8]. In addition, organizational performance is also influenced by the decision-making strategies made by leaders [9].

Looking at the sentence, it can be seen that leaders have an important role in realizing good organizational performance. The role of the leader is influenced by his leadership style. This was also conveyed in several previous studies which stated that leaders have the ability to motivate and encourage the performance of organizational members by using an effective leadership style [10]. However, research relating to the relationship between leadership style and sports organizational performance has not been widely discussed. Therefore, this study was made to determine the leadership style that is most widely used by the main leadership of sports organizations in Central Java.

## **2 Literature Review**

In sports, leadership is not a new thing discussed in various articles, the term has been widely discussed since the early 1970s [11]. However, from various existing studies, the notion of a leader himself cannot be directly translated, there are some researchers who state that a leader is someone who has the ability to influence others, while in another sense, a leader can also be said to be someone who is responsible for realizing organizational goals and ensure that all members work towards those goals [12], [13] conclude and divide the definition of a leader as follows:

- 1) A leader is a person who has the ability to influence
- 2) The leader is a person who is able to create a deal
- 3) A leader is a person who is able to be an example in action
- 4) The leader is a figure who becomes a bridge between powers
- 5) The leader is a person who is able to bring the organization to achieve its goals
- 6) The leader is a figure who plays a role in dividing tasks among its members.

There are several leadership styles that are widely used in organizational management, including:

#### 1) Transformational leadership style

This leadership style provides opportunities for leaders to influence their members through an intellectual approach, including the leader's ability to make changes to the organization. This happens because this leadership style prioritizes the development of human resources which will later be useful for organizational change [14]. In practice, this leadership style has the ability to change the perspective of its members in dealing with problems by helping them find new innovations [15]. Therefore, leaders who have this leadership style have the following characteristics:

- A. Charismatic. These characteristics are needed so that a leader can influence his members to work and behave in accordance with the wishes of the leader. One way that can be done is to provide confidence and calm pride in the organization.
- B. Intellectual Stimulation. These characteristics will make a leader have the ability to direct and open the horizons of his members to continue to innovate at work.
- C. Individual attention. These characteristics are needed so that the leader has sensitivity to the situation and also the condition of its members so that members can feel the presence of a leader not only as a boss but also as a co-worker.

#### 2) Servant Leadership Style

This leadership style focuses on the leader's ability to serve the community and stakeholders as its main priority. By having this leadership style, leaders have the sensitivity to understand the needs and serve the community so that they feel satisfied with the organization's performance [16]. This leadership style has several indicators that show leaders who have a soul to serve the community [17], such as:

- A. Strive to empower and assist the development of members of the organization.
- B. Always provide direction and direction for the organization's goals to its members so that they can work optimally in meeting the needs of the community.
- C. Not thirsting for respect and never bringing up the goodness that has been given to employees are authentic characteristics of leaders with this leadership style.
- D. Giving trust to its members in serving the community. This is part of the stewardship of the servant leadership style.

#### 3) Participative Leadership Style

Having a participatory leadership style, makes leaders provide space for their members to play a role in decision making [18] so that leaders will prioritize deliberation in solving problems [19].

#### 4) Humanistic Leadership Style

This leadership style is one of the newly developed leadership styles in several studies, they develop the main points that become strengths in this leadership style, namely [15]:

- A. Leaders will prioritize the relationship between administrators and leaders with administrators.
- B. Leaders have the view that a good organization is influenced by the relationship between human beings, the moral quality of the administrators, including work efficiency.
- C. Leaders have the principle that leaders must be able to understand their members so that they can maximize performance through social and psychological encouragement.
- D. Leaders understand that the quality of organizational performance is influenced by complex emotional relationships between managers.
- E. Leaders must be able to pay attention to members who have worked hard in realizing organizational goals.
- F. Leaders must have the concept of humans as social beings who will improve the quality of their performance when they get colleagues who are able to maximize their abilities, so finding the right people and putting them in the right position is an obligation.

### **3 Methods**

With quantitative research methods, this study was made using numerical data and statistics to investigate the relationship of a cause and effect of social phenomena. Based on what is written above, this study was made to determine the most dominant leadership style in sports federations in Central Java. The population in this study were the administrators of 46 main sports branch organizations incorporated in KONI Central Java and 27 main sports branch organizations incorporated in KORMI Central Java. By using purposive sampling, the authors will determine the criteria, both inclusion criteria and exclusion criteria. The inclusion criteria used consisted of 1) Willing to be a respondent, 2) Active management of a sports federation, 3) Not serving as chairman of the organization. The number of respondents who became the sample in this study were 26 people. Respondents filled out a questionnaire consisting of statements that lead to four leadership styles, including the humanistic leadership style, transformational leadership style, participatory leadership style, and servant leadership style. After the data is obtained, the data is analyzed using Microsoft Excel with the results in the form of percentages.

### **4 Data collection**

The researcher carried out data collection by distributing a google form containing statements made according to the grid listed above. Respondents who will fill out the questionnaire are sports federation administrators who have filled out a willingness form to become a respondent. Due to limited manpower, time, and cost, not all respondents were accompanied directly by the

researcher. However, the researcher includes a contact person who can be contacted if experiencing problems.

## 5 Results and discussion

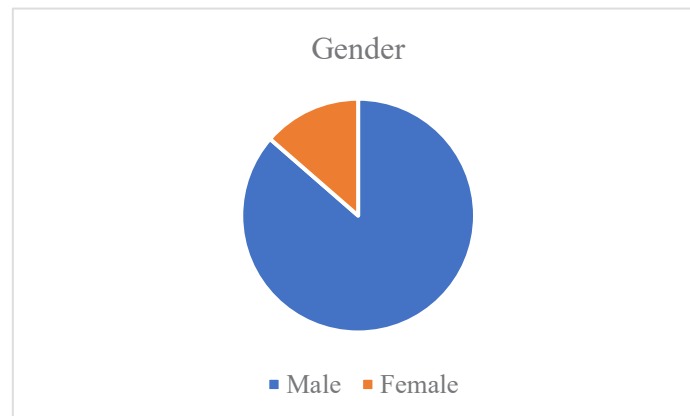
The respondents in this study were members of the sports federation in Central Java Province. The number of respondents who became the sample in this study were 26 people. Respondents were then classified based on age, gender, education level, and years of service. The classification carried out on respondents based on the characteristics that have been mentioned aims to provide details about respondents as objects of research.

**Table 1.** Respondents Characteristics Based on Age

Age	Respondents
<30 years old	3
30-40 years old	16
41-50 years old	3
>50 years old	4

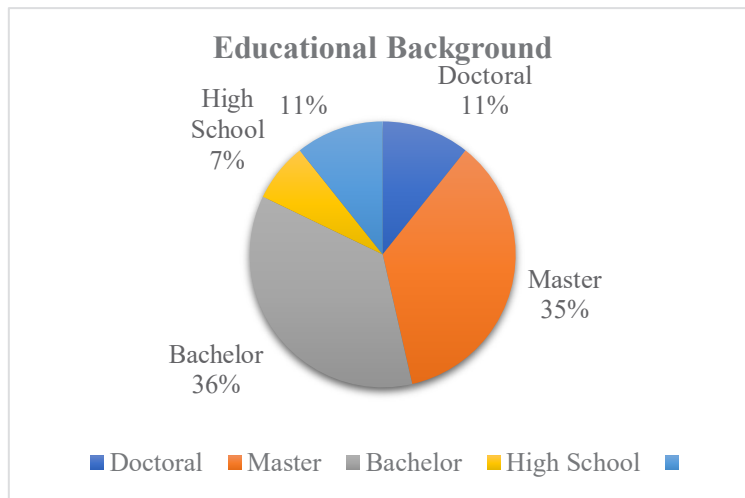
The age characteristics of the respondents in this study were dominated by respondents aged 30 to 40 years, totaling 16 people. Then the second largest age range of respondents is respondents aged 41 to 50 years with a total of 4 respondents. The next highest age range is from respondents aged under 30 years amounting to 3 people, similar to the age range over 50 years which amounted to 3 people out of a total number of respondents as many as 26 people.

If viewed by gender, it can be seen that the answers to the questionnaire given by the respondents are as listed in the following diagram:



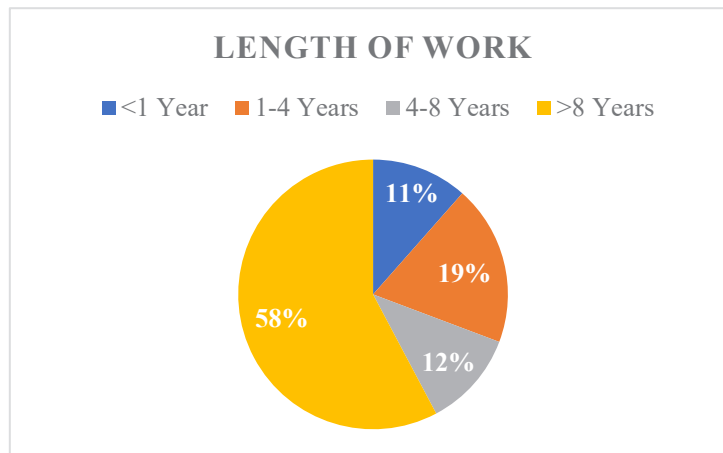
**Figure 1.** Respondents Characteristics Based on Gender

The next respondent's characteristics are based on the educational background completed by the respondents. The following diagram contains information about the educational background of the respondents:



**Figure 2.** Respondents Characteristics Based on Educational Background

The characteristics of the last respondent are classified based on the length of service that has been taken by the respondent. The following are the characteristics of respondents based on length of work:



**Figure 3.** Respondents Characteristics Based on Length of Work

From the results of data processing, it can be seen that the highest average percentage of the dimensions of leadership style applied by leaders in sports federations in Central Java are as follows:

**Table 2.** Most Dominant Leadership Style in Central Java Sports Federations

<b>Rank</b>	<b>Leadership Styles</b>	<b>Percentage</b>
1	Humanistic	98,07 %
2	Transformational	97,86 %
3	Servant	97,50 %
4	Participatif	97,43 %

As can be seen from the results of data analysis, it can be seen that the humanistic leadership style is the leadership style most often used by sports federation leaders in Central Java. This is because humanistic leadership is able to support and enhance the role of organizational management so that they can work optimally. This statement is in line with previous research by [20] which stated that humanist leadership can improve the role of the board by encouraging each other and maintaining openness so that all parties can support each other.

In addition, administrators who have leaders with a humanistic leadership style have a tendency to be able to communicate better with their leaders, both about what problems are being faced by the organization to the needs of the administrators in managing the organization [21]. Say that this can happen when leaders with this humanist type always position themselves as colleagues and not only as leaders and employees [22]. Later, the communication built by the leadership with various parties including employees and stakeholders will be able to improve the quality of transparency and honesty in managing the organization [23].

Humanist leadership can also increase employee confidence in the quality of organizational leadership so that they will be able to develop a good quality democratic process. This trust can arise as a result of increasing the quality of communication so that when the leader will be elected, the members already understand where the work direction and work pattern is desired by the leader and in the end will minimize errors in decision making [24]. With the increase in the democratic process, where all members in the organization are always involved in the decision-making process, it will affect the quality and comfort of working [25].

This leadership style also has a function as a counterweight so that leaders can involve all parties in the organization when making decisions and running the organization [26]. If this condition is maintained, then the organization can run without discrimination and increase the concern of fellow members because the leader can become a protective figure who is able to embrace all parties [24]. On the other hand, administrators are also more open when they need an increase in welfare after they fulfill the responsibilities that have been given [27]. With this increase in welfare, the performance quality of sports organizations is also getting better and finally sports organizations are able to achieve their goals optimally [28].

## **6 Conclusion**

The conclusion that can be drawn from the results of the data analysis and discussion above is that the humanist leadership style is the most frequently used leadership style by sports federations in Central Java. This leadership style is very suitable to be used to improve the quality of communication and openness between leaders and organizational management. This



is useful for maintaining the quality of trust and is useful as a means to get a leadership figure who is able to protect the entire management of the organization. However, the humanist leadership style alone is not enough, because in the process of managing the organization, many problems will be encountered and require various leadership patterns to be adapted to existing conditions. Therefore, the leader of a sports organization must be able to adjust his leadership style in leading an organization. This research is a preliminary study that requires further analysis of leadership styles that are suitable for improving the quality of management and organizational performance, so further research is needed that discusses more deeply the relationship between leadership styles and management patterns and organizational performance quality.

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# Test Effect of Type of Materials and Cooking Process Ipomoea Batatas Spirulina Mix for Diabetes Mellitus Preventive

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**Abstract.** Management of Diabetes Mellitus is the focus of attention worldwide. Indonesia ranks 7th in the world. Complications can attack all organs of the body and will worsen the patient's quality of life. The objectives of the research are: 1) Acceptability of products related to organoleptic and hedonic tests, 2) Proximate test results, 3) GI level of the product, and 4) Product formula to be recommended. The main ingredients are red sweet potato in flour or porridge form and spirulina. The additional ingredients are cornstarch, flour, eggs, honey, CMC, and margarine. The product formula consists of three kinds of red sweet potato content (40%, 50%, and 60%). Processing of products by frying, steaming, and roasting. Measurements are 1) organoleptic test, 2) hedonic test. 3) proximate test and 4) glycemc index test. Different tests were carried out with the Anova test and Post Hoc test. The statistical test showed a significant difference of 0.000 ( $p < 0.55$ ) in each product. The content of carbohydrates, protein, water, and ash with frying, roasting, or steaming is higher in those made from red sweet potato porridge. The production process by steaming produces more crude fiber. All Glycemc Indexes tested were in a low category for the steamed (48.56) and the fried (23.90). So it can be recommended for preventive consumption of Diabetes Mellitus.

**Keywords:** Diabetes mellitus, Glycemc Index, Red Sweet Potato, Spirulina, Type of Material Effect, Cooking Process Effect

## 1 Introduction

Diabetes Mellitus is a group of Non-Communicable Diseases (NCDs) and includes degenerative diseases, which are the focus of attention worldwide. According to WHO, DM cases have increased very sharply, so it is estimated that in 2015 among 11 people, there will be one person with diabetes. Indonesia ranks 7th in the world. The impacts, such as treatment for patients for life, will result in a family financial burden [1],[2]. In addition, complications that can attack all organ systems of the body will worsen the quality of life of the patient.

Lifestyle-related diet is the main factor in the DM cases increases besides other unhealthy living habits [3],[4],[5],[6],[7],[8]. Habits in main meals and snacks consumed with high-carbohydrate, high-fat portions increase blood sugar or Glycemic Index [8]. On the other hand, the results obtained from several local food ingredients are known to have a low glycemic index, including sweet potato flour [9],[10],[11],[12],[13]. The lowering blood glucose effect in sweet potatoes is associated with an increase in Adiponectin, an adipocyte hormone that functions in insulin metabolism [10]. The carbohydrate content of sweet potatoes can be used as a source of calories and has a Low Glycemic Index value (51), which is a type of carbohydrate and will not increase blood sugar levels drastically [14].

The research related to Spirulina (*Athrospira Plantesis*), a type of blue-green algae or microalgae and is one of the biological resources of marine biota in Indonesia, showed it can break radical chain reactions. It can inhibit oxidative stress in people with Diabetes Millitus [15],[16],[17]. The ingredients selected in this study were red sweet potato and spirulina. They are widely available in almost all agricultural and marine areas in Indonesia. The local food ingredients can be utilized to function optimally. Utilization of local food ingredients is needed for enrichment and diversity of snack foods on the market and improving blood sugar levels so that it can be preventive against DM. The selection of shapes and flavors favored by the community at this time is in the form of bars (stems), with various processing processes (fried, boiled, and burned) to get maximum results. The research problems are: 1) How is the target consumer's acceptance of products related to organoleptic and hedonic tests, 2) How are the results of the proximate test on each product, 3) What is the GI level in the two selected products, 4) Which product formula will be recommended.

The urgency of this study is an increase in DM cases related to the consumption of unhealthy food, the existence of local food ingredients that can be used for preventive purposes and to support the success of treatment for DM sufferers. So it is necessary to test the product.

## **2 Method**

**Materials/Ingredients:** The main ingredient is red sweet potato, selected based on its nutritional content and good color, then mixed with spirulina. The additional are cornstarch, flour, eggs, honey, baking powder/baking soda, and margarine. The formula for sweet potato content in the initial test consisted of 40%, 50%, and 60%. The laboratories used are the Nutrition Laboratory and the Biology Laboratory of UNNES. While the process of making is carried out together with SME partner "Billis Kaasstengels".

## 2.1 Product making process

**Table 1.** Product Formula

No	Ingredients	Formula 1	Formula 2	Formula 3
1.	Red Sweet Potato Flour/Porridge	40 gr (40%)	50 gr (50%)	60 gr (60%)
2.	Spirulina	100 mg	100 mg	100 mg
3.	Cornstarch	14 gr	14 gr	14 gr
4.	Flour	22,5 gr	12,5 gr	2,5 gr
5.	Baking powder/baking soda	0.5 ts	0.5 ts	0.5 ts
6.	Margarine	10 gr	10 gr	10 gr
7.	Honey	1 ts	1 ts	1 ts
8.	Egg	0,5 ts	0,5 ts	0,5 ts

The process begins by mixing all the ingredients according to the formula to become a dough. The product tested initially consisted of six formulas. Three used red sweet potato porridge, three used red sweet potato flour. Each was cooked in three ways. They were fried, roasted and steamed, initial product tested were 18 formulas.

## 2.2 Organoleptic Test, Hedonic Test, and Proximate Analysis

The organoleptic test was carried out to determine the preferred product, while the hedonic test was to obtain the preferred product (color, texture, taste, aroma, and overall quality). The proximate analysis objective was to get carbohydrate content using carbohydrate by difference [18], protein content using the Micro Kjeldahl method [18], fat content using the Soxhlet method [19], moisture and ash content using the oven [18] method, and analysis of dietary fiber content [20].

Organoleptic tests were carried out on trained panelists aged 25-40 years. Five men and five women. The instrument used a 9-point quality scale. Namely 1 for "very-low quality" up to 9 for "very very-good quality" [21]. The analysis was repeated three times with a 30-minute break. The preference level assessment was carried out to 80 consumer panelists with an acceptance test on a preference scale of 1 to 9 [21],[22].

## 2.3 Glycemic Index (GI) Assesment

Panelists are adults. For each product, there were five women and five men. Provided that: healthy, not with DM, age 25-40 years, whose Body Mass Index is in the standard category. Panelists undergo a night fast first from 20.00 to 08.00. At the beginning of the activity and for 2 hours, with 30 minutes intervals of giving the product tested, with a carbohydrate content equivalent to 50 grams. A blood sample is taken then blood sugar is checked with a glucose meter. As a standard, blood sugar levels were measured after giving 50 g of pure glucose (anhydrous d-glucose) to the panelists. Measurement of blood glucose levels between the reference food, and the simulated product, was given a 7-day gap for each food. Different tests were analyzed by Anova and Post Hoc tests. The research has passed the Research Ethics test with certificate No. 165/KEPK/EC/2021 from the Health Research Ethics Commission (KEPK) Semarang State University.

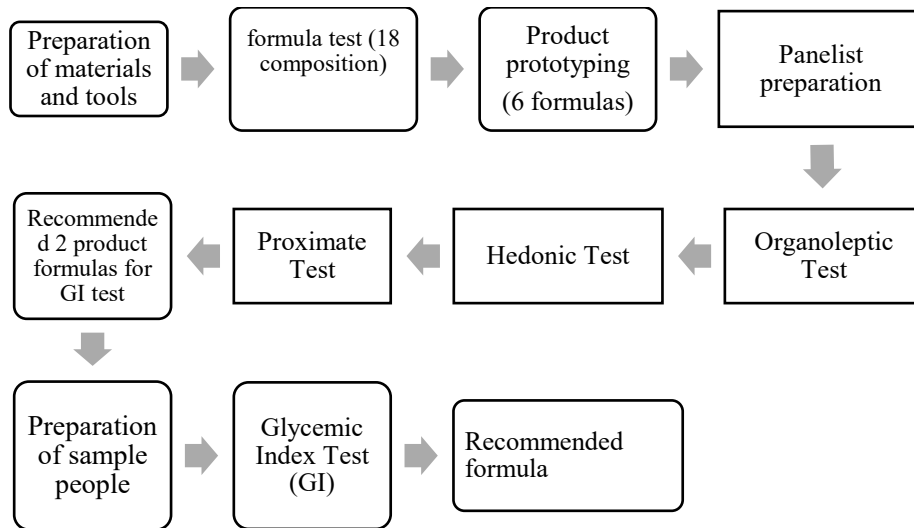


Fig. 1. Research Flowchart

### 3 Result

The results of three formulas with three cooking processes (fried, roasted, and steamed) with several changes to the use of red potato porridge and flour, and additional ingredients (18 recipes), then obtained six selected recipes representing three cooking processes and the base ingredients using red potato porridge or flour. The product is fried using Formula 1 (40% red potato porridge). To get a better taste and crispness, the size is thinner (0.5 cm). Products with roasted and steamed using Formula 3 (60% red potato porridge). The formula using red potato porridge results in a softer product, strong red potato taste, but less crispness and shorter shelf-life. Particularly the form of steamed (1 day), when the formula made from red sweet potato flour results in a crispier product, longer shelf-life (2 days), and a subtle red sweet potato taste.

#### 3.1 Organoleptic Test, Hedonic Test

The test used three formulas with red sweet potato porridge and three more formulas with red sweet potato flour. Namely, by using F1 for fried products and F3 for baked and steamed products. The results of the organoleptic (sensory) test on the highest overall score (517), while the highest total score (3307) is the products that were processed by frying in the form of sticks. Hedonic test results (preferred) overall highest value in processed products with fried (517), while the highest total value is found in processed products by steaming (3261).

### 3.2 Proximate Test

**Table 4.** Proximate Test Result (ANOVA TEST)

Code	Cookie Variation	Average					
		Carbohydrate (%)	Protein (%)	Fat (%)	Water (%)	Ash (%)	Crude Fibre (%)
1	Fried products from red sweet potato porridge	14,0223 <sup>b</sup>	19,0717 <sup>a</sup>	2,0167 <sup>f</sup>	0,0367 <sup>e</sup>	18,730 <sup>b</sup>	46,0453 <sup>c</sup>
2	Baked products from red sweet potato porridge	14,1423 <sup>a</sup>	18,494 <sup>b</sup>	6,0467 <sup>d</sup>	0,110 <sup>c</sup>	20,390 <sup>a</sup>	40,7117 <sup>e</sup>
3	Steamed product from red sweet potato porridge	11,847 <sup>e</sup>	14,1027 <sup>e</sup>	4,0133 <sup>e</sup>	0,5333 <sup>a</sup>	13,0307 <sup>c</sup>	56,337 <sup>b</sup>
4	Fried products from red sweet potato flour	12,7367 <sup>d</sup>	18,2983 <sup>c</sup>	19,9633 <sup>a</sup>	0,0267 <sup>e</sup>	10,1833 <sup>f</sup>	38,5073 <sup>f</sup>
5	Baked products from red sweet potato flour	13,066 <sup>c</sup>	17,9187 <sup>d</sup>	14,0433 <sup>b</sup>	0,0633 <sup>d</sup>	10,5633 <sup>e</sup>	44,1773 <sup>d</sup>
6	Steamed product from red sweet potato porridge	12,736 <sup>d</sup>	6,086 <sup>f</sup>	8,0467 <sup>c</sup>	0,1533 <sup>b</sup>	12,0333 <sup>d</sup>	60,91 <sup>a</sup>
p-value		0,000	0,000	0,000	0,000	0,000	0,000

**Remark :** Different letter notation (<sup>a,b,c,d,e</sup> and <sup>f</sup>) indicates significant variation on *Post-Hoc* test, and notation (<sup>a</sup>) is the higher score.

Proximate test results on three products made from red sweet potato pulp and three products made from red sweet potato flour. The Anova Statistical Test and the Post Hoc Test showed a significant difference of 0.000 ( $p < 0.55$ ) for each product. Overall, the following results were obtained:

The average content of carbohydrates, protein, water, and ash in the fried, roasted, and steamed production process is higher for those made from red sweet potato porridge.

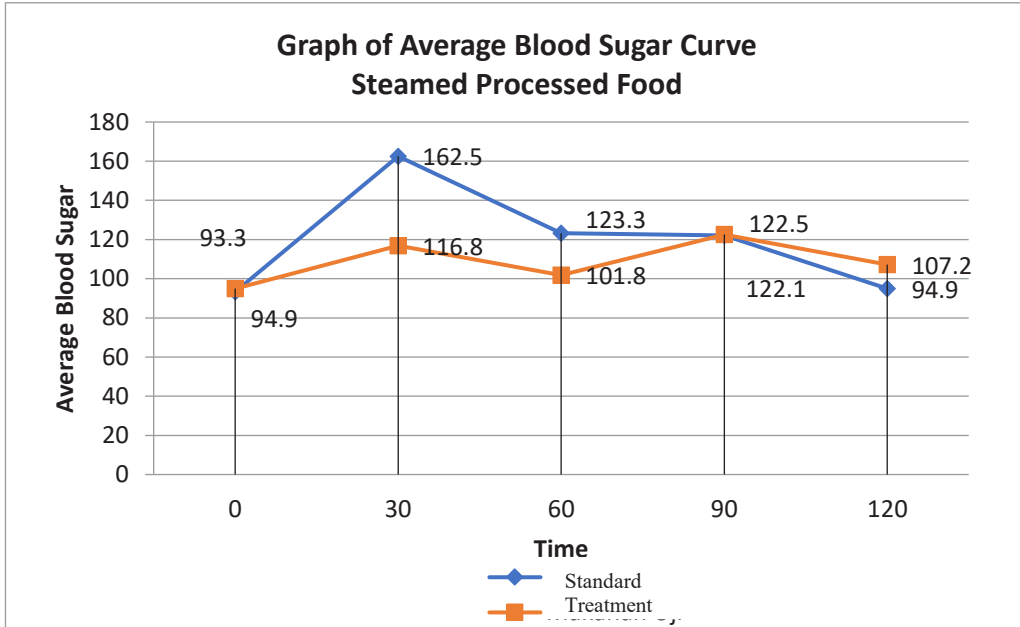
The average fat content in the fried, baked, or steamed production process is higher for those made from red sweet potato flour.

As for the crude fiber content in each cooking process and the ingredients used, different results are obtained. The highest is in steamed products of red sweet potato flour (60.91). Then the second order is for steamed products with red sweet potato porridge (56.337). So the production process by steaming will produce more crude fiber content.

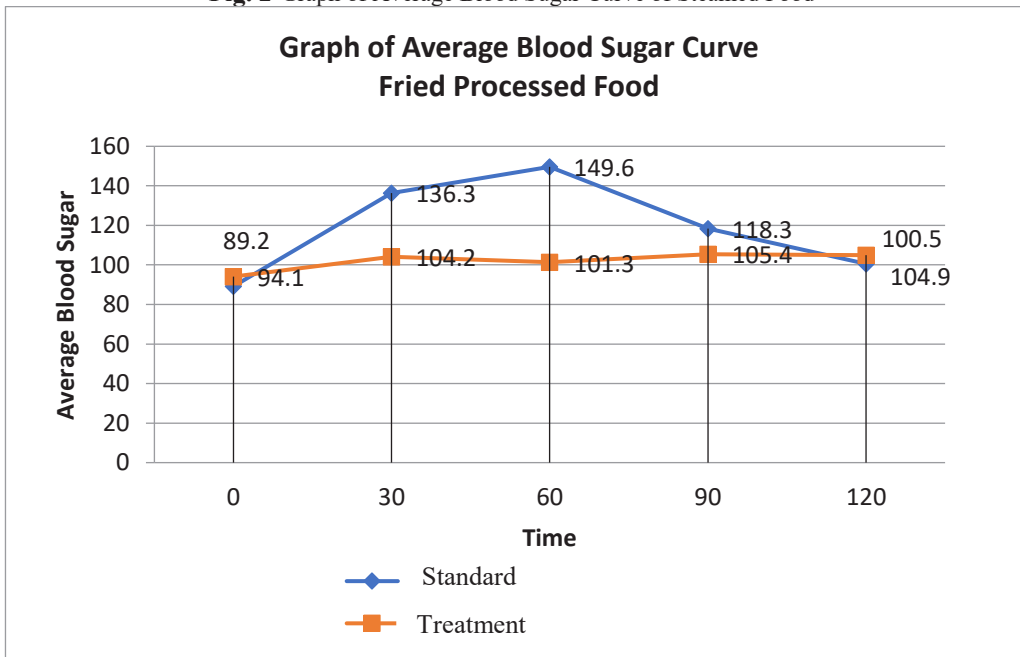
### 3.3 Glycemic Index Test (GI)

The selection of the product to be tested is based on the results of sensory tests, preference tests that are acceptable to consumers, and proximate test results, especially related to low carbohydrate content and high crude fiber. The GI test on the product was fried in the form of sticks using F1 (40% red sweet potato porridge) and the product was steamed in the form of a bar using F3 (60% red sweet potato porridge). The results of the GI calculation for both products are all in the Low category (23.90 and 48.56).





**Fig. 2** Graph of Average Blood Sugar Curve of Steamed Food



**Fig. 3** Graph of Average Blood Sugar Curve of Fried Food

## 4 Discussion

The sensory and the preference test result that the product with the fried process made in the form of sticks is the most preferred (acceptable), and the overall assessment gets the highest score (517). But of the total value of each item assessed (color, aroma, texture, sweetness, yellow sweet potato taste, and overall value), the steamed product had the highest score (3216). In more detail, the steamed product has the highest score on assessment items related to color, aroma, sweetness, and taste of red sweet potato. The lack of the product with the steamed process is that it does not have a long shelf-life due to the high water content of the main ingredient used, which is in the form of red sweet potato porridge and the water content will increase due to the steaming process.

The results of the Glycemic Index examination of the two products tested, all had low categories, namely those with the steaming process (48.56), and those for the fried process (23.90). The Glycemic Index with the steamed process got a higher value than the fried process, it was possible due to the higher carbohydrate content (14.0223%) and lower crude fiber content (46.045%), based on the results of the proximate test. Meanwhile, with the steaming process, the carbohydrate content is 11.847% and the crude fiber content is 56.337%. The difference in content may also occur because the fried product uses a formula with a lower red sweet potato porridge (40%) when the steamed product uses higher (60%). The content of sweet potato porridge used will affect the crude fiber content, which then affects the speed of the glucose metabolism process in the digestive system. In addition, the types of sweet potato variants used have different qualitative and quantitative in nutritional content, including in this study the form of the ingredient used will affect some of the nutritional content produced (in this study using the red sweet potato flour and red sweet potato porridge). In addition, according to Murtiningsih, the composition of sweet potatoes is highly dependent on the variety and level of maturity and storage time. The darker color of sweet potatoes, the higher the beta-carotene level functioning as provitamin A. Compared to white sweet potatoes, they only contain beta-carotene as much as 260 mg/100 grams, red sweet potatoes 2900/100 grams, while purple sweet potatoes do not contain beta-carotene[14].

The cooking process can affect the nutritional content of the food produced. The results showed that the cooking method by roasting, grilling, frying or boiling would affect the Glycemic Index of 10 sweet potato cultivars commonly consumed in Jamaica. Consumption of boiled sweet potatoes can minimize the postprandial rise in blood glucose. So it can be used in the management of type 2 Diabetes Mellitus. It is partly due to the formation of AGEs (Dietary advanced glycation end products), which are part of normal metabolism. But if the level of AGEs is too high, it can cause become a pathogen because it will bind to the surface of the receptor cell or cross-link with body proteins so that it will change its structure and function. The pathological effects of AGEs are related to their ability to increase oxidative stress, which is associated with the epidemic of diabetes mellitus and cardiovascular disease[23].

The results of the proximate analysis of red sweet potato per 100 grams were: carbohydrates 20.12 g, Protein 1.57 g, fiber 3 g, lipids 0.05 g, various vitamins such as Thiamin, Riboflavin, Niacin, B6, B9, vitamin C, vitamin K and most of them are vitamins A 14187 IU, various minerals such as Calcium 30.78 mg, Iron 0.61 mg, Magnesium 25.70 mg, Phosphorus 47.81 mg, Potassium 337 mg, Sodium 55 mg. The effect of lowering blood glucose in red sweet

potatoes is associated with increased levels of adiponectin, which is an adipocyte hormone that functions in the process of insulin metabolism [10]. Red sweet potato dietary fiber is a polysaccharide that cannot be digested and absorbed in the small intestine. So it will be fermented in the large intestine and will be used to balance the intestinal flora and as a prebiotic that can stimulate bacterial growth to support good absorption of nutrients. Red sweet potatoes contain strong antioxidants to neutralize malignant free radicals that cause premature aging and trigger various degenerative diseases such as cancer and heart disease.

The Spirulina addition to this product is to strengthen the effect of the resulting Glycemic Index value. Spirulina is known to be a food supplement that is safe or without side effects [17], [19]. Spirulina supplementation, three grams for four weeks, can significantly reduce fasting blood sugar levels [15],[16],[17]. Spirulina can break the radical chain reaction. So it can inhibit oxidative stress in people with Diabetes Mellitus. The results showed it has biological activities such as preventing viral replication, lowering blood glucose, and lipid profile [24],[25]. Spirulina contains active ingredients, especially phycocyanin and -carotene having antioxidant and anti-inflammatory activities [26]. Research conducted by Guan Y also found that the high calcium and low sodium content of spirulina has a positive effect on blood pressure [27].

## 5 Conclusion

The Anova Statistical and the Post Hoc Test on three products made from red sweet potato porridge and three products made from red sweet potato flour showed a significant difference of 0.000 ( $p < 0.55$ ) for each product. The average content of carbohydrates, protein, water, and ash in the fried, roasted or steamed production process is higher in the red sweet potato porridge. The fat content in the fried, baked, or steamed production process is higher than that made from red sweet potato flour. The production process by steaming produces more crude fiber content. The results of the Glycemic Index examination were all in the low category. For the steamed process (48.56) and the fried process (23.90). So it can be recommended for Diabetes Mellitus preventive.

**Acknowledgement.** This research was carried out with funding assistance from the Budget of the Faculty of Sports Science and the Institute for Research and Community Service, the State University of Semarang, following the Budget Implementation List (Daftar Isian Pelaksanaan Anggaran/DIPA) of Universitas Negeri Semarang.

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# Analysis of Using the Mobile Education Model in The Community in Health Emergency Conditions

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**Abstract.** The COVID outbreak has been declared a global health problem since January, 2020. Behavior change is the key to the spread of the Coronavirus that causes COVID-19, and conveying information regarding the application of health protocols requires appropriate counseling methods. One of the outreach programs to the community that is run at the Puskesmas is mobile counseling. The purpose of the study was to determine whether the mobile extension method brought changes in health protocol behavior in the community. This type of research uses experimental research with a pre-test and post-test design. The research at Sekayu Health Center, Semarang City, with a population of 3616 people. The accidental sampling technique was chosen. The respondents were 50 people. The Wilcoxon test was used to analyse differences behavior before and after treatment during health protocol COVID-19. The results showed the average behavior of respondents before being given the mobile counseling method is 35 and after being given the mobile counseling method is 45. The results of statistical tests obtained a p-value = 0.001 ( $p < 0.05$ ), which means there is a difference in the behavior of respondents regarding the COVID-19 health protocol before and after being given health education using the mobile method.

**Keywords:** Mobile education, health emergency condition, COVID-19, pandemic.

## 1 Introduction

Countries with vulnerable health systems have a high risk of handling COVID-19. Severe Acute Respiratory Syndrome identified as COVID-19 [1][2][3]. Early detection, isolation, appropriate treatment, and the implementation of a strong tracking system is a standard systematic response to the spread of COVID-19[4].

Some rules have been issued by the WHO and the government regarding protocols to prevent the transmission of COVID-19. The protocols include wearing masks, washing hands, avoiding touching the face, coughing and sneezing etiquette, maintaining distance, self-isolation when not feeling well, and maintaining health. Behavior change is the key to the spread of the Coronavirus that causes COVID-19. Changes in behavior in adapting new habits during the COVID-19 pandemic are important because COVID-19 has changed human civilization, such as how to get along, go to an office, and work. In delivering information regarding the application of health protocols, appropriate counseling methods are needed[5].

Counseling is a behavioral change process carried out through a systematic, directed educational approach with the active participation of individuals and groups or communities to solve problems at community. The communities are expected to know and ultimately be able to make changes. The changes that occur in society are expected to be able to increase production, income even profits so as to increase welfare [6][7].

One of the outreach programs to the community at the Puskesmas is Mobile education. It is counseling carried out around (moving) without any community gathering using loudspeakers<sup>8</sup>. Mobile education is expected to change the knowledge of people to be good. The problem in this study is "Does the mobile education method bring changes in health protocol behavior in the community". The urgency of this research is that public health education is an important part, especially in a state of critical health problems such as a pandemic. The method must be chosen properly.

## 2 Methods

Experimental research (pre-post test design) was used. The research design can be seen as below



Remarks:

- O1 : Measurement of respondent's behavior before counseling was carried out using the mobile education method.
- XI : The treatment of providing health education with the mobile education method.
- O2 : Measurement of respondent behavior after being given counseling using the mobile education method.

The research location is based on: high COVID-19 cases (red zone), visited by many immigrants, has a mobile health education program, namely the work area of the Sekayu Health Center, Semarang City, with a population of 3616 people. The sample was determined by an accidental sampling technique that met the requirements of 50 people who were determined using the Slovin formula. The sample requirements are 1) Citizens with an age  $\geq 40$  years, 2) Willing to be research respondents, 3) Participate in mobile education activities. The dependent variable in this study is the behavior of the community concerning the COVID-19 health protocol, while the independent variable is the mobile education health education model.

The research instrument consisted of counseling materials and questionnaires to assess community behavior related to the COVID-19 health protocol. The questionnaire has been tested for validation and reliability. Univariate analysis to describe the characteristics of each research variable using a frequency distribution. The Wilcoxon test was used to know about differences in community behaviour.

### 3 Results

**Table 1.** Distribution Behavior during Mobile Education Method.

No	Behavior	Before		After	
		n	%	n	%
1	Good	0	0	26	52
2	Moderate	39	78	24	48
3	Poor	11	22	0	0
	Total	50	100	50	100

Based on Table 1, it is known that the behavior of the respondent's health protocol before counseling using the mobile education method had the highest percentage, namely the behavior of respondents in the moderate category of 39 respondents (78%). While the behavior of respondents after counseling using the mobile education method has the highest percentage, namely the behavior of respondents in the good category of 26 respondents (52%).

Based on the results, the average behavior of respondents before being given counseling using the mobile education method was 35. After being given counseling using the mobile education method was 45. There are differences in respondent behavior regarding the COVID-19 health protocol before and after being given health education using the mobile education method ( $p=0.001$ ).

Before and after health counseling, there was an increase in behavior regarding the COVID-19 health protocol. Analysis of the questionnaire results showed that only 43% of respondents showered and changed clothes after doing activities outside. After being counseled, it increased to 72%. 29% of respondents who exercise regularly after counseling increased to 72%. While from 43% of respondents taking regular vitamins after being given counseling increased to 72%.

### 4 Discussion

Health education using the mobile education method can provide results of differences in respondents' behavior regarding the COVID-19 health protocol before and after treatment. Improved behavior related to bathing and changing clothes after doing activities outside the home, doing sports regularly, and taking regular vitamins.

Mobile education is counseling carried out by traveling around the community (moving) with material about current health problems without any community gathering. Mobile education aims to remind citizens of the health protocols that must be implemented. Mobile education can change people's knowledge from poor to good. One thing that plays a role to determine a person's attitude regarding handling COVID-19 is the availability of correct information about COVID-19. Effort to prevent transmission of COVID-19 can be done through. The mobile education method is one method that can be used in this situation without gathering residents. Mobile education is an activity of delivering information by traveling around with specific routes and counseling materials. Mobile education directs the health protocol application steps to targets of counseling. The results aligned with Wirawati et al. (2020), stating an increase in knowledge before mobile education was carried out from 71% to 90% after it [8].



Mobile education is one of the methods that can be used during an emergency, such as during the COVID-19 pandemic. In choosing an education method, we must consider the level of emergency or the impact on mortality events, cultural values, and public perceptions affecting the public's health behavior [9]. The results stated that the spread of COVID-19 in a pandemic situation forced changes in work habits, as well as the methods of education and counseling, are carried out [10],[11]. Quality health education involves the delivery of accurate information in simple, understandable by individuals or groups to increase awareness, change behavior, and reduce illness and death. Community education can take place in various settings, such as community centers, places of worship and schools, sporting events, local health awareness days, or in the context of screening campaigns [12]. The form of community education in groups is not possible during the COVID pandemic. Policymakers need to consider other forms of public education, including safer counseling method [13].

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# Analysis of Fitness Levels of Swimming Athletes During the Covid-19 Pandemic

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**Abstract.** This study aims to analyze the fitness level of swimming athletes in Semarang age group 10-12 years, especially during the covid-19 pandemic that is or is still ongoing. Restrictions on community activities, both micro-scale and macro, cause swimming training to experience significant disruption. The method used is to use the fitness level test method according to age or age. Tests used for this age include 40-meter sprints, sit-ups, pull-ups, vertical jumps, and 600-meter running tests. The results of the study conducted on September 3-6, 2021 are the following results for the TKJI test of male swimming athletes, the percentage of male swimming athletes who get moderate results is 3.03 % (1 athlete), and 48.48 % (16 athletes), based on the average fitness value of male swimming athletes is 13.23%, can be expressed in the less category. And for female athletes, moderate results were obtained by 42.42 % (2 athletes), and less categories were 6.06% (14 athletes), with an average of 16 female athletes as follows, 13.56% with less categories, the conclusion is that the level of physical fitness of Semarang city swimming athletes aged 10-12 years in Semarang city was declared less fit, due to the effects of government policy and less active athletes during the covid-19 pandemic.

**Keywords:** Swimming Athletes; Covid-19 Pandemic; Indonesian Physical Fitness Test (TKJI)

## 1 Introduction

The covid-19 pandemic has been going on for a year, the effects of which have been tremendous to all lines of life [7]. No exception to the world of sports, especially in terms of matches / competitions, is very limited even in Indonesia at the beginning of the covid-19 pandemic banned until now [8], athletes and performances that have been built for a very long time are very disturbed by this, especially swimming athletes [16]. Swimming athletes are required to practice regularly, even systematically and are not allowed to rest completely for two twenty-four hours, because it will be directly related to the fitness of the athlete himself [5].

Fitness is the main element that must exist in every athlete, especially swimming athletes [2], although the dominant we see in every race is speed, of course as academics we know that the element of speed without being supported by the element of endurance, especially fitness will be meaningless [13], fitness becomes a determinant of both the number of short, medium and

long distances in each race number in swimming. The efforts of all lines starting from the coach in creating fitness are very important, especially for junior athletes because this is actually the Muara candidate who will later become an important factor in achieving achievements when the athlete has reached senior [25].

The level of physical fitness of swimming athletes during the pandemic is very worrying, we know that at the beginning of the covid 19 pandemic all activities were limited even in semarang city, restrictions on community activities were applied or we often call them PPKM. In March, the existing swimming club in semarang city has started to retrain, so the researchers think that it is important to examine the level of fitness of athletes in semarang city which will be used as important information, especially for semarang city in general and their club shelter, in particular as an effort to restore swimming achievements, especially from the side of junior athletes.

The interesting point of this study is that with the analysis of fitness levels for swimming athletes, researchers can provide an overview of the fitness levels of swimming athletes, especially aged 10-12 years who during the covid-19 pandemic rest and are not intensive in training, this starting point that makes coaches will make decisions, especially in the evaluation of macro programs in the swimming coaching cycle.

Terms that often appear in the physical fitness test we often find in the Indonesian physical fitness test [7], the term that often appears in the study is kesamaptaan, fitness and Physical fitness [8] which all have the same understanding. Physical fitness is a person's ability to perform a physical activity, in certain tests that can be used to assess indicators of a person's ability or performance [9].

Toho cholik mutohir and ali infallible [10] concluded that a person's ability to do a certain effort in some time without having significant fatigue. Fitness is also defined as the body's effort to respond to physical stress and immediately neutralize it again without experiencing significant difficulties [11].

From the opinion of the experts above it can be concluded that physical fitness is an important element that must be owned by a person, especially athletes. The athlete's daily diet is a physical activity and is very relevant if the physical condition is in a fit, healthy, strong and ready to start movement activities in the sense of training with portions tailored to the needs for the sake of improving performance.

Toho cholik mutohir and ali maksum [10] divided several components of physical fitness, namely:

1. Kelentukan
2. Muscle speed in contracting
3. Cardiovascular endurance
4. Skeletal muscle strength
5. Muscle endurance

Looking at the statements of experts / experts above can be concluded that the components of physical fitness that can be studied later can be divided into four parts, including:

1. Endurance
2. Power
3. Speed, and
4. Muscle strength

A way to analyze or measure physical fitness can be done with several models, including [12] using the Indonesian physical fitness test (TKJI), which is a reference for trainers, penjas teachers and other sports people used as a reliable measurement benchmark, and valid because it has gone through a long procedure in pembuatannya.

Another basis is to use this test, adjusting to the condition of children in Indonesia so that it fits and is suitable for use as an analysis tool or measuring instrument in order to see the physical potential possessed by Indonesian athletes [13], TKJI itself is divided into several age levels, for the age to be used as a benchmark is 10-12 years

a. TKJI age 10-12 years consists of:

- 1) run 40 meters
- 2) hanging body lift, 60 seconds
- 3) bed sitting, 30 seconds
- 4) jump upright, and
- 5) 600 meters running

Starting from this, researchers are interested in conducting a study with the title: analysis of the fitness level of swimming athletes during the Covid-19 pandemic.

### **1.1 Objectives**

The purpose of this study is to determine the level of physical fitness of athletes swimming Semarang, especially when restrictions on community activities are implemented, so that it can be used for referral trainers to make a better exercise program after exercise activities can be implemented.

## **2 Methods**

Based on the discussion of the chapter The purpose of this study is to determine by using the analysis of the level of fitness of swimming athletes Semarang, Central Java. The methods used to conduct research are as follows the research approach used, how to display sample samples and populations, instruments used in research, how to take data in research, how to analyze research data, the schedule or time of research is carried out, and the last is a bibliography [15].

Variety of research that will be used is a direct survey method with a variety of approaches chosen by the researcher is descriptive. Survey is the approach chosen by the researcher who aims to find information in the form of data to be obtained complete and accurate [16]. The researchers aimed to obtain data on the level of physical fitness of Semarang city swimming athletes during the covid-19 pandemic.

Population is the number of swimming athletes to be studied in the age group of 10-12 years [17]. So that the populasi that will be used is a number of swimming athletes in the city of Semarang in the age of 10-12 years or entered in the age group 4, in accordance with the age group division in PB PRSI [18].

Sampling or often referred to as a sample is a portion of some population that will be used as the object of research/ research [19], if the studied less than a hundred people then it can be used all or in the sense is the total sampling, but if there are more or more than serratus people then it can be taken 10-15 percent or 20-25 percent or more [20].

Measurement of the level of physical fitness of Semarang city swimming athletes aged 10-12 years was measured using the Indonesian/TKJI physical freshness test items, namely 40 meters fast running, bed-sitting, pull-ups, jumping upright and running as far as 600 meters [21].

To obtain relevant and accurate information, it is necessary to measure information that can be accounted for, namely measuring instruments or substantial research instruments, because good research instruments must meet two requirements, namely substantial and reliable [22]. In this study, the physical fitness meter conducted physical fitness test on the object of study using test observation sheet [23].

Tests and measurements conducted and standardized in the symposium in 1984 TKJI test has been agreed with the test items for the age of 10-12 years are as follows, namely:

1. Sprint 40 meters
2. Pull up
3. Sit up
4. Vertical jump
5. Run 600 meters

This test is a valid and reliable instrument that can be used as a physical freshness test guideline in order to get the results of the level of physical fitness for the age of 10-12 years for the son and daughter [24], so that the results will be as a reference stakeholder/Semarang city government for input material about the state of the fitness level of swimming athletes aged 10-12 years both the son and daughter of Semarang City.

### **3 Data Collection**

The data obtained as follows, the physical fitness data of Semarang city swimming athletes aged 10-12 years are in the category of less once with a percentage of 0% (no athletes), less percentage category of 90.09% (30 athletes), moderate category percentage of 9.09% (3 athletes), good category percentage of 0% (0 athletes), and excellent category with a percentage of 0% (0 athletes). Meanwhile, based on the average value of 13.39, the level of physical fitness of male and female athletes is included in the category of less.

The COVID-19 pandemic has an effect on all lines, especially sports nurseries, including Semarang city swimming athletes, starting from the change of policy from not being allowed to do activities, with restrictions on large-scale community activities, until the implementation of restrictions on community activities has an impact on many facilities and infrastructure closures and the effect is that Semarang city swimming athletes, swimming athletes are athletes who are special seen from the hours of training because it is not allowed to exercise holidays within 2x24 hours, if it happens of course the effect on the performance of physical fitness athletes, and it is proven by the Indonesian physical fitness test for the age of 10-12 years obtained less results, it is obtained because after the opening of the new swimming pool

2 weeks opened, athletes are given tests and the results can be used as material for future evaluation, of course to City athletes and related parties to improve the performance of swimming Semarang and Central Java.

## 4 Result and Discussion

This study was conducted in the city of Semarang, precisely in the sports arena Manunggal Jati, East Semarang. Conducted on September 1, 2021 until September 4, 2021. The research subjects were swimming athletes aged 10-12 years, Semarang men and women.

### 5.1 Numerical Results

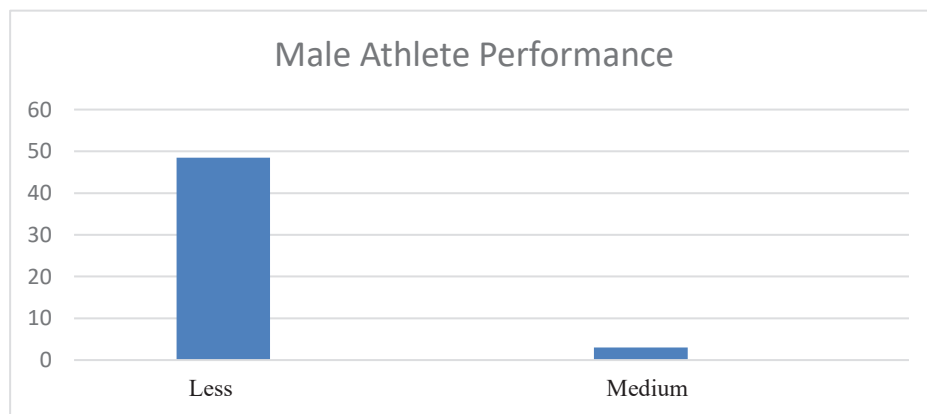
The results of the 2021 Indonesian physical fitness test research, Semarang city swimming athletes aged 10-12 years consisting of Test 1). Run 40 meters, 2). Body lift hanging Test, 3). Sitting bed test, 4). Test skip upright, and 5). The 600-meter running test is as follows:

**Table 1.** distribution of physical fitness athletes swimming Semarang age 10-12 years

No	Number of Values	Classification	Frequency	%
1	22-25	Very Nice	0	0 %
2	18-21	Good	0	0 %
3	14-17	Medium	3	9.09 %
4	10-13	Less	30	90.9%
5	5-9	Less Once	0	0%
<b>Results</b>			<b>33</b>	<b>100%</b>

### 5.2. Graphical Results

Here is a presentation of physical fitness research results Semarang swimming athletes aged 10-12 year, the graph data as follows:



**Fig. 1.** Male swimming athletes aged 10-12 years

Judging from the graphic data above, the following results are obtained for the TKJI test of male swimming athletes, the percentage of male swimming athletes who get moderate results as much as 3.03 % (1 athlete), and as much as 48.48 % (16 athletes), based on the average fitness value of male swimming athletes is equal to 13.23 %, can be expressed in the category of less.

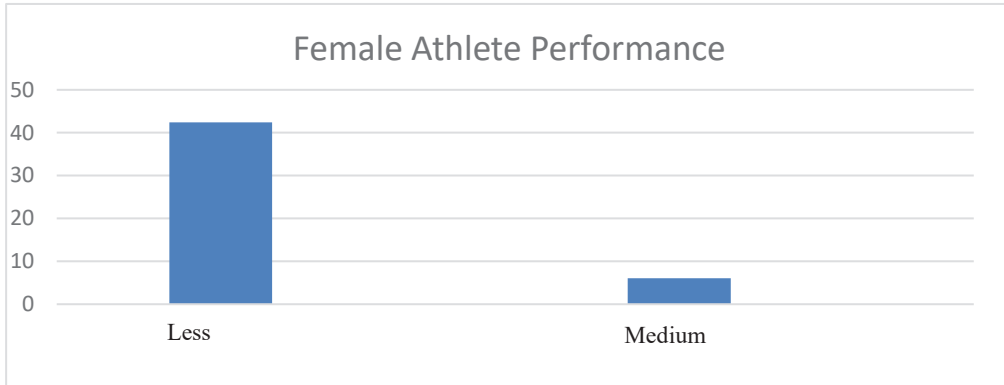


Fig. 2. Female swimming athletes aged 10-12 years

### 5.3. Proposed Improvements

The graph above is the achievement of the TKJI test of female swimming athletes aged 10-12 years Semarang city, obtained moderate results as much as 42.42 % (2 athletes), and less category as much as 6.06 % (14 athletes), with an average of 16 female athletes as follows, 13.56% with less category.

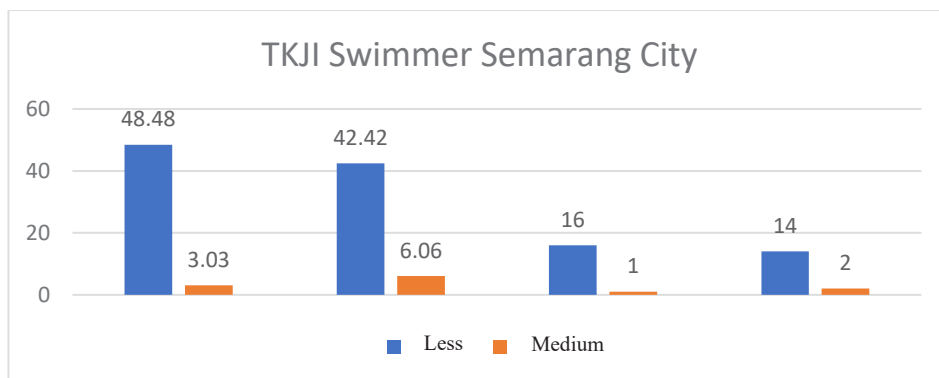


Fig. 3. Semarang City Swimming Athletes Aged 10-12 Years

### 5.4. Validation

Based on the table and graph above shows that the physical fitness data of Semarang city swimming athletes aged 10-12 years are in the category of less once with a percentage of 0%



(no athletes), less percentage category of 90.09% (30 athletes), medium category percentage of 9.09% (3 athletes), good category percentage of 0% (0 athletes), and excellent category with a percentage of 0% (0 athletes). Meanwhile, based on the average value of 13.39, the level of physical fitness of male and female athletes is included in the category of less.

## 6 Conclusion

The effects of the covid-19 pandemic are presented very real, especially to the object of research, namely the Indonesian physical fitness test for athletes aged 10-12 years, proven to get 90% less fit results, so the training pattern and training strategy will start from scratch, this is the embodiment of the consequences of the rules made by the government, which is a priority, because currently other countries also with its policies make everything a new normal, even the Olympic event has just been completed, and after this will be welcomed by a national grand event such as PON, so we need to wait for this policy / rule to improve for sports people so that achievements continue to increase, especially for the image of the Indonesian nation

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# Instrument Model of Tennis Forehand Stroke through Biomechanics Movement Analysis for National Tennis Athlete

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**Abstract.** In a tennis game, effective and efficient biomechanics motion is very important to produce maximum explosive power. In addition to blocking the flow of ball power, the wrong stroke motion is also expected to cause injury. This study uses R&D with a sampling technique using purposive sampling of 10 national athletes. The instrument developed is biomechanical motion including foundation, rotation, force position, impact and follow through. The results show that the most crucial aspect of the foundation is how athletes use the forehand grip correctly, namely the semi western. Correct rotational motion plays an important role in gathering energy by means of good and fast body elasticity. A good strength position utilizing the position of the shoulders, chin, inactive hands, body position and elbows must carry out their functions properly in a regular series of movements. The correct impact is done at perfect momentum and the eyes are focused on the ball, the racket is slightly horizontal, the weight is transferred forward through the left knee and the shooting distance is not too far or too close to the body. The follow through should be accelerated and let it flow naturally until it runs out to the sides. The conclusion of the forehand technique if done with the correct biomechanical motion will affect the power of the stroke, the more effective the movement, the greater the power generated

**Keywords:** instrument, biomechanics, forehand.

## 1 Introduction

A professional athlete certainly wants his technical ability to play tennis to be perfect. Because perfection in any sport, including tennis, will support future achievements. A building must have a strong foundation. In technical tennis, physical and mental is a pyramid that forms a unity in achieving an achievement. The correct biomechanical motion will produce the correct punch technique so that the results of the blow become effective and efficient. Effective movement in tennis, especially the forehand technique, will produce super explosive power. Besides, if the biomechanical motion sequence is correct, it will minimize injury.

Mastery of basic techniques correctly is very fundamental. In tennis, there are at least 5 basic techniques: 1) forehand, backhand, volley, smash and serve. Of the five techniques, the forehand is the first technique mastered by a player. The main basic tennis technique that must

be mastered is the forehand stroke [1]. For a professional player to form the correct forehand technique is very important because the amount of power generated is influenced by the truth when the athlete performs the forehand stroke technique or often called biomechanical motion. An aggressive early approach is the key to the forehand shot [2]. The magnitude of the speed of the blow produces a large force or power stroke [3].

There are actually a lot of talented tennis athletes in Indonesia who have the potential to achieve maximum performance. However, due to mishandling from the start and lack of knowledge of the coach in identifying the athlete's biomechanical motion errors, the athlete's performance became mediocre. Even some of Indonesia's top tennis players, such as Angelia Widjaya, Daniel Haryanto, Johan Samawi, etc., suffered serious injuries which resulted in the athlete retiring from the world of tennis. This was identified in addition to an excessive training program also due to a biomechanical motion error when performing a tennis stroke technique. There are various types of injuries in tennis, such as ankle, back, shoulder, elbow, knee injuries and others. According to RSON, the average tennis injury in 2015 reached 6.3% [4].

Several observations have been made in the field, athletes are often frustrated because the forehand strokes produced are not as desired. The power of the forehand stroke is not maximized due to errors in the athlete's biomechanics when performing the forehand technique so that the athlete's performance development automatically stagnates and it is not uncommon for athletes to experience injuries so that many athletes end up not continuing their careers in the world of tennis.

From some of the findings above, the researcher can conclude that biomechanical motion errors in performing the forehand technique are very influential on the development of progress in mastering the athlete's forehand stroke technique and the risk of injury, kinematic analysis in forehand drive is very important to determine the quality of the technique [5]. Even more crucial if there is no comprehensive improvement will cause the athlete's achievement to decline. Departing from these problems, researchers are interested in developing a forehand biomechanics motion evaluation instrument in analyzing athlete motion. The purpose of this research is as a tool for analyzing motion errors made by athletes so that athletes and coaches can make corrections and interventions to improve the athlete's stroke technique and minimize the occurrence of injuries to athletes in order to support athlete's achievement in the future.

## **2 Methods**

The design used in this research is Research and Development (R&D) to develop a biomechanical motion analysis instrument for the forehand stroke technique [6]. The sampling technique uses purposive sampling with the following criteria: 1) athletes are advanced players, 2) athletes are male players, 3) athletes are regional and national level players. The instruments developed in this study include foundation, rotational motion, positional force, impact and follow-up.

In compiling the instrument involved 3 experts, namely 1 tennis expert, 1 tennis coach and 1 biomechanics expert. The test trials were carried out 2 times on a small and large scale. Small-scale trials were carried out 2 times using 10 field tennis UKM students and large scale trials were carried out 1 time using 4 national athletes.

Data collection techniques with observation, questionnaires, tests & measurements and documentation. Observations were made to identify the initial fault in the biomechanics of regional athletes when performing the forehand technique. After researchers know the athlete's motion problems, the next step is to make an initial draft of the instrument which is given to 3 experts to get an assessment of the feasibility of the product. In compiling the instrument involved 3 experts, namely 1 tennis expert, 1 tennis coach and 1 biomechanics expert. Tests & measurements using small scale trials were carried out 2 times using 10 regional athletes and large scale trials were carried out 1 time using 4 national athletes. Documentation in the form of videos and photos which will then be included in the Dartfish Motion Analysis program or software.

Data analysis using Dartfish Motion Analysis and quantitative descriptive. Dartfish analysis by recording the athlete's movements or samples with video then entered into the dartfish software and the video is cut into photos to make it easier to obtain the angle or target of the movement to be analyzed. The movements that have been analyzed are then used as benchmarks in compiling the forehand biomechanics movement instrument using a quantitative descriptive formula.

### 3 Results

The results were obtained by means of 10 athletes doing groundstrokes in pairs for 5 minutes. When the athlete performs a groundstroke, a video recording session is conducted. The video is then converted with Dartfish software. The assessment model for each aspect is 0-5 points. The maximum value per aspect item is 5 and the maximum value for all aspects is 25. The five aspects assessed include foundation, rotational motion, position strength, impact and follow through. The results of the study after being analyzed are as follows: the foundation aspect has an average of 4.6 and an SD of 0.52. The rotational motion has a mean of 4.1 and an SD of 0.87. Strength positions have a mean of 4.4 and SD of 0.52. Impact has a mean of 3.6 SD 1.26. The mean follow-through was 4.7 and SD 0.48.

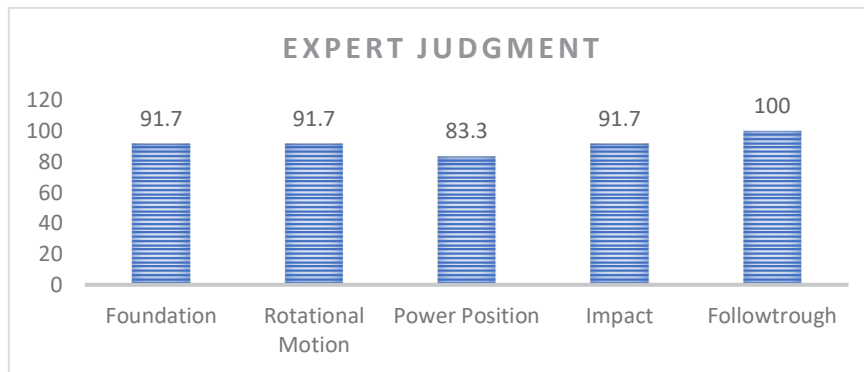
The overall results of the biomechanics of the forehand technique show that 4 national level athletes are in the good category with scores of 25, 25, 24, 24. At the regional level athletes there are 6 less category scores, namely 20, 20, 20, 19, 19, 18. Average The average forehand technique of 10 people is 21.4 with an SD of 2.76. The biomechanical motion parameter table for the forehand stroke technique can be seen in table 1.

**Table 1.** Parameters motion biomechanics forehand technique

Item	Category
Very good	> 26
Good	24-26
Enough	21-23
Less	17-20
Very Less	< 17

The results of the study which were validated by 3 tennis experts showed that the foundation had a percentage of 91.7% (very high), rotational motion 91.7% (very high), position strength 83.3% (high), impact 91.7% (very high) and 100% follow-through (very high). These results

indicate that the acceptability of the product is very high and can be used in the evaluation and analysis of forehand biomechanics motion instruments. The table of product acceptance by experts can be seen in Figure 1.



**Fig. 1.** Expert evaluation percentage.

#### 4 Discussion

The foundation has a major role in the continuation of the biomechanical motion of the forehand technique a regular series of motion will produce an optimal forehand stroke [7]. The right motion means that it will have the right effect on the other movements. The correct foundation based on this study uses a semi-western grip which is often used by regional and national level athletes. grip contributes to the biomotor quality of an athlete [8].study concluded that the horizontal grip speed of the eastern grip racket is faster than the continental grip on the backhand technique [9]. When the athlete is in a position ready to receive the ball from the opponent, the head of the racket is above the grip. In the next aspect of the foundation that is no less important when the player is about to hit, all hands are functioning properly, if the right hand holds the grip, the left hand holds the neck of the racket. In the position of the feet, both feet are opened shoulder width apart with the body slightly bent forward so that it will produce a good balance in the body. In a study, the movement of the leg that is perpendicular to the forehand stroke has the potential to cause injury compared to both bent legs [10], the elbow flexion movement in the forwardswing step is better than the elbow extension movement [11]. Players must always focus and concentrate their eyes on the incoming ball.

The movement of rotation or rotation plays an important role in gathering power before releasing a forehand shot. To improve forehand performance, coaches should focus on proper hip and torso rotation [12]. Legs, hips and chest must move in synchrony so that athletes can take full advantage of the kinetic chain [13]. When the opponent's ball comes towards us as quickly as possible, the body rotates stating that agility is needed in making forehand strokes [14]. For right-handed players, the left shoulder is facing the net, use the index finger of the left hand (if not a left-handed player) to aim at the ball as well as the navigator the ball will be shot in the desired direction. The use of the index finger also acts as a counterweight to the body so that the body is balanced and does not float around. The position of the open stand foot (left and

right feet parallel) when going to fire a forehand shot. And when the body does a round of both legs bent.

Forehand strokes require the right position of strength so that the resulting ball can be fast and effective. To get high explosive results, the racket head must be higher than the grip, this is possible if the racket head is above the power in the hand will not run out first. When the racket is swung down, there is a gravitational attraction of the earth which will naturally increase the power of the blow. The shoulders and hips are wrapped around to form a square before hitting. The wrapped shoulders and hips can be said to produce Hooke's law, which is to form the elastic properties of the shoulders and hips so that they will produce a spring force hip flexion increased by 38% after impact from slow to fast [15].

Ball impact or often called ball hitting is a crucial phase in the biomechanics series of forehand stroke techniques. The player must create the right momentum when there is an impact between the racket and the ball so that it will create the desired ball speed. In producing the right ball impact, the player must focus on the ball to be hit, swing the shoulders quickly, the hand position must be upright and the racket is horizontal, when the ball impact is straight then transfer the body weight forward through the ball bent left knee for a powerful hitting runway [16].

The correct follow through is that after contact, the swing is accelerated to allow the racket to flow naturally. Use the right and left foot as a pivot when the player swings and let the foot stabilize the movement naturally and then end with a pronation movement. At the time of follow through, so that the biomechanics of the forehand stroke is correct, let the elbow stabilize the movement naturally. The muscles stabilize the elbow as a unit during a hit to the ground in high-level players [17]. Effective follow-through movements can reduce the risk of injury [18].

This developed instrument can be used to analyze motion errors when performing a series of forehand strokes so as to optimize the performance of the hips and shoulders in creating explosive forehand strokes. This instrument can also minimize the occurrence of injury because it can correct wrong movements into correct and effective movements.

## 5 Conclusion

This research instrument is highly recommended in analyzing the biomechanical motion of the forehand stroke technique. The coach from the beginning must emphasize to the athlete to use a semi-western grip when making forehand strokes in order to produce effective and high explosive forehand strokes. Athletes should pay attention to the rotation of the shoulders and hips when performing rotations to be carried out as quickly as possible. Coaches and athletes must pay attention to the position of the racket head always above during the backswing in order to collect the power that will be fired from the racket to the ball. In order for the shot to reach the desired target, it is important that the impact racket is always in a horizontal position and the key is to focus on the ball and train players to hit at the right momentum. Let the follow through occur naturally in order to reduce the risk of injury when making forehand strokes.

**Acknowledgments.** The authors would like to thank all those who have helped to carry out this research. Relevant parties include: Athletes from UKM Tennis field, Semarang State University, Central Java National Athletes, Enrico Satria National Trainer, Tri Nurharsono,

Tennis Expert, Prof. Sugiharto, M.Kes is an expert in sports biomechanics and LP2M who has helped facilitate this research activity.

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# Intensive Care Coordination Method (ICCM) Improve Clean and Healthy Lifestyle Habits to Prevent Breeding Places Vector

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**Abstract.** Efforts to improve healthy behavior and clean teenagers in boarding schools should be increased, given the increasing number of health problems that occur in boarding schools. Steps can be taken to build a clean and healthy life behavior for one of them by applying methods of Intensive Care Coordination. ICCM application of this emphasizes intensive coordination between the occupants of the boarding school to raise awareness of self-care and the creation of a healthy environment at the boarding school. The research objective is the establishment of a Model ICCM and getting an idea of the effectiveness of the model ICCM as an effort to improve hygiene and health behaviors in adolescent girls boarding school occupants. Research has been done in one of the female Islamic boarding schools in Semarang City. The samples were female students who have health problems and have unhealthy habits. Quasi Experiment study was a non-randomized design with one group pretest-posttest design. Data was collected by means of observation, interviews, and questionnaires. The instrument of research is an observation checklist, interview, and questionnaire. Data were analyzed with univariable and bivariable analysis, namely the Wilcoxon statistical test. The results showed indicators of personal hygiene, environmental sanitation in the room and a place to learn, environmental sanitation in latrines and ablution, and environmental sanitation in the yard between before and after application of ICCM increased significantly ( $p$ -value  $<0.05$ ). So, clean and healthy behaviors to prevent breeding place vector diseases in female santri increased significantly ( $p$ -value = 0.00).

**Keywords:** Intensive care coordination, clean and healthy lifestyle habits, female santri, Islamic boarding school.

## 1 Introduction

Islamic boarding schools are the oldest educational institutions in Indonesia. In Islamic boarding schools, all educational activities are carried out as well as dormitories for administrators, teachers, and students [1]. The life of a boarding school is identical to simplicity and togetherness/familiarity which if not organized can lead to health problems. Such as the culture of borrowing and borrowing clothes, towels, gloves, hanging dirty clothes, etc. In addition, information about clean and healthy living, especially in preventing the breeding of vectors that cause disease, has not yet reached the lives of students.

Semarang City Health Profile data states that diseases related to unsanitary and healthy living behavior related to individual hygiene and poor environmental sanitation are scabies, ARI,

diarrhea, typhus, leptospirosis, and vector-borne diseases such as dengue hemorrhagic fever (DHF) (Dinas Kesehatan Kota Semarang, 2019). The incidence of disease due to lack of Healthy and Healthy Behavior (PHBS) and lack of awareness in maintaining environmental sanitation always increases every year. Problems of health and environmental sanitation also occur in the area of Islamic boarding schools in Semarang City, especially those located in robbed areas or on the coast. Poor environmental sanitation conditions and poor individual hygiene behavior will trigger the emergence of health problems.

Based on the results of the researcher's interview with one of the boarding school administrators, he explained that health problems related to infectious diseases such as dermatitis, pediculosis, tinea versicolor, scabies, and DHF always infect students in Islamic boarding schools. It was reported that poor environmental hygiene and sanitation increased the incidence of the disease. In general, the cottage environment is surrounded by sewers. Miftakhul Ulum Islamic Boarding School is located in a coastal area where tidal water will inundate the cottage environment every 12.00 to 15.00 WIB. Rob water and stagnant water around the cottage environment are usually used to dispose of garbage. The main access/road to Ponpes is a large river that is used to dispose of feces by residents. The condition of the Islamic boarding school building is increasingly concerning because the building is getting shorter/lower and narrower due to the elevation of the floor to avoid the entry of tidal water, while the roof is not raised. This makes the air in the room more stuffy and unclean. The individual hygiene behavior of students based on interviews is also still not good. For example the behavior of rarely changing clothes or underwear, the habit of hanging clothes, the habit of borrowing friends' clothes (especially headscarves and jackets), also not washing dishes immediately after eating, and the lack of habit of draining the bathtub once a week.

In avoiding and overcoming environmental health problems, students need support and assistance from various parties, including support from their friends and administrators. However, one thing that should not be forgotten is the awareness of the individual students themselves to change and become disciplined individuals in maintaining the hygiene and sanitation of the Islamic boarding school environment [2]. Knowledge needs to be increased so that students can change their behavior to be healthier [3]. Through knowledge, they will realize that there will be bad impacts that they will receive if they behave unhealthily and there will be benefits that they will get if they behave in a healthy manner to protect the environment [4].

Changes in health behavior can be started by changing unhealthy behavior into a healthy behavior, developing healthy behavior, and maintaining healthy behavior [5]. A person's behavior can change if there is a synergy between self-awareness and coordination between residents in the pesantren environment. One of the steps that can be taken to build clean and healthy living behavior is by applying the Intensive Care Coordination Method (ICCM) [6]. The goal to be achieved in this study is the formation of the ICC model as an effort to improve clean and healthy living behavior in Islamic boarding schools and Islamic boarding schools. found a picture of the effectiveness of the ICC method as an effort to increase clean and healthy living behavior in Islamic boarding schools in preventing disease vector breeding places.

The core of ICCM is to coordinate the pesantren community (girls, teachers, and administrators) so that they are willing and able to live clean and healthy lives. The concept of ICCM is to facilitate them to find unsanitary and healthy behavior so that they seek to solve the problems they face through good coordination between each individual in the team and with the board of

the Islamic boarding school. So that awareness of the importance of clean and healthy living can grow well.

The solution to health and environmental problems that exist in the ICC method is to find health problems that occur in Islamic boarding schools by students directly which is carried out during an introspective survey so that they agree that these problems do exist and occur and need to be prevented and controlled through team coordination, individual care, and implementation of healthy behavior guidelines to realize clean and healthy living behavior in Islamic boarding schools. Therefore, to improve clean and healthy living behavior, the application of the ICC Method is important to be able to solve health problems that occur in Islamic boarding schools. Improving clean and healthy living behavior will be able to improve the quality of life of santri as the next generation of the nation who excels, is physically and mentally healthy and free from disease.

## **2 Objective**

The research objective is the establishment of a Model ICCM and get an idea of the effectiveness of the model ICCM as an effort to improve hygiene and health behaviors in adolescent girls boarding school occupants.

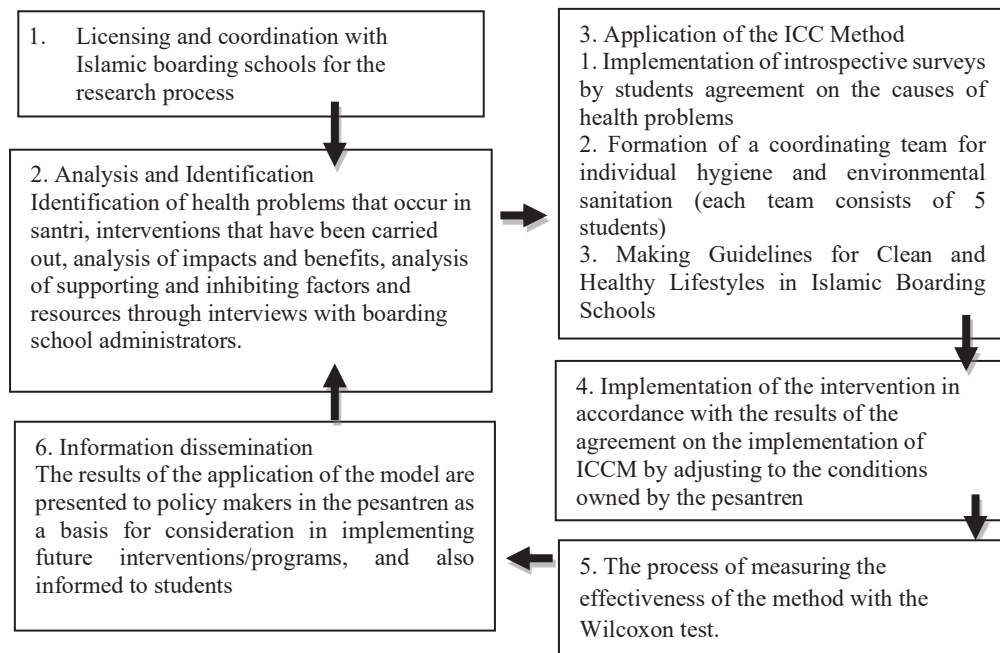
## **3 Literature review**

Changes in health behavior can be started by providing knowledge and understanding to the target. After the target has adequate knowledge and understanding, gradually the target's attitude towards healthy behavior increases, so that slowly the target will change unhealthy behavior into a healthy behavior, develop healthy behavior, and maintain healthy behavior [5]. A person's behavior can change if there is a synergy between self-awareness and coordination between residents in the community, both the community in general or the community in a limited scope such as Islamic boarding schools, schools, workers, and others [3]. One of the steps that can be taken to build a clean and healthy lifestyle is to apply the Intensive Care Coordination Method (ICCM) [6]. This ICCM aims to form a model of intensive self-care and environmental coordination as an effort to improve clean and healthy living behavior in Islamic boarding schools so that efforts can be made to improve clean living behaviors in preventing disease vector breeding grounds. More about this source textSource text required additional translation information.

## **4 Methods**

The research was conducted at the Putri Takhfidzul Quran Islamic Boarding School MIFTAKHUL ULUM, Kel. Terboyo Wetan, Genuk, Semarang City. The research sample is female students who have health problems and have unhealthy habits based on the results of the coordination of the boarding school administrators totaling 30 people. This research is Quasi Experiment research with Non-Randomized One Group Pretest-Posttest Design. The research instruments are an observation checklist, interview guide, and questionnaire. Data analysis used

univariable analysis, research data were described in the form of tables, graphs, and narratives) and bivariable analysis was used to determine the effectiveness of the method, namely before and after the application of the ICC method using the Wilcoxon statistical test. The stages of ICCM research can be seen in Figure 1.



**Figure 1.** ICCM Research Implementation Flowchart

The research began by coordinating and licensing with the leadership of the Islamic boarding school. After being allowed to do research at the boarding school by the administrator, the research team coordinated with the board of the Islamic boarding school. After determining the schedule that was adjusted to the free time with the students, the researchers conducted interviews with the boarding school administrators about the clean and healthy behavior of students and also about the behavior of maintaining environmental sanitation in Islamic boarding schools. In addition, they were also asked about the obstacles faced in maintaining the PHBS of students and the environment of the Islamic boarding school.

## 5 Data collection

Data collection with observation, interview, and questionnaire.

## 6 Results and discussion

The Islamic Boarding School for Girls Takhfidhul Quran Miftakhul Ulum is one of the Islamic boarding schools in the city of Semarang. This Islamic Boarding School consists of two Islamic Boarding Schools, namely a special boarding school for men and a special boarding school for women. There are approximately 40 female students in the female Islamic boarding school. The results of interviews with boarding school administrators stated that the health problems that occur in students are dermatitis (itching on the skin), pediculosis (hair lice), tinea versicolor, scabies, in addition, dengue fever, fever for no apparent reason, and scabies. The state of personal hygiene of each student is still lacking, for example, they rarely change clothes, often hang clothes because there are no closets available, and the habit of borrowing clothes, especially jackets and headscarves.

The daily activities of female students are only carried out in the pesantren. There are no interventions that have been carried out to solve health problems related to clean and healthy living behavior by the leaders of Islamic boarding schools. The activities carried out were the establishment of a picket schedule for cleaning the Islamic boarding school and washing dishes. Meanwhile, the counseling that has been done by the puskesmas is about women's reproductive health. The students at the Miftakhul Ulum Islamic Boarding School are teenagers, and they are still very unstable and easily influenced by the environment, including the school environment, family, friends, and society. There are some students who are diligent in maintaining personal and environmental hygiene, but there are students who do not want to know about the problem of environmental cleanliness in Islamic boarding schools.

The inhibiting factor that becomes an obstacle in efforts to improve healthy and clean living behavior is the lack of togetherness and the low sense of need for students for the importance of self-care and the environment, this is due to the lack of in-depth information related to how to coordinate to improve PHBS in Islamic boarding schools. The supporting factor in efforts to improve PHBS in Islamic boarding schools is their very strong sense of kinship which can be a way to coordinate to remind and maintain each other in self-care and improve the cleanliness of the Islamic boarding school environment. It is hoped that with a strong sense of kinship, the team coordination between them will succeed in realizing PHBS in Islamic boarding schools.

The study was conducted on 30 students, and the selection of students was based on recommendations from the boarding school administrators. The selected students are those who are regular and do not often return to their hometowns. All students are female. The Characteristics of the research subjects in Table 1.

**Table 1.** Characteristics of research subjects

No	Age	Amount	%
1	11-15 years old	5	16,7
2	16-20 years old	18	60,0
3	21-25 years old	7	23,3
Total		30	100

The implementation of ICCM emphasizes intensive coordination among the residents of Islamic boarding schools to raise awareness of self-care and the creation of a healthy environment. Elements of this ICCM consist of the Implementation of Self Insight Survey (SMD), Care Planning Team (CPT), making a Guide for health behaviors, and the implementation of healthy behavior guidelines in Islamic boarding schools. The stages of implementing the ICC Method to improve PHBS in Islamic boarding schools are started by conducting a Community Self Survey (CSS). Community Self Survey (CSS) or Self Insight Survey (SMD) is an activity of collecting and processing data on conditions/problems related to pesantren health, such as environmental health problems and behavioral problems (PHBS). The purpose of CSS is for students to be able to conduct introspective studies and obtain information about the health conditions/problems faced by them at their Islamic boarding schools who are accompanied by boarding school administrators and researchers so that the problems found are truly felt and agreed upon by them. Thus, it is hoped that they will become aware of the problems faced in their pesantren, and rise up intending or determined to find solutions. This survey was conducted on 30 female students and was accompanied by the administrator.

**Table 2.** Results of Community Self Survey on PHBS Problems

No.	PHBS Problem	%
<b>A</b>	<b>Personal Hygiene (Body, clothing, nails)</b>	
1	The rest of the food that is scattered / not cleaned in the hostel	26,7
2	Garbage is not managed properly / not directly disposed of in the trash	23,3
3	Borrow clothes that have been used interchangeably	26,7
4	Sleeping without a blanket	23,3
5	Sleep without mosquito repellent/ mosquito repellent	60,0
6	Drink a glass for two	43,3
7	Pillows are often used together	80,0
8	sleeping on the floor, without blankets and bedding	20,0
9	Serving food is not closed	63,3
10	Dirty dishes are not washed immediately after eating	23,3
11	Some students rarely brush their teeth	13,3
12	Rarely cut and clean nails	26,7
<b>B</b>	<b>Environmental Sanitation Problems in the Dormitory (rooms and study areas)</b>	
1	The clothes that have been used are hanging in the dormitory	53,3
2	Don't open the window every day	30,0
3	shoes and slippers are placed in the room	86,7
4	Wet clothes are drying in the dormitory	23,3
5	Mattress is rarely dried	63,3
6	Blankets are rarely washed	26,7
7	Dormitory floors are rarely mopped	50,0
8	Do not provide covered trash cans in the hostel	33,3
<b>C</b>	<b>Environmental sanitation problems in latrines and ablution places</b>	
1	The soap bucket is not neatly arranged	16,7
2	After defecating don't wash your hands with soap	13,3
3	The bathroom is mossy and slippery	30,0
4	The place for ablution is mossy and slippery	23,3
5	Don't drain the tub regularly once a week	90,0
<b>D</b>	<b>Environmental sanitation problems in Islamic boarding school Pages</b>	
1	The drains around the cottage are clogged with garbage	16,7
2	Stagnant water around the hut	50,0
3	Garbage in the pesantren environment is not managed properly	23,3

Based on Table 2, the seven highest PHBS problems that exist in Islamic boarding schools based on the mutual agreement are not draining the bath regularly once a week (90.0%), shoes and sandals being placed in the room (86.7%), pillows often shared (80.0%), mattresses were rarely dried (63.3%), served food uncovered (63.3%), slept without mosquito repellent/mosquito repellent (60.0%), clothes that were already used hanging in the dormitory (53.3%), stagnant water around the cottage (50.0%), the floor of the dormitory is rarely mopped (50.0%). The problems that have been found together are then agreed to be resolved together. The next stage is the formation of a care planning team.

The second stage of ICCM is the formation of a Care Planning Team, namely the formation of a team consisting of 1 chairman and 5 members in each group. This is intended so that each group can easily carry out self-care and environmental monitoring in an effort to create PHBS in Islamic boarding schools. After that, the students who are members of the team will prepare guidelines for implementing PHBS in Islamic boarding schools assisted by researchers. This guide aims to make it easier for the team to assess the success they want to achieve in realizing PHBS in Islamic boarding schools. The formation of the Care Planning Team and the making of the Guide for Health Behavior is an integral stages that cannot be separated.

The preparation of the Guide for Health Behavior was carried out together with the boarding school administrators and representatives of female students. This guide is then printed on colored paper to make it more attractive. After the socialization of the guide that has been made, then this guide is distributed to all students to be pasted in the room and also on the walls of the boarding school dormitory which allows all students to read and practice it.

**Table 3.** Average self-care score

No	Name of Group	The average score in 1 month (%)
1	Melati	75
2	Mawar	70
3	Anggrek	78
4	Nusa Indah	80
5	Tulip	81
	Average	76,8

**Table 4.** Results of PHBS data processing before and after the application of the ICC Method to reduce vector breeding places

No.	Variable	Characteristics		
		Mean (%)		<i>p-value</i>
		Pre	Post	
1	Individual PHBS	74,0	83,9	0,000
2	PHBS in rooms and study areas	67,7	79,7	0,000
3	PHBS in latrines and ablution places	73,8	91,1	0,000
4	PHBS in the yard around the Islamic boarding school	84,2	97,5	0,000
	PHBS Santri as a whole	74,9	88,0	0,000

The groups formed in the implementation of the CPT were the Melati, Mawar, Anggrek, Nusa Indah, and Tulip groups (Table 3). The task of each group leader is to monitor self-care and the environment in the Islamic boarding school. Monitoring is carried out every week and carried



out for 1 month. Each group will calculate the average number of scores per week. The following are the results of monitoring the average score for self and environmental monitoring for a month. The average score for self-care and environment for female students increases every week from the week I to week IV.

The results of the analysis using the Wilcoxon test (Table 4), it was found that all variables, namely individual PHBS, PHBS in rooms and study areas, PHBS in latrines and ablution places, PHBS in the yard/environment around Islamic boarding schools after applying the ICC method showed significant changes ( $p$ -value  $< 0.05$ ). The overall PHBS of students increased after the ICC method was applied ( $p$ -value = 0.000).

Vector prevention and control can be done by vector control methods, either through single method control or integrated vector control. Vector control can be carried out biologically, chemically, physically/mechanically, with genetic engineering for vectors as well as through environmental management [7],[8],[9],[10]. Many vector control activities are not followed by community involvement which is the subject of vector control implementers. Whereas vector control activities require the role of all parties including the community so that vector control programs can be sustainable [11]. Vector control behavior can work if the targeted community has the will to take action. Willingness supported by intensive coordination will produce behavior that can last a long time so that it can become a habit. This is in line with research on the application of school-based vector control in the prevention and control of disease vectors in schools. Achieving optimal results in the prevention and control of disease vectors is not only carried out by janitors or students but must involve all elements in the school, both stakeholders, teachers, canteen owners, and people related to the school itself [12].

Research conducted in Malaysia on dengue vector control activities states that most of the costs of preventing dengue hemorrhagic fever are spent on fogging [13]. As is the case in Indonesia, most people still think that fogging is the most appropriate choice for eradicating mosquito nests. In fact, fogging is a chemical vector control whose use should be minimized because it is not environmentally friendly [14]. In addition, fogging activity should be the last alternative to be carried out if the environmental situation is already an emergency due to a DHF outbreak [15]. If there has not been a DHF outbreak, then the community should carry out activities to eradicate mosquito nests through burying, closing and draining the bath once a week regularly and simultaneously for all communities [8].

Vector prevention and control is a shared responsibility at every level of society. Not only health workers must play an active role, but also religious leaders, and community leaders, including community groups that exist in each agency. Such as schools, Islamic boarding schools, offices, and companies/industries. The boarding school environment can be a key community group to make behavior change. Changes in attitudes and behavior in the prevention and control of infectious disease vectors are urgently needed to protect the communities in them and will also benefit the surrounding communities [16].

Strengthening the internal coordination of the community in Islamic boarding schools will increase cooperation and communication of students in conducting environmental monitoring to prevent vector breeding grounds. Meanwhile, intensive self-care can improve clean and healthy living behavior in Islamic boarding schools. Vector prevention and control in Islamic boarding schools are not much different from that in schools, where the point is to involve administrators, teachers, and also students/students to participate in activities to eradicate

infectious disease vectors. The administrators/stakeholders in schools and Islamic boarding schools are the people who make policy decisions, including policies in environmental management and determinants in providing health education to encourage them to behave in a clean and healthy manner [17],[18].

## 7 Conclusion

The implementation of ICCM can improve indicators of personal hygiene, Islamic boarding school environmental sanitation in rooms and study areas, Islamic boarding school environmental sanitation in latrines and ablution places, and environmental sanitation in Islamic boarding schools yards in preventing vector breeding places. A strong sense of kinship has been manifested in the application of the ICC method in Islamic boarding schools and has succeeded in realizing PHBS for residents of Islamic boarding schools.

**Acknowledgments.** The researcher would like to thank LP2M (Institute for Research and Community Service) Semarang State University which has provided funds to the author to carry out the research.

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# Mointaineers Awarness in Complying the Covid-19 Health Protocols on Mount Prau, Central Java

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**Abstract.** Covid-19 is a pandemic that is hitting the whole world, including Indonesia. All activities have been hampered and even temporarily stopped to reduce the spread of the virus-19, including mountain climbing activities. This study aims to determine mountaineers self-awareness in complying with health protocols made by the government to prevent the spread of Covid-19 cluster climbers on Mount Prau. This research uses mixed method with descriptive servey data analysis. A population are 50 mountain climbers and 5 managers of the Mount Prau basecamp. Data collection techniques using questionnaires, interviews, and documentation. The results of the study stated: (1) the understanding of the importance of health protocols was very good by 96% but the violations that occurred were quite high, namely 70% (2) the use of masks and maintaining distance was quite good, namely 64% and 66% (3) the application of health protocols by the manager is good, namely 80% but the sanctions applied by the basecamp manager are not firm, namely 58% and (4) climbers who have vaccinated by 72%.

**Keywords:** Covid-19, mount Prau, self-awareness, mountaineers.

## 1 Introduction

Sport is basically an important thing for humans. Exercise can not only maintain physical health, but can also maintain mental health. A balance between good physical and psychological conditions is very important as an effort to reduce and prevent stress level [1].

The type of sport that is currently being loved by many millennials in Indonesia is recreational sports. Recreational sports according to the UU Sistem Keolahragaan Nasional No. 3 Tahun 2005 that the concept and understanding of recreational sports are sports activities/physical activities carried out by individuals, groups or communities with the aim of obtaining health, physical fitness, joy, building social relationships, preserving and increasing regional and national cultural wealth[2]. This recreational sport is found in many tourist spots and varies from adventure to adrenaline, such as diving, rock climbing, and what is very popular today is mountain climbing. Not only young people, but from children to adults also like this one sport [3]. Many also make mountain climbing as family recreation and the rise of mountaineering communities.

Climbing mountains in Indonesia has been favored by people who love nature and connoisseurs of heights. concept of mountain climbing in Indonesia in 1964, a campus organization was formed, MAPALA UI in Jakarta who do mountain climbing, until the 2000s mountain climbing began to stand out as the mother of nature-loving scholarship, and has been increasing since 2012, after the emergence of films about climbing such as the 5 cm film which tells the beauty of Mahameru Peak, Mount Semeru has become a public epidemic. to climb mountains in Indonesia[4]. The number of mountains in Indonesia is also a motivation for both new and professional climbers to explore the beauty and heights of the mountains in this country. An adventurous sport that requires skill, intelligence, strength, and high fighting power to reach the top which presents a very captivating natural beauty[5]. This is what makes climbers increasingly challenged, so they feel stronger when facing the rigors of life, and climbing mountains can foster a high social spirit both to fellow humans and the environment..

Mount Prau is a mountain in Central Java that is in great demand by beginner mountaineers, families or nature lovers both inside and outside the city because with an altitude of 2565 meters above sea level it can be said that the mountain is not too high for beginners and the path is easy to pass and also has a beautiful view of the peak. very beautiful. We are spoiled with views of Mount Sindoro, Mount Sumbing, Mount Kembang, Mount Merbabu and Mount Lawu which can be very beautiful photo objects. Mount Prau is also called the Best Golden Sunrise because it has the best sunrise view according to climbers[6].

There are several hiking trails, including Dieng, Patak Banteng, Wates, Igir manak, Kalilembu, Pranten, Ngalak, Dwarawati, Kenjuran, Campurejo. The Wates route is a path that is in great demand by mountain climbers because it is a gentle climbing route and along the way from basecamp to post 1 along plantations owned by residents who are still beautiful that can spoil the eyes of climbers or for beginners, there are also motorcycle taxi services to post 1 so that they can shorten the time and energy to climb to the next posts. And also the Wates route is the only route that has very fresh springs and can be used as supplies at the peak, this spring is located at post 3.

Coronavirus Disease-19 (Covid-19) is a virus that is sweeping the entire world, including Indonesia. This virus started in Wuhan, Hubei Province, China which was found since December 18, 2019 there were 5 cases. January 3, 2020 this case increased rapidly, reported as many as 44 cases occurred. Samples of patient isolates studied showed the results of a coronavirus infection named 2019-novel coronavirus (2019-nCoV). Then on February 11, 2020, WHO (World Health Organization) gave the name Coronavirus Disease (Covid-19) caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) virus[7]. This virus can be transmitted from human to human through the mouth, nose and eyes. This disease attacks the lungs like symptoms of pneumonia, its spread is very fast and deadly. According to WHO as of March 2, 2020, 90,308 cases were found to be infected with Covid-19. On March 12, 2020 WHO declared Covid-19 a pandemic. In Indonesia itself, early March was the beginning of the entry of Covid-19 cases with 2 confirmed cases of Covid-19 in Jakarta and its spread to various regions throughout Indonesia. In early April 2020, based on PP number 21 of 2020, the government imposed a Social Distancing policy or known as PSBB (Large-Scale Social Restrictions) to prevent and reduce the spread of the corona virus[8]. A number of public facilities were closed, school and office activities were carried out from home, transportation restrictions, places of public worship and tourist attractions were temporarily closed. Based on

data on the official Covid-19 Indonesia website, as of December 6, 2020, there were 757,796 confirmed cases and 17,740 deaths due to Covid-19[9].

Mountaineering tourism in Indonesia must also be closed to all hiking trails in order to prevent the spread of Covid-19 indefinitely, although the closure of mountain tourism is no stranger to bad weather. In Central Java, a number of basecamp managers have also closed climbing tours such as Mount Andong, Mount Merbabu, Mount Sindoro, and Mount Prau. Welcoming the new normal era, several mountains in Central Java have reopened mountaineering. Based on the results of the Mount Prau basecamp management meeting, the Patak Banteng route has reopened climbing on July 18, 2020, with new rules in accordance with the Covid-19 health protocol. In this trial phase, climbers are allowed only from Central Java with a climbing capacity of 250 people per day. Followed on July 22, 2020, Mount Prau on the Wates route also reopened climbing with a 14-day trial period for climbers in Central Java and DIY with a capacity of 500 people per day. The capacity limitation from before the pandemic which reached more than 2000 climbers per day was carried out to reduce the density of climbers in the peak area. The health protocols during the pandemic are mandatory wearing masks and carrying at least 4 spare masks, 1 hand sanitizer per person, carrying a health certificate from the area of origin, maintaining a distance of 1 meter, using tents at 50% of the tent capacity, and setting up tents at a distance of 1 meter. 1.5 meters. As well as checking the temperature, washing hands, and spraying disinfectants provided by the basecamp manager. This health protocol must be strictly enforced. On August 24, the increase in Covid-19 in Wonosobo caused Wonosobo to become a red zone. A number of hiking trail managers in Wonosobo agreed to close climbing activities to help the Wonosobo government. There are 5 mountains recorded, namely Mount Prau, Mount Sumbing, Mount Prau, Mount Kembang, Mount Bismo. The results of the Wates basecamp management meeting on November 1, 2020, the ascent of Mount Prau on the Wates route has been reopened while still implementing health protocols.

Based on the author's first observations, from May 22, 2021 to May 24, 2021, there are still many climbers who are not aware of the Covid-19 protocol set by the government. The health protocol in accordance with government regulations issued by the manager of the Patak Banteng basecamp has been carried out well for climbers. Before climbing, the basecamp manager checked all equipment and gave directions according to applicable health protocols. Problems occur when the rules go well at basecamp, but during the climbing trip there are still many climbers who don't wear masks, crowding, and when in the peak area many set up tents not according to the specified distance rules[10]. The Prau, Dieng mountain climbers still lack awareness of the Covid-19 health protocol rules.

## **2 Methods**

This research is a mixed method approach with survey descriptive data analysis[11]. Held in the basecamp area, the hiking trail to the top of Mount Prau, the Wates route, is located in Wates Village, Wonoboyo District, Temanggung Regency, Central Java. In this study, the research targets were the climbers of Mount Prau as subjects and the self-awareness of mountaineers in complying with the rules of the COVID-19 health protocol as the object of research. Data collection was carried out on August 17, 2021 by filling out a questionnaire totaling 10 questions

to 50 climbers and 4 direct interview questions to 5 climbers and 5 questions to the basecamp manager. Data collection techniques using questionnaires, interviews, and documentation.

### 3 Results and Discussion

#### 3.1 Questionnaire

The results of the study regarding the awareness of climbers in complying with the Covid-19 health protocol were based on a questionnaire that had been answered by 50 respondents.

**Table 1.** Results of Filling Out Questionnaire by 50 Prau Mountain Climbers

No	Questionnaire Question	Number of Answers	
		Yes	No
1.	With this Covid-19 pandemic, do you know the rules of the Covid-19 climbing health protocol?	50	0
2.	In your opinion, is it important as a climber to comply with the Covid-19 health protocol?	49	1
3.	When you adhere to this health protocol is an awareness of your own conscience?	49	1
4.	Do you bring climbing equipment according to the health protocol rules that have been applied?	45	5
5.	Are you sure you always wear a mask while climbing?	18	32
6.	Will you keep your distance from fellow climbers (including climbing friends) during the ascent to prevent transmission?	33	17
7.	Have you encountered climbers who violated health protocols both at basecamp and on the way?	32	18
8.	If Yes, will you remind him to comply with health protocols?	20	30
9.	Have basecamp officers implemented health protocols in accordance with government regulations properly?	40	10
10	Are there strict sanctions from the basecamp manager to violators?	29	21
11	Do climbing activities have the potential to cause clusters of climbers?	32	18
12	Have you been vaccinated against Covid-19?	36	14

Based on the results of the questionnaire as shown in Table 1, it states that, most of the climbers already understand the applicable health protocol rules and say that they have complied with the health protocol with an awareness of conscience, but there are still many violations that occur such as not wearing a mask and also not wearing a mask. the awareness to remind fellow climbers to always comply with health protocols and also the implementation of health protocols by the manager of the Mount Prau basecamp at the Wates route is good, but there are no firm sanctions for violators of the rules.

The questionnaire data that has been obtained is tested for validity and reliability using the SPSS application with test results as shown in Figure 1 below.

**Correlations**

		Data01	Data02	Data03	Data04	Data05	Data06	Data07	Data08	Data09	Data10	Data11	Data12	Total
Data01	Pearson Correlation	1	-.090	.504**	.393**	.125	.100	.090	.161	.180	.168	.026	.185	.512**
	Sig. (2-tailed)		.536	.000	.005	.386	.491	.536	.265	.211	.245	.859	.199	.000
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data02	Pearson Correlation	-.090	1	.469**	.211	.145	.027	.079	.245	.019	.000	.211	.359*	.491**
	Sig. (2-tailed)	.536		.001	.141	.313	.852	.586	.087	.897	1.000	.141	.010	.000
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data03	Pearson Correlation	.504**	.469**	1	.264	.301*	.082	.272	.412**	.063	.199	.020	.298*	.711**
	Sig. (2-tailed)	.000	.001		.063	.034	.572	.056	.003	.666	.167	.893	.036	.000
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data04	Pearson Correlation	.393**	.211	.264	1	.007	-.113	-.071	.035	.083	.016	.107	.071	.366**
	Sig. (2-tailed)	.005	.141	.063		.963	.435	.623	.807	.567	.910	.459	.623	.009
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data05	Pearson Correlation	.125	.145	.301*	.007	1	.014	-.060	.197	.111	.323*	-.077	-.023	.376**
	Sig. (2-tailed)	.386	.313	.034	.963		.925	.678	.171	.444	.022	.594	.872	.007
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data06	Pearson Correlation	.100	.027	.082	-.113	.014	1	.144	.073	.258	.202	.385**	.021	.404**
	Sig. (2-tailed)	.491	.852	.572	.435	.925		.319	.616	.071	.160	.006	.882	.004
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data07	Pearson Correlation	.090	.079	.272	-.071	-.060	.144	1	.244	.031	.098	.252	-.034	.383**
	Sig. (2-tailed)	.536	.586	.056	.623	.678	.319		.087	.831	.497	.077	.816	.006
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data08	Pearson Correlation	.161	.245	.412**	.035	.197	.073	.244	1	.027	.033	.035	.238	.502**
	Sig. (2-tailed)	.265	.087	.003	.807	.171	.616	.087		.850	.822	.807	.096	.000
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data09	Pearson Correlation	.180	.019	.063	.083	.111	.258	.031	.027	1	.490**	.083	-.031	.418**
	Sig. (2-tailed)	.211	.897	.666	.567	.444	.071	.831	.850		.000	.567	.831	.003
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data10	Pearson Correlation	.168	.000	.199	.016	.323*	.202	.098	.033	.490**	1	.099	.066	.494**
	Sig. (2-tailed)	.245	1.000	.167	.910	.022	.160	.497	.822	.000		.495	.651	.000
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data11	Pearson Correlation	.026	.211	.020	.107	-.077	.385**	.252	.035	.083	.099	1	-.010	.396**
	Sig. (2-tailed)	.859	.141	.893	.459	.594	.006	.077	.807	.567	.495		.947	.004
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Data12	Pearson Correlation	.185	.359*	.298*	.071	-.023	.021	-.034	.238	-.031	.066	-.010	1	.395**
	Sig. (2-tailed)	.199	.010	.036	.623	.872	.882	.816	.096	.831	.651	.947		.004
	N	50	50	50	50	50	50	50	50	50	50	50	50	50
Total	Pearson Correlation	.512**	.491**	.711**	.366**	.376**	.404**	.383**	.502**	.418**	.494**	.396**	.395**	1
	Sig. (2-tailed)	.000	.000	.000	.009	.007	.004	.006	.000	.003	.000	.004	.004	
	N	50	50	50	50	50	50	50	50	50	50	50	50	50

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Fig. 1.** The results of the validity of the questionnaire data using the SPSS application

The results of data processing from the questionnaire that was filled out by the respondent at the time of data collection showed that the data used was valid with an "star" (\*) mark on each question number, or it could be proven using a comparison of  $r_{count} > r_{table}$ .

Then the reliability test results are worth 0.703 with a strong level or the data used is reliable (reliable) according to the guidelines interpreted by Suharsimi Arikunto[12]. The results can be seen in Figure 2.



## Reliability

### Scale: ALL VARIABLES

Case Processing Summary		N	%
Cases	Valid	50	100,0
	Excluded <sup>a</sup>	0	,0
	Total	50	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
,703	13

Fig. 2. Reliability Test Results of questionnaire data using the SPSS application

### 3.2 Interview result

The results of 4 interview questions to 5 mountain climbers at random, among others, the first question about understanding Covid-19 and the symptoms felt, "what do you know about Covid-19 and the symptoms of Covid-19?". Four out of five climbers on average answered that Covid-19 was a virus that originated in China and spread to all countries in the world, this virus attacks the respiratory system and is very dangerous and easy to transmit through human droplets so that it spreads more widely. The symptoms of Covid-19 itself are flu, cough, fever, sore throat, bone aches, body aches and senses of smell and taste also die. There is one climber's answer that is quite complete when interviewed by researchers who think that the symptoms of Covid-19 are the same as the flu in general, but for severe conditions, some sufferers feel short of breath and feel very weak and have very severe body aches. Covid-19 will not be dangerous for people who have a healthy physical condition, but for those who have congenital diseases such as diabetes, heart disease, or high blood pressure, for example, this is very dangerous because the Covid-19 virus attacks the respiratory system and even causes pneumonia and binds blood. sufferers so that it greatly weakens the body's immune system, for sufferers of severe disease it will be very risky and has the potential to cause death if it is delayed or mishandled. This is what makes the Covid-19 virus look scary, for that the need for self-awareness to keep a distance from each other, wearing a mask is useful to keep the virus from attacking people who have congenital diseases and are very vulnerable. He also believes that actually at the beginning of the pandemic, the news about Covid-19 in the mass media was too exaggerated and made people more afraid of the Covid-19 virus without understanding what Covid-19 really was, which made people not support each other to take care of themselves or others. people around to avoid contracting the Covid-19 virus.

The second question is "what is your response to the PPKM imposed by the government?", four of the five climbers interviewed argued that PPKM was an effort made by the government to reduce the spread of Covid-19, which has spiked again in this new normal period. With this

PPKM rule, it is hoped that all of us will have self-awareness to always comply with health protocols wherever we are, because the existing virus will not disappear quickly so that later if the government stops this PPKM rule, the Covid-19 virus will not increase again. There was one climber who had a different opinion, he replied that this PPKM rule only hinders activities, we cannot travel freely. However, he also replied that he would continue to comply with existing rules, so that Covid-19 would be reduced quickly and PPKM rules would be quickly abolished.

Furthermore, the third question is "what is the reason you keep climbing during the Covid-19 pandemic in 2021?", the five of the climbers on average have the same answer, namely because they are bored and bored after several months of this PPKM period and all tours are closed. When they found out that climbing tourism was reopening in the middle of PPKM, especially for nature lovers, of course, they really wanted to climb despite the Covid-19 pandemic, but as a good climber, they should still comply with the applicable health protocols, so that mountain climbing activities are safe and do not spread. Covid-19 virus.

The last question from the researcher's interview to the climbers was "what do you think about the Covid-19 vaccination?". Two of the five people interviewed by the researchers answered that they had vaccinated against Covid-19 and thought that this vaccination was very helpful in preventing the increase in victims due to the Covid-19 virus. It is hoped that this will be a solution to break the chain of the spread of Covid-19. From the counseling carried out by health workers before the vaccine is administered, this vaccine is not useful so that we avoid the virus, but the administration of the vaccine functions so that the body can first get to know the Covid-19 virus, then the body can form the body's defense system or antibodies naturally so that if we infected with the Covid-19 virus, the body is able to respond to the virus that enters the body and the body's immune system can fight the virus naturally. The government's Covid-19 vaccination is very useful, especially since the government provides free vaccines to the public. One climber has already vaccinated, but he replied that the reason for doing this vaccine was because several agencies made the vaccine a requirement for job registration so that he inevitably had to vaccinate. At first he was afraid of vaccines because of the news that the Covid-19 vaccine was dangerous and even made him sick, but after he felt for himself that vaccines were not as scary as the mass media circulating. He supports vaccination in Indonesia and believes that it is always positive with what the government is doing for the good of the community.

Two other climbers answered that they were afraid to vaccinate on the grounds that the injected vaccine would harm the body, many of the victims were getting worse after being vaccinated and even died. But they still adhere to health protocols and take vitamins to prevent contracting Covid-19. News in the mass media greatly influences people's thinking, so there are indeed many thoughts like the ones above. For this reason, it is hoped that the media will filter out negative news which causes people to be more afraid of the Covid-19 vaccination.

### **3.3 Manager Interview**

Interviews were also conducted with one of the managers of the Mount Prau basecamp on the Wates route to find out the manager's point of view regarding the applicable Covid-19 health protocol and the behavior of climbers regarding self-awareness in complying with health protocols. The first question is "how is the response regarding the presence of Covid-19? What is the impact of climbing tourism?" From this question, the manager of the Mount Prau basecamp on the Wates route answered that Covid-19 was the biggest outbreak in Indonesia and

even in the world until it became a pandemic, not only Indonesia, which felt that almost all countries in the world were infected with the Covid virus. -19. The rapid spread and treatment and treatment that have not been found exacerbated the situation, especially in Indonesia, the spread is increasing day by day and it is difficult to stop, various government efforts have been made, such as the implementation of social distancing to local lockdowns in several areas, especially the capital, PSBB rules at the beginning New normal, until PPKM in mid-2021 due to the increase in Covid-19 again.

The lockdown rules imposed by the government at the beginning of the pandemic were very detrimental. Approximately 6 months in a row the closure of climbing tours is certainly very detrimental to the manager and also local residents because of the loss of income from visitors who usually reach hundreds to thousands of people. Then new rules such as PSBB by the government regarding quota restrictions from 100% to 50% were applied, then in early 2021 the spread of Covid-19 increased again and was closed again, until a new government regulation, namely PPKM, with rules for limiting quotas, was reduced to 25% and other health protocols. This of course has a very bad impact on tourist activities on Mount Prau. However, with this health protocol rule, it can help the government to reduce the spread of Covid-19, especially the residents of Wates, because many climbers who come from various regions will have the potential to bring the virus to Wates village.

The second question, "how is the implementation of health at the basecamp on the Wates route?", the basecamp believes that the manager of implementing good health protocols will improve health protocol facilities such as increasing places to wash hands, as well as giving advice to wear masks and maintain a good distance verbally. or good writing on basecamp, in every post up to the top. Initial checks of the ascent have also been carried out. In the parking area, before entering the registration area, the manager checks strictly, checks all the climbers' belongings that must be brought, if they do not match then climbers are not allowed to enter the registration area or basecamp. This is done so that there are no additions to the registration counter area and basecamp. However, the manager admitted that he did not provide body temperature checks either in the parking lot or in the basecamp area. The manager also realizes that this health protocol has not been running effectively because according to the manager the climbers themselves do not have a sense of self-awareness to always comply with the health protocol to maintain the health of themselves or other climbers. Often the manager who is traveling checks the situation admonishing climbers who do not wear masks or who are resting by sitting in groups, but the manager cannot always supervise this at all times. If the climbers have self-awareness, it will be easier for the health protocol to be carried out effectively.

The third question is "how are the sanctions imposed by the manager for violators of the health protocol?", the basecamp manager answered that there were no specific sanctions regarding health protocol violations due to sanctions such as sanctions for violations of throwing garbage, cutting down trees, carrying sharp objects, or committing adultery, and other matters must be discussed with all managers of the Gunung Prau basecamp and obtain approval from the local government. So that the warning is only in the form of an appeal or a direct warning when you find climbers who violate the rules. However, there will be a possibility that this sanction will be closed with all the managers of the Mount Prau basecamp and representatives of the local government for the sake of effective health protocols and safety in climbing the mountain.

The fourth question is "what do you think about climbers' self-awareness with health protocols?", the basecamp manager answered that climbers' self-awareness was still very

lacking, especially the things that were most frequently violated, namely not wearing masks and keeping a good distance. For the basecamp area, the registration counter, prayer room, and its surroundings are still being monitored so that the health protocols are still complied with quite well, if someone does not wear a mask, the managing party must be properly reprimanded for wearing a mask. Likewise with maintaining distance, managers often take decisive actions such as deliberately separating climbers who are in a group when appeals or verbal warnings are not heeded. In fact, if the self-awareness of each climber grows to take care of each other so as not to transmit the covid-19 virus or at least he is afraid of contracting covid-19 then the violation will not occur without strict sanctions, the health protocol will feel light, with awareness To comply with health protocols, of course, you can prevent the transmission of Covid-19 in mountaineering tours and give a positive impression in the community that mountain climbers are people who comply with health protocols.

And the last question for the basecamp manager is "what is the response to this PPKM rule?", the Mount Prau basecamp manager on the Wates route gave an answer that there was no specific response to the PPKM rule because before there was this PPKM rule there was already a PSBB rule that did not differ much in the rules, it's just that the quota of climbers has been reduced from 50% to 25%. Of course this has a negative impact on the manager on the financial side, income will also decrease, while the management of the climbing area must still be carried out. However, with this PPKM regulation, it can reduce the number of Covid-19 spreads and even reduce the death rate due to Covid-19, the manager will try to make health protocols even better. Managers will comply with any government regulations in order to resolve the spread of Covid-19 until Indonesia can return to normal and free from the Covid-19 pandemic.

#### **4 Conclusion**

The results of the acquisition of research data resulted in the conclusion that the level of self-awareness of mountaineers had not grown from the conscience of the climbers themselves. This can be seen from the climbers' understanding of health protocols that are quite good, but the implementation of health protocols is only carried out when there is an inspection or when supervised by the basecamp manager, not a personal initiative to always comply with health protocols in order to help prevent the spread of Covid-19 among climbers. With strict sanctions against health protocol violators, it will reduce violations and foster a sense of awareness from the conscience of climbers to always comply with health protocols.

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# Drills Exercise Method Improving Passing Ability In Volleyball

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**Abstract.** The problems that occur are that the students often make mistakes in playing volleyball, especially passing. This study aims to determine how effect of right and left sideways drill and which one is more influential on the volleyball passing ability of the students of MTs Negeri 3 Tegal. The research used an experimental method in the form of "Pretest-Posttest Group Design". The designs were divided into 2 groups using the ABBA formula. The results of the analysis are: 1) t-count 18,735 > t-table 2,093 (there is the effect of right sideways drill), 2) t-count 16,199 > t-table 2,093 (there is the effect of left side drill) , 3) Right side drill drill is more influential compared to the left side drill. The conclusions of the study are 1) right and left sideways drill exercises have a significant effect on volleyball passing, 2) right side drill drills have more effect in improving volleyball passing skills. Suggestions in this study are that all trainers, especially at MTs Negeri 3 Tegal, are advised to use the right-side drill method during practice

**Keywords:** Drills Exercise, Passing, Volleyball

## 1 Introduction

Volleyball is a sport that originated in Holyoke Massachusetts. This game consists of two opposing teams of 6 players each. There are several variations of the game to choose from. According to Morgan, volleyball can be played flexibly anywhere, whether it's indoors or outdoors. The most important thing is the existence of the field as a fighting arena. The main objective of this game is to drop the ball in the opponent's area to get points.

Sport is an inseparable part of human life. Regular exercise will really help humans to achieve physical and spiritual health. At school, there are many sports that are studied, one of which is volleyball. Volleyball is played or competed in groups. Therefore, cohesiveness in a team is essential to be maintained so that the team is able to win every game. Even so, the individual skills of each player cannot be underestimated so that the cooperation will be more solid.

Physical education is defined as an education that includes a variety of physical (physical) activities to acquire adequate physical skills and performance. He utilizes a variety of physical activities to develop physical abilities, intelligence, emotional and character-consciously and systemically. Physical education has long been asked as a vital aspect in educational education; he relies on campaigns for a clean environment and a healthy lifestyle, seeking to escalate physical fitness for anyone involved in the educational process.

Physical education is essentially an educational process that utilizes physical activity to produce holistic in individual qualities, both physically, mentally, and emotionally. Physical education will not achieve its goals without a careful plan in the learning process. As a primary factor in the success of all learning processes, the ability of teachers to present teaching materials to students is required to be very good. Therefore, they need to be equipped with a comprehensive and effective set of knowledge, materials, and teaching methods based on the class situation and the character of the students.

MTs Negeri 3 Tegal is a school with adequate infrastructure, one of which is in sports. It is located in Lebaksiu District, Tegal Regency, Central Java. Volleyball is one of the materials in physical education that is superior to other sports. lack of basic technical skills in volleyball will greatly affect the quality of the game. The problem that often occurs when competing in volleyball is that they do not master the basic techniques, one of which is the passing (bottom pass). This is quite unfortunate, because the bottom pass is a basic skill that every player in volleyball should master. Therefore, training with the drill is needed in order to increase the ability of students to pass down. This is because the drill is repetitive, all students are asked to practice consistently or continuously so that they are able to make their skills more mature. Various descriptions have been mentioned, researchers are interested in conducting research about How Drills Exercise Improving Passing Ability In Volleyball.

### **1.1 Objectives**

MTs Negeri 3 Tegal is a school with adequate infrastructure, one of which is in sports. It is located in Lebaksiu District, Tegal Regency, Central Java. Volleyball is one of the materials in physical education that is superior to other sports. lack of basic technical skills in volleyball will greatly affect the quality of the game. The problem that often occurs when competing in volleyball is that they do not master the basic techniques, one of which is the passing (bottom pass). This is quite unfortunate, because the bottom pass is a basic skill that every player in volleyball should master. Therefore, training with the drill is needed in order to increase the ability of students to pass down. This is because the drill is repetitive, all students are asked to practice consistently or continuously so that they are able to make their skills more mature. Various descriptions have been mentioned, researchers are interested in conducting research about Drills Exercise Method Improving Passing Ability in Volleyball.

## 2 Literature review

Passing techniques with the actual playing practice method can improve the results of passing tests under the volleyball players (Barlian et al., 2019). In volleyball passing ability is a very basic technique. To be able to pass the ball accurately, it is necessary for the athlete to have the corresponding passing technique. In volleyball passing technique seems simple but it is actually a very delicate and complex technique that requires high wrist strength (Liu et al., 2021). A suitable exercise to improve the ability of passing in volleyball is drills exercise. This is because the drill training method is an activity to do the same thing over and over again and seriously which aims to strengthen and perfect a skill so that it becomes permanent. The drill method in volleyball techniques such as serving, passing which is done repeatedly makes students or athlete become skilled at doing it and it can be said that they have the skills to play volleyball. The application of the drill method through teaching methods where children carry out training activities so that children have higher dexterity or skills than what they are learning.

## 3 Methods

This study was conducted using experimental with pre test and posttest design of two conditions underhand passing in volley ball: 1) highest result of under passing 2) lowest result of under passing. The participant of the study was 60 student in MTS Negeri 3 Tegal. In this design form, I divide into two groups that have been determined to be samples. Furthermore, pretest to determine the initial condition of the student's ability to do underhand passing volleyball. After that, the results will be sorted from highest to lowest and divided into two groups. Furthermore, they will carry out posttest after being given treatment, which is the effect of the treatment itself. The sampling technique in this study was to use a random sampling technique, namely random sampling without regard to the existing strata in the population (Sugiyono, 2018). The students of MTs Negeri 3 Tegal were randomly selected to be included in this study. An experiment that matched and uses a correlated samples uses a t-test. The data were then analyzed using descriptive statistical analysis and t-test. To analyze the data further, use the short t-test formula (short method) as follows:

$$t = \frac{MD}{\sqrt{\frac{\sum d^2}{N(N-1)}}}$$

Description:

- t : data analysis results
- MD : mean difference between *pretest* and *posttest*
- N : number of pairs of
- $\sum d^2$  : the number is determined N-1

(Sutrisno Hadi, 2015)

After various data are collected and processed, the hypothesis test carried out will provide an answer whether the hypothesis is rejected or accepted. The simplest hypothesis, minimal from



a theoretical point of view, is called the null hypothesis. The term nil refers to the absence of differences between samples in the object under investigation (Hadi, 2015).

The results of the statistical analysis of the t-test formula are then inputted into a t-table at a significance level of 5% with a degree of freedom (dk) 19. From this analysis, the following hypotheses will be concluded:

1). if the t-count value obtained from statistical calculations is the same or greater than t-table means significant, then Ho is rejected and Ha is accepted; 2). if the t-count value obtained from statistical calculations is smaller than the t-table which means it is not significant, then Ho is accepted and Ha is rejected.

#### 4 Data collection

Add data collection here. The following is a summary of the data on the results of the pretest and posttest of the results students of MTs Negeri 3 Tegal 2021, namely:

**Table 1.** Description of Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
		m			
right pretest	20	4.00	14.00	7.7000	2.83029
posttest	20	16.00	23.00	19.4000	1.81804
left pretest	20	4.00	13.00	7.5500	2.76205
left posttest	20	15,00	23.00	18,8500	2,05900
Valid N (listwise)	20				

From the table above, it can be seen that the mean result of the pretest exercise treatment drill was 7.70 with the lowest result being 4 and the highest 14. While the mean result posttest experimental group 1 is known to get a mean of 19.40 with the lowest result of 16 and the highest of 23. Then pretest of experimental group 2 before being treated with drill left-side posttest Experimental group 2 is known to have a mean of 18.85 with the lowest result being 15 and the highest being 23. The t-test was used to reveal whether the passing of the students of MTs Negeri 3 Tegal got the effect of drill right and left sideways pretest and posttest. The following is the data from the analysis results:

**Table 2.** T test results of the *pretest* and *posttest* drill drills right side

	t	Sig. (2-tailed)	Mean Difference
PreTest & Post Test Right	-18,735,	,	-11,70000
	000		

From the results of the t test, it can be seen that the t count is 18,735, with a significance level of 5% at the degree of validity 19 at the t table value of 2,093. That is, the value of t arithmetic > t table (18.735 > 2.093) and p-value 0.000 < 0.05. These results demonstrate that Ho is

rejected; have drill drills been shown to have a significant impact on passing ability under volleyball. The existence of this difference indicates that the *drill* on the right has an effect on the *passing* students' bottom

**Table 3.** T test of the results of the *pretest* and *posttest* exercises *drill* left side

	t	Sig. (2-tailed)	Mean Difference
PreTest & Post Test Left	-16,199	,000	,-11,35000

The t-count value obtained is 16,199 with a significance level of 5% at the validity degree 19 at the t-table value of 2.093. These results demonstrate that the value of t arithmetic  $>$  t table ( $16,199 > 2,093$ ) and the value of  $p$   $0.000 < 0.05$ . From here,  $H_0$  was rejected; practice *drill* has been shown to have a significant effect on the underpassing skills of the students.

**Table 4.** T test results of *pretest* and *posttest* exercises *drill* right and left side

	t	Sig. (2-tailed)	Mean Difference
PreTest & Post Test Right	-18,735,000	,	-11,70000
PreTest & Post Test Left	-16,199	,000	,-11,35000

The t-count value of *pretest* and *posttest* exercise *drill* is -18,735, while for the t-count value of the *pretest* and *posttest* exercise *drill* left-side. Both were measured with a significance level at the degree of validity of 19 at a t-table value of 2.093. The results from the *drills* proved to have a significant effect on the *passing* students' increasing underpassing skills and the *drills* sideways *right*. The results of the research show that the *drill drill* right side *drill* create a significant difference in the volleyball bottom pass skills of MTs Negeri 3 Tegal students in 2021. The results of data analysis for *drill drills* that have been carried out show t count of  $18,735 >$  t table of 2,093 and for the analysis of the *drill* left side, the t-count result is  $16,199 >$  2,093, which means that there is a significant change. From the results of the comparison of the mean of each experimental group, it is known that the results of *drill drills* right side have more effect on baiting ability under volleyball compared to left side exercises.

## 5 Results and discussion

The research was carried out using an experimental method, namely by treating the effect of drill right and left side passing down volleyball of MTs Negeri 3 Tegal students. The stages in conducting this research are: 1) taking initial data to find out the students' initial abilities. Then from the results obtained, sorted from the largest to the smallest to be divided into two experimental groups. The experimental group 1 drilled right sideways and experimental group 2 drilled left side 2) Then carried out treatment according to the experimental group. 3) posttest to determine the student's ability after being given treatment.

## 6 Conclusion

Based on the results of the research and discussion, it was concluded that one, after analyzing the drill, it turned out to have a significant effect on the passing volleyball bottom. Second, after analyzing the drill, it turned out to have a significant effect on the passing volleyball bottom. Third, the drill drill is more influential than the drill left side passing volleyball bottom.

**Acknowledgements.** This research received funding from the Faculty of Sport Science, Universitas Negeri Semarang in 2020.

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# Potential Emergence of New Zoonotic Disease in Semarang City Based on Eco-Geographical Analysis

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**Abstract.** Semarang City is included in the Covid-19 red zone. The natural evolution of CoV has been confirmed as the cause of Covid-19 transmission in various countries. Based on eco-geographical mapping, it can be seen the distribution of animals as a potential source of possible origin coronavirus. This information can be used to analyze the potential for emerging zoonotic diseases in Semarang City. Research aims to describe the potential emerging zoonotic diseases through the distribution of data&information on distribution of various animal species. Collecting data conduct by cluster random sampling through surveys. Criteria for sample people who live near monitored, patients & confirmed positive Covid-19 (treated/cured/deceased) that have pets/livestock also wild animals around residence. The results show there are 3 animal health center (Gayamsari, Mijen, Gunungpati) from a total of 16 sub-districts. Wild/ownerless animals are cats (65%), bats (6%), birds (16%), dogs (2%), chickens (9%), and squirrels (1%). Finding in Ngaliyan district there are respondents monitored, patients, & confirmed positive Covid-19; presence of pets: cats & birds; wild animals: bats & cats. This condition makes Ngaliyan district has the potential to emerge of new emerging zoonotic diseases.

**Keywords:** Mapping, demography, pets, transmission.

## 1 Introduction

The severity of the Covid-19 pandemic has affected various countries. Even the sars-cov-2 virus that causes Covid-19 is able to reach 70 countries. Covid-19 cases in Indonesia were recorded as of April 2020 reaching 9096 cases. The first case of Covid-19 was discovered on March 2, 2020. The transmission of Covid-19 was very fast, there were an addition of 214 positive cases within 24 hours. The discovery of the Covid-19 transmission route that occurred in various countries was made possible, because the virus underwent a natural evolution. Indonesia is one of the countries affected by the Covid-19 pandemic. Covid-19 has infected residents in various provinces and many areas have been designated as red zones [1,2,3].

Central Java province is listed as a red zone category. One of the regions in the Central Java province with the greatest concentrations of Covid-19 cases and designated a red zone is Semarang City. Based on information from the corona.jatengprov.go.id case findings website, the number of people being monitored in the province of Central Java reached 28,826 cases. Found 1307 cases of patients with the status under surveillance. Patients who were positive

infected with the corona virus were found to be 704 cases. The virus that causes corona belongs to the Betacoronavirus genus. Precisely, the corona virus belongs to the Coronavirinae subfamily and the Coronaviridae family. There are several strains of the coronavirus that are zoonotic, even found in animals and humans [3,4,5]. The virus that causes Covid-19 is an ss-RNA virus. The nature of the Betacoronavirus group includes being pathogenic to mammals. Although CoV in animals will be different from CoV that infects humans. Coronaviruses that infect humans can cause SARS-CoV and MERS-CoV diseases. CoV infects animals in example it can infect cows, chickens, cats, dogs, and pigs. However, when analyzed from the genome sequence of the virus that causes Covid-19 that was SARS-CoV-2 and related viruses, it does not originate from laboratory or engineering laboratory activities. From the results of the investigation, it was found that there was a CoV reservoir (bats). This CoV can spread and form into a new strains, which appears from recombination or mutations that occur in the bat's body [4,6,7].

Based on laboratory investigations of gene sequence analysis, it was thought that there are two evolutionary pathways for CoV. Bats are suspected as reservoirs for SARS-CoV-2. Coronavirus that infects bats, it is possible to act as an intermediate host, as a host between humans and bats. Another evolutionary pathway, viruses that are pathogenic can pass from animals to humans. Viruses become pathogenic when they are in the human body, because they have evolved, then transmission occurs between humans. Knowledge to obtain information regarding the first path of CoV evolution is difficult to obtain. The pathogenic SARS-CoV-2 originates from animals and infects humans. The occurrence of outbreaks in the future may be hampered by this situation. There is a substantial danger of transmission to humans from Covid-19 virus variants that are still present among animal populations. [7,8,9].

Estimation of the Covid-19 virus may have originated in animals and then naturally evolved. The transmission of Covid-19 which has become a pandemic is due to its very fast transmission, as well as human-to-human transmission. This condition can still be prevented from spreading, by carrying out Covid-19 prevention rules in accordance with the health protocols issued by the WHO. The Covid-19 preventative health regimen must be thoroughly implemented with full compliance from the populace. compliance with the physical separation requirements and personal-environmental hygiene requirements of the Covid-19 health protocol. This prevention is carried out to prevent infection or transmission between humans, or transmission to animals. Animals in this case are pets, farm animals and poultry as well as wild animals (animals without owners) that around the settlements [9,10,11,12].

Research has confirmed that there is transmission from humans to animals. The re-transmission cycle, or back transfer from animals to humans, has not yet been further studied. It is still important to be concerned about this scenario and to be aware of the possibility of new zoonotic diseases. It is crucial to have knowledge of the various species and geographic locations of animals that can readily contract Covid-19 or may serve as a source of transmission of Covid-19. This information as a real form to prevent the possibility of emerging zoonotic diseases [9,12,13].

Given the possibility of the virus strain that causes Covid-19 still existing in animal populations, this knowledge is crucial. It can switch hosts between animals and people. Cases of pets infected with Covid-19 from their owners have been confirmed, occurring in cats and dogs. The discovery of the transmission of Covid-19 also occurred in tigers at the zoo. This still causes great concern, despite the cycle of re-transmission from animals that are positive for Covid-19 infecting humans. The possibility of this cycle of reverse transmission needs to be aware of the

possibility of an outbreak. In order to prevent the spread of Covid-19, it is crucial to understand the species, distribution, health, and number of livestock and wild animals that could potentially harbor the virus (possible animal origins) [7,12,14].

## 2 Methods

In Semarang City, Indonesia, this study was carried out. In the province of Central Java, Semarang City is classified as a red zone with the highest number of verified positive Covid-19 cases. The population of this study consists of all people who live in Semarang City's red zone, which includes 46 urban villages. The sample was chosen based on the criteria of having pets or livestock, having individuals under surveillance, having patients under observation, having positive Covid-19 patients who were treated, recovered, or died, and having wild animals around the respondent's home.

The survey method and descriptive research design are both used in this study. The predictive study was carried out to determine the likelihood of new zoonotic diseases contributing to the spread of viral zoonotic diseases (CoV). This study focuses on the status-distribution-number of animals-types or animal species around the respondent's residence. The animals explored in this study were domesticated animals, farm animals, and wild animals that lived around the respondent's house. Management of animal care carried out by owners or treatment of respondents when interacting with wild animals, as well as reports on cases of viral-zoonotic diseases that have occurred.

A sample of each subdistrict in Semarang City was taken using the sampling technique of simple random sampling. The information gathered is both primary and secondary data. Primary data collected through questionnaires and interviews. Guidelines for interviews and questionnaires were employed as the study instrument. Secondary data, in the form of information on the number of viral-zoonotic cases, was received from the Semarang City Agriculture and Animal Husbandry Service and the Semarang City Health Service.

Data collection was carried out by survey by taking data in the form of: species, type, status, number of animals (wild animals/farm animals/pets) - distribution of animals, management of wild animals around the respondent's residence, number of viral zoonotic cases that occurred in the Semarang City. Data analysis using univariates processed with SPSS and ArcGIS. The study's findings are displayed as putative origin CoV zoning maps and narratives to show the possibility for new zoonotic disease viral viruses to emerge in Semarang City.

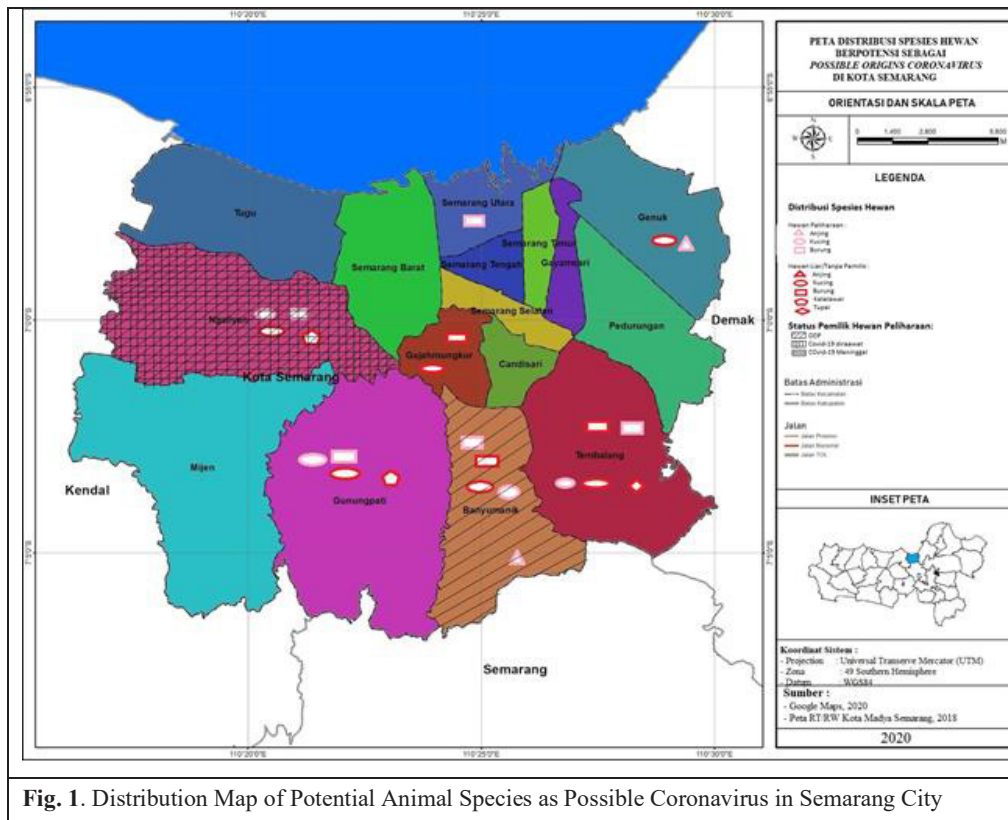
## 3 Results and discussion

A zoonotic illness has the potential to spread or give rise to "new emerging zoonotic diseases" if it is pathogenic and has the ability to infect both people and animals. a zoonotic illness with the potential to spread worldwide in the future. Because of this, it's important to understand the potential range and animal species that could harbor the corona virus. the capacity of the Corona virus to organically develop. If there has been human-to-human transmission, a pandemic could develop. Even if it is challenging to pinpoint the exact evolutionary path that took place, this evolutionary cycle needs to be understood. However, by understanding the potential source of

the corona virus, it is possible to understand how diseases spread and take the necessary precautions [7,10,12]. 16 districts make up Semarang City's land area. In this study, a survey of people residing in 46 red zone villages in Semarang City was undertaken. There are 3 sub-districts in Semarang City's total of 16 sub-districts that have an animal health center, according to records (Mijen, Gayamsari, and Gunungpati). Cats (65%), bats (6%), birds (16%), dogs (2%), chickens (9%), and squirrels (1%) are the most common wild or ownerless animals. Finding in Ngaliyan district there are respondents who are people under surveillance, patients under surveillance, and confirmed positive Covid-19. There are presence of pets : cats & birds,; also wild animals: bats & cats in Ngaliyan District.

The status of respondents in this study obtained data, 10% of respondents live in areas where there are people under surveillance, 8% live in areas where there are cases of Covid-19 treated patients, and as many as 3% of respondents live in areas with cases of Covid-19 died patients. There are 3% of respondents who live in the same house as people under surveillance status. Respondents who had direct contact with people with the status of people under surveillance, patients under surveillance, and positive COVID-19 patients who were treated/recovered/died within 1-14 days (8% of respondents). A 21% of respondents have a history of traveling to red zone areas. Respondents who self-isolate at home are known to be 36%. It is also known that 46% of respondents have pets, 3% of livestock ownership, and 51% do not have pets or livestock.

Figure 1 in this study depicts the distribution of animals that may be potential origins of CoV in Semarang City and that fall under the category of pets. In this investigation, the distribution of animals with the potential to be Possible Possible Origins Coronavirus in Semarang City, groups of wild animals / without owners within a radius of 10, patients under observation and in good health In the vicinity of 10 meters for Covid-19 patients who underwent treatment, recovered, or passed away, there were dogs (1%), cats (65%), birds (16%), chickens (9%), bats (6%), and others (4%). According to the study's findings, cats make up the majority of both pets and wild animals that don't have owners. Animals with the potential to serve as hosts or reservoirs for the corona virus include cats. Particularly in stray cats, who have a very high chance of catching the disease or becoming ill. According to the most recent study, the corona virus can persist in the environment for several hours or even days. Even the spread of Covid-19 can happen via contaminating droplets in the environment. If infected with Covid-19, animals that have the ability to serve as coronavirus reservoirs, such as dogs, cats, and birds, then spread Covid-19 to other animal species. causes New Emerging Diseases (NEDs) in certain animal species. Additionally, it is predicted that in the future there will be Emerging Zoonotic Disease (EZD) and the possibility of a pandemic if there is re-transmission to humans and a cycle develops [11,13,14, 15].



**Fig. 1.** Distribution Map of Potential Animal Species as Possible Coronavirus in Semarang City

The location of the residence of the pet owner with a residence radius of 10 m from people under monitoring (10%), Covid-19 sufferers being treated (8%), Covid-19 who has died (3%), does not have pets & is far from Covid-19 sufferers 19 (79%). In this study, it was discovered that roughly 10% of pets belonged to owners who fell under the Covid-19 monitoring category. According to the findings of respondents' interviews, it represents a relatively tiny portion of animal ownership. The risk that pets may contract or become infected with Covid-19 from their owners makes the ailment still a concern. When dealing with their dogs, especially if pet owners have a history of visiting red zone locations and disobeying Covid-19 preventative health practices. Covid-19-infected individuals can shed droplets that can live in the environment for hours or even days. Different time variations exist in droplets in the environment, on contaminated equipment, and in open air [4,14,15,16].

In this investigation, it was discovered that about 10% of domestic pets belonged to owners who were monitored under COVID-19. Despite the fact that just a small portion of the population under observation has pets, this is still a concern because it's possible that animals could contract Covid-19 from their humans. 13% of respondents said they regularly engage with their dogs. People from the red zone who have previously traveled and interacted with pets without using Covid-19 preventive measures (12%). All respondents who have pets carry out animal checks and vaccinations at the vet. Routine a pet health checks (15%), routine pet vaccinations (19%). Early vigilance about the spread of Covid-19 is important. In this study, it was discovered that 12% of the participants used co-19 prevention techniques when dealing with pets. Owners do



not perform personal hygiene before to dealing with their pets after leaving Covid-19 red zone sites. The Covid-19 preventive regimen is not followed by owners when caring for their pets. The risk of EZD can be reduced by following the Covid-19 preventative health program before dealing with dogs [5,14,16,17].

Only 12% of pet owners directly connected with their animals after leaving the red zone, according to one survey. Animals are at a significant risk of contracting Covid-19 via direct contact with pets if Covid-19 preventative health practices are not followed. Although a Real-Time Polymerase Chain Reaction (RT-PCR) test and a fast test are required to identify SARS-CoV-2 in animals. The purpose of this test is to rule out any chance of transfer from owner to animal. Only 15% of pet owners frequently performed pet health checks, and only 19% of owners vaccinated their animals, according to this survey. According to this statistic, more than 50% of pets are unvaccinated. Pets that have not received their vaccinations are more prone to illness. vaccination of animals, particularly with vaccinations designed to stop the spread of viral diseases [10,12,13,17].

The findings revealed that 66% of wild/ownerless animals walked about the respondent's home virtually every day; 13 respondents responded every 5–6 days; nevertheless, 2% of 16 respondents responded in the range of 1–2 days; and 3% responded in the range of 3–4 days. claims that no wild animal or animal without an owner has ever entered the yard of a house. 25% of respondents indicated they had direct contact with wild animals without their owners, while 75% said they had no contact with them. When respondents interacted directly with wild animals/without owners, 6% of respondents said they used masks and gloves, 10% said they did so but did not wear gloves, 6% said they did not use either, 29% said they washed their hands before and after interacting with these animals, 35% said they did so after, and as many as 13% said they did something different.

70% of respondents said they did not spray disinfectant when these wild/ownerless animals entered the yard, compared to 30% of respondents who did. 6% of respondents claimed they would adopt wild or abandoned animals, while 94% said they would not. respondents who have taken in wild or abandoned animals; 29% of these respondents check them out at the vet, and 40% of these respondents vaccinate the animals. Bats were also discovered (6%) in this study's red zone-designated residential zones. CoV can infect dogs and cats in animals. Despite the differences between the CoV that infects humans and animals, the study's findings revealed that bats serve as a reservoir for the virus. CoV in bats has the ability to mutate and combine to form new strains that can spread to other species. If it has infected humans, CoV that mutates from the reservoir is very simple to propagate and has the potential to become a pandemic [7,15,17].

#### **4 Conclusion**

There have been found species of domesticated and wild animals that can be at high risk as hosts for CoV. Found species of bats that are known to theoretically be the origin of CoV around the red zone. Finding in Ngaliyan district there are respondents monitored, patients, & confirmed positive Covid-19; presence of pets: cats & birds; wild animals: bats & cats. This condition makes Ngaliyan district has the potential to emerge of new emerging zoonotic diseases.

## 5 Recommendation

Covid-19 prevention procedures should still be carried out properly and correctly, especially in red zone areas. Continue to carry out the Covid-19 prevention health protocol, especially when mobilizing from and to the red zone area, especially when interacting with pets, or wild animals around the place of residence. Vaccinate pets or wild animals/animals without owners, especially animals that can act as coronavirus reservoirs

**Acknowledgments.** This study was funded by research fund 2020 from Sport Science Faculty of Universitas Negeri Semarang.

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# Interactive Learning Media of Football Learning on Physical Education

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**Abstract.** During the pandemic, the learning process took place many system changes, starting from the technical implementation carried out online as well as setting learning hours in schools to be shorter. This also has an impact on the physical education learning process in schools. So the need for learning media that can overcome the problems of online learning and the lack of learning time. The purpose of this research is to create interactive learning media that can be accessed online or offline. This media is based on the Lectora Inspire application and contains material about the Football Game for senior high school students. This is a research development or Research and Development with stages a) Analysis b) Planning c). Development d) Implementation e) Evaluation. The population of this research is 10th and 11th grade the students of Senior High School with the sampling technique using random sampling. This interactive media based on Lectora Inspire is considered effective for online and offline learning and is in accordance with the Learning Objectives for Competence in Big Ball Game for Class 10th and 11th grade Senior High School.

**Keywords:** Football, interactive, learning media

## 1 Introduction

The goal of physical education is to help children develop their mental, physical, and psychomotor abilities in order to help them become mature, autonomous adults who can subsequently be employed in daily life [1]. In line with that, the aim of Physical Education is to achieve the process of developing the cognitive, affective, and psychomotor domains [2] as well as mental and social [3] through physical activity. Physical education learning is centered on application and movement-based learning, which includes content in line with Core Competencies and Basic Competencies. Learning goals must be met for both Core Competencies and Basic Competencies. The involvement of a learning media will be crucial in achieving these learning objectives. Particularly now, when learning is implemented during shortened school days due to the Covid-19 pandemic. so that instructional time cannot be used to its fullest advantage for physical education learning.

The role of online-based interactive learning media used by students and teachers is expected to overcome the lack of face-to-face learning hours for Physical Education. Media is anything that can provide information from sources of information to recipients of information [4]. One of the key elements in raising learning quality is the use of learning media, which is a result of technical advancements in the field of education and demands that learning be efficient and

effective [5]. Interactive learning materials based online are one sort of educational media. The media that will be created in this research will be interactive online content that adheres to established Core Competencies and Basic Competencies. For the great game of football for high schools, an interactive media based on Lectora Inspire was created in this study. It contains Core Competencies and Basic Competencies material.

One of the Basic Competencies in the Physical Education curriculum for high schools is the large-ball sport of soccer. The fundamental moves in football include passing, dribbling, shooting, heading, and goalkeeping [6]. The availability of learning resources with in-depth photographs and videos of the content will tremendously aid physical education teachers in their responsibility of helping pupils master these skill.

## 2 Literature review

Interactive Learning Media based on Lectora Inspire is the title of her article. This research and development aims to understand the prevalence of interactive learning media products assisted software lectora inspire and to understand learners' reactions to these products' developed material relations and functions. The research method employed in this study is based on Brog and Gall's 10 step research and development process that Sugiyono simplified into 7 phases. Potential issues, data gathering, product design, validation, design enhancement, product testing, and product revision are the steps. The validation sheet and student responses to the questionnaire are the data gathering tools. According to the study's findings, the interactive learning media-assisted software Lectora inspire on material relations and class X functions, which was created with Brog and Gall and modified by Sugiyono, has been deemed feasible for use by experts in materials and media under good criteria, with an average rating of 4,2 for material experts and 3,5 for media experts. The average score for the student reaction to the interactive learning program Lectora inspire on material relation and function was 4,0167 [7]. The goal of this research is to ascertain how interactively children react to media based on Lectora Inspire, in line with Hamidah's research on high school football. Additionally, development study by Borg and Gall is comparable to this research and is of the same type. The same tool is employed, which is an expert evaluation sheet. The goods created in Hamidah's study were deemed appropriate for usage by students by industry professionals.

Lectora Program Interactive Media Development Android-Based Inspire On Journal Materials Adjustment Of Class Xi Accounting And Service Companies Financial Institutions Of State Vocational School 10 Surabaya. With the introduction of the 2013 curriculum system and the advancement of science and technology in the fourth industrial revolution, teachers were expected to be able to keep up with new advances. Utilizing an android smartphone to create interactive media was one approach to benefit from current technologies. Students might learn at any time, anyplace, by using an engaging application on an android smartphone. As a result, learning proceeded smoothly. Interactive media was supported by a variety of programs, including Lectora Inspire. The aim of this project was to create interactive media for the Lectora Inspire software running on Android using data from service company adjustment journa. The definition, design, development, and dissemination stages are all included in the 4D development model that Thiagarajan created for this form of development research. The research, however, was only able to get to the development stage because of the short time it

had. Twenty students from class XI Accounting and Financial Institutions 4 at SMK Negeri 10 Surabaya served as the study's subjects, together with media and material specialists and experts in their fields. using a survey as a research tool and quantitative descriptive analysis as a method of data analysis. Several processes were taken to assess the viability of interactive media, including media evaluation, revision, validation, and small-scale tests. The average response rate from material specialists was 81.30%, that from media experts was 84%, and that from students was 93.33 [8].

Similar to Mely's research, this research design can also be accessed using Android wherever students are. This online-based media that can be accessed using Android is considered feasible by experts for use in learning.

## **2.1 Learning media**

Learning media is physical equipment to present learning to students [9]. Learning media is also a messenger technology that can be applied to learning [10]. Because it will make it simpler for teachers to transfer knowledge in order to accomplish learning objectives, the role of learning media in learning is crucial. The following are some of the functions of learning media: 1) fostering learning motivation; 2) reinforcing previously taught material; 3) offering learning stimuli; 4) eliciting student reactions; 5) offering quick feedback; and 6) encouraging suitable exercise [11]. There are 2 functions of learning media, including 1) media as a tool in learning. As a tool in learning, media has a function to make it easier to achieve learning objectives and improve the quality of learning. 2) Media as a learning resource. Media can also be used as a source of knowledge to help students understand the material [12].

For pupils to reach their full potential, dynamic, supportive, and dialogical media and educational techniques must be made available. This is due to the fact that when provided with various media or infrastructure that supports the ongoing engagement process, students' potential will be more stimulate [13]. Anything that may communicate ideas through a variety of media and pique students' interest and/or thoughts in order to promote the development of a learning process and the addition of new knowledge to students in order to successfully accomplish learning objectives is considered learning media [14]. Interactive learning media built on information technology is one sort of media used in education. A method of delivering instruction that uses computer control to show students recorded video content that includes graphics, sounds, and the ability to reply to users is known as interactive learning media [15]. Media Called interactive because this media is designed to involve the user's response actively [16].

Lectora inspire is a powerful tool for producing educational material. Because Lectora inspire does not require knowledge of complex programming languages, it is a reasonably simple electronic learning (e-learning) development tool to use or install. Because those of us who are proficient in or familiar with Microsoft Office have a familiar interface with Lectora inspire [17]. Because Lectora Inspire is specifically made for novices, its benefits include being very simple to use when creating learning media and having the ability to produce test or evaluation materials. This tool is simple to use even for teachers with limited computer skills. Making use of the Lectora Inspire application tool, we can create lesson plans for student [18]. Lectora inspire can be accessed online or offline [19]. Lectora Inspire is a new innovation in the application of digital-based learning in learning. This can help teachers to be able to increase

competence in the use of digital technology in learning. Digital competence is the basis for the successful professional activity of any specialist in the field of education [20]

### 3 Methods

This preliminary study is a development study with the goal of creating interactive learning media products. A technique or approach used to create or validate items used in education and learning is research and development [21]. The population of this study were students of class X high school with a sampling technique using random sampling. The stages carried out in this research are Analysis, Planning, Development, Implementation, Evaluation with the following description:

#### 1) analysis

Stages of analysis carried out with initial observations. At this stage, it is carried out to collect initial data in the form of the needs of the teacher as a user of the product to be developed. Data collection can be done by measuring needs, literature studies, research on a small scale and considerations in terms of value [22]. The next stage is to make observations of learning to schools and interviews with Physical Education teachers. Next, conduct a literature study related to the problems studied and collect information related to interactive learning media to partners.

#### 2) Planning

The planning stage is carried out by setting goals and development steps. At this stage, the steps taken are plans before developing learning media, including:

##### a) Curriculum Analysis

The creation of interactive learning materials must be based on the high school curriculum, which include competency criteria, fundamental skills, and measures of success for subjects like high school physical education.

##### b) create a storyboard display layer

After analyzing the Basic Competencies curriculum for the Big Ball Game, a storyboard is drawn up as an overview of the product layer display of the resulting application. As an initial illustration of the display form of the contents of the layer is an example as follows :

**Table 1.** Content of layer draft lectora inspire

<b>Interactive Learning Media</b>	
Preface	Football Picture
Basic Competencies	Basic Competencies for High School
Learning material	Dribbling, Passing, Shooting
Refereces	Learning sources of PE High School

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# Identification Factors Affected Sport Organization's Transparency in Central Java Province

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**Abstract.** The accumulation of sporting scandals in recent years has had such a negative impact on the credibility of sport and its organizations due to a lack of openness, according to the Global Corruption Report, which was presented in Berlin, Germany in 2004. Only 37% of Central Java's sports groups have high levels of transparency, according to the findings of prior research, according to the transparency of sports organizations in Central Java. To improve this, it is necessary to know what factors have the most influence on the transparency of sports organizations. This research is a quantitative descriptive study conducted to provide a more detailed description of the factors that most influence transparency in the company using the survey method. The population in this study were all sports organizations in Java with total sampling that involved sports organizations in 35 regencies/cities throughout Central Java. The survey conducted will use an instrument consisting of independent variables, namely the position of the organization, the level of organizational prosperity, the number of members, external pressures, and organizational management commitment, each with five questions, then added with five questions from the dependent variable, namely organizational transparency. in the form of a checklist using a 4-point Likert scale. The results of the study will be tested using multiple linear regression analysis on SPSS 21. After processing, this study succeeded in obtaining 2450 data from 27 Sports Organizations throughout Central Java and it can be seen that organization well-being, number of members, and internal commitment has significant influence.

**Keywords:** Sports management, sport governance, sport organization, transparency, Central Java

## 1 Introduction

According to Michener, the number of scandals in sports has risen to a point where it is affecting the organizations' and sports' reputations. According to authorities in the sphere of good governance and corruption, this frequently happens as a result of a lack of transparency [1]. The public's confidence in sports, which are viewed as contributing to beneficial social and cultural values in society, may then be threatened by this. These challenges emerge and are connected to the management of sports organizations, including frameworks for dealing with policy concerns and a sports organization's performance orientation. [2] [3] [4]. Not only offers direction for the Sports Organization, but also contributes to a rise in public confidence in the organization [5].

It should be understood that in organizational governance, transparency and openness are important parts that cannot be separated [6] because they are part of the concept of an organizational governance system that has been widely adopted in organizational systems in various countries in the world, including Indonesia [7]. It is also concerned that openness can advance the ideals of good governance, support organizational legitimacy, increase efficiency within organizations, and help avoid corruption [8] [9] [10] [11]. On the other hand, transparency is also seen as a basic human right [12].

The importance of transparency in the governance system of Sports Organizations cannot be underestimated. The demand for increased transparency is always pursued in relation to the media, global political campaigns, and corporate organizations [13] because effective management may ensure that the sports organization achieves its long-term objectives and can thus continue to function in the long run [14]. Lack of a solid governance system, in particular one to manage and monitor sports organizations, can lead to sponsors losing interest in working with them, a decline in membership and participation, as well as intervention from outside authorities [15].

According to the declaration, sports organizations' poor governance practices could have a significant detrimental effect on society. It is crucial that sports organizations administer sports in a responsible and transparent manner because of the load that sports organizations place on society [16] [17]. The results of prior research, particularly in Central Java, indicate that there is a lack of transparency in sports groups. Evidence that just 37% of sports groups in Central Java have strong transparency quality supports this even further [18]. Knowing what influences sports organizations' transparency the most is obviously crucial to make.

### 1.1 Objectives

The study's goal was to identify the characteristics that have the biggest effects on organizational transparency in sports so that researchers could advise Central Javan sports organizations on how to improve organizational management openness.

## 2 Literature review

Grouping people, resources, tasks, duties, and authorities into an organization that can move as a unit to accomplish predefined goals is the act of organizing. Putting people and basic resources in a pattern that allows them to carry out tasks to achieve predefined goals is what it means to organize. While Jones in [13] gives a description of an organization as a tool people use to coordinate their activities to achieve what they desire or value, specifically to accomplish their aim. Additionally, according to Atmosudiro in [12], an organization is the framework of the labor division and the working relationship between a group of position holders who collaborate in a specific manner to jointly accomplish a specific goal. Several of the perspectives expressed above lead to the conclusion that the organization serves as a tool or container for managers to do tasks in an effort to accomplish objective.

Organization is a tool for achieving goals based on predetermined plans, and it must contain a number of components. According to [11], the organizational components are as follows:

- 1) human, which refers to the reality that human beings interact and that both leaders and followers are made up of human beings;
- 2) to domicile is to have a domicile;
- 3) objectives, indicating that there are objectives to be attained;
- 4) work, which denotes the division of labor and the existence of work to be done;
- 5) structure, which denotes that people interact with one another and cooperate;
- 6) Technology, which includes technical components;
- 7) environment (environment external social system), which refers to a system of social cooperation as an example of an environment that impacts others.

A good level of transparency is one of the requirements for a company to be considered to have good management. The majority of definitions of transparency focus on how much information an organization can reveal about its activities, processes, and performance [17]. As a result, transparency can indicate a variety of things, including the accessibility of data regarding an organization's performance. This enables people and/or organizations outside the organization to keep an eye on the actions and decisions the organization makes. Therefore, transparency can be defined as the accessibility of data about an organization that allows outside parties to monitor the organization's performance [18]. According to earlier study, there are a variety of variables that influence transparency in an organization, including organizational position, amount of organizational prosperity, membership, external pressure, and organizational management commitment.

### 3 Methods

This research is a quantitative descriptive study conducted to provide a more detailed description of the factors that most influence transparency in sports organizations using a survey method. The research was conducted on sports organizations described in Law No. 3 of 2005 concerning the National Sports System article 1 and article 35 and was carried out in June-July 2019 in 35 regencies/cities throughout Central Java. Sampling will use total sampling involving sports organizations in 35 regencies/cities throughout Central Java. This research data will be tested using multiple linear regression analysis on SPSS 21.

### 4 Data collection

The survey's used questionnaire has several indicators, including the organization's position, its level of prosperity, the number of members, external pressure, and organizational management commitment, each with five questions, plus an additional five questions pertaining to organizational transparency. A 4-point Likert scale was used in the checklist-style questionnaire.

### 5 Results and discussion

After data was analyzed, it can be seen that there is no influence of organizational position and organizational management commitment on transparency because the value of Sig. > 0.05.

**Table 1.** Result of Management Commitment Analysis

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.306	1	21.306	3.473	.074 <sup>b</sup>
	Residual	153.361	25	6.134		
	Total	174.667	26			

a. Dependent Variable: TransparasiOrganisasi  
b. Predictors: (Constant), KomitmenManajemen

**Table 2.** Result of Organization Position Analysis

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.073	1	37.073	6.736	.016 <sup>b</sup>
	Residual	137.594	25	5.504		
	Total	174.667	26			

a. Dependent Variable: TransparasiOrganisasi  
b. Predictors: (Constant), KedudukanOrganisasi

In the second factor that calculates the effect of the level of organizational prosperity on transparency, it was found that there was a significant effect of up to 59.9%.

**Table 3.** Result of Organizational Wealthiness Analysis

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.774 <sup>a</sup>	.599	.583	1.67458

a. Predictors: (Constant), TingkatKemakmuranOrganisasi

In the next factor regarding the number of members of the organization, it can also be seen that this factor has a significant influence up to 48.8%.

**Table 4.** Result of the Number of Organizational Member Analysis

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698 <sup>a</sup>	.488	.467	1.89205

a. Predictors: (Constant), JumlahAnggotaOrganisasi

In the fourth factor, the external pressure of the organization also shows a significant influence with a percentage of up to 43.6%.

**Table 5.** Result of External Preasure Analysis

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.660 <sup>a</sup>	.436	.414	1.98485

Based on the results of the analysis of 2450 data from 27 sports organizations throughout Central Java, it can be seen that management commitment and organizational position have no influence on sports organizations. If viewed in depth, management commitment is related to management's internal awareness in carrying out transparency, this could be due to the lack of education and training for organizational members about the financial sector and the importance of transparency in sports organizations [19]. Whereas this education and training will make an organization more competitive, so that its members are able to adapt, compete, innovate, so that they can achieve the desired goals [20]. While the position of the organization is related to the level of the organization and based on several studies, the greater or the higher the level of an organization, the more closed the information shared with the public [21]

## 6 Conclusion

A conclusion that can be drawn from the data analysis results is that external pressure, the number of organizational members, and the amount of organizational prosperity all have an impact on a sports organization's level of openness. If we look at each percentage produced, it can be seen that the level of organizational prosperity has the greatest influence, which is 59.9%. However, organizational standing and management commitment have no influence on the transparency process in sports organizations. This shows that the high and low of an organization or the size of an organization has no influence on the organization's desire to be transparent, so it can be said that transparency will occur if there is pressure given to the organization, especially when the organization is included in an organization that has a high level of prosperity. This study can help stakeholders and the general public understand that when a sports organization is a part of a prosperous company and there is external demand to be open, the level of transparency for those organizations will rise in Central Java.

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# Food Intake, Percent Body Fat, and Nutritional Status at Football Academy in Pati Regency

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**Abstract.** The performance of youth football athletes in the field is related to food intake, body fat percentage, and nutritional status. To achieve maximum performance and achievement and support growth, an athlete needs to have a good body fat composition and nutritional status. The purpose of this study was to determine the relationship between food intake, percent body fat, and nutritional status of adolescent football athletes at football academy in Pati Regency. The research was conducted by analytical observation with a cross sectional design. Data collected through recall 3x24 hours (food intake), and anthropometry measurements (BMI, body fat percentage) using weight scale, microtoice, and BIA. A sample of 111 athletes with a total sampling method. The research population was all youth football athletes in Football Academy at Pati Regency, aged 13-20 years. Samples were taken using simple random sampling technique. The independent variables of this study were food intake and physical activity. While the dependent variable is the percent body fat and nutritional status of athletes. The analysis was carried out univariately to describe the characteristics of each variable, and bivariate to determine the correlation between variables using the Spearman correlation test. Based on the results of the analysis, data showed that there was a significant relationship between fat and protein intake with BMI ( $p < 0.05$ ), there was no significant relationship between energy and carbohydrate intake with BMI ( $p \geq 0.05$ ), and there was no significant relationship between calorie, carbohydrate, protein, and fat intake with percent body fat ( $p \geq 0.05$ ).

**Keywords:** Food intake, physical activity, body fat, nutritional status, football.

## 1 Introduction

Football is a sport that is played by 265 million people worldwide and is the most popular game in the world today [1]. Over the last few years, this sport has evolved into a game of faster intensity and more aggressiveness than ever before [2]. A soccer athlete needs to be skilled in agility and agility to be able to perform technical movements such as turning, jumping kicking, and tackling as an effort to attack and defend. Explosive power and good fitness are also needed by athletes because they have to sprint every 90 seconds for a minimum of 90 minutes of competition [3].

The performance of a football player is closely related to a number of factors, such as the level of fitness, psychology, technique, and tactics [2]. A decrease in athlete performance can occur if the athlete receives high physical exercise, resulting in dehydration and hypoglycemia. However, this condition can be prevented if athletes get the right nutritional intake. In its development, nutrition is increasingly recognized as a component in optimizing sports performance through the contribution of knowledge and practice [4].



Fulfillment of nutritional intake is important for every athlete to pay attention to, especially in terms of the balance between energy intake and expenditure. With adequate nutritional intake, an athlete can train optimally and improve his performance, so that it can support athletes to get their best performance. Trained techniques and tactics cannot be practiced properly if there is not enough energy available in an athlete's body [5].

The balance of nutrients is needed to create maximum performance in sports. If the fulfillment of nutrients through food is less than the need, it will result in a Negative Energy Balance (KEN) and will make the nutritional status less. In adolescent athletes, poor nutritional status not only has an impact on performance decline but also hampers body development and growth [6]. On the other hand, if the fulfillment of nutritional intake exceeds the need, it will result in more nutritional status and increase fat reserves. Excessive nutritional status will lead to a lack of performance in the field and limited ability to perform at their best [7].

The balance of the daily energy intake of an athlete needs to be considered to be able to provide energy used during exercise, while maintaining and achieving ideal body weight and body composition [8]. Monitoring of body weight and body composition needs to be carried out on an athlete because it will affect the exercise design, the nutrition program provided, and monitor the development of an athlete [9]. A person's body fat percentage can reflect his body composition. If a person's body fat percentage is higher than the normal number, it means that his body fat mass is also excess.

Body fat percentage can be influenced by several things, namely nutritional intake, physical activity, and lifestyle. This is in line with research by Anwar et al., (2016) [10], that there is a significant relationship between intake of carbohydrate, fat, and fiber intake with percent body fat. Other studies have also shown that fat consumption is associated with BMI and body composition [11]. The percentage of body fat affects the performance of athletes. Excess fat can lead to obesity, arteriosclerosis, increased blood pressure, stroke, and heart attack. While the lack of body fat can result in reduced muscle tissue which will affect the performance of athletes. A football athlete, especially a teenager who is still in his growing age, requires adequate food and nutrition to support his body's growth and development. However, athletes in this age range often do not realize the importance of balanced nutrition for themselves. With a good diet, he will have a normal nutritional status and a proportional body composition. A preliminary survey conducted at the football academy in Pati Regency showed that the athlete's food intake was still less than the requirement. This is in line with previous research which stated that the intake of adolescent soccer athletes had not met the recommended needs [12].

Based on the description above, the researcher is interested in analyzing the relationship between food intake, body fat percentage, and nutritional status in adolescent soccer athletes at the Pati Regency football academy.

## **2 Methods**

The data in this study are primary data obtained from the Safin Pati Football Academy, October, 2021. This study used an observational technique with a cross-sectional research design. The sample in this study were all members of the population (total sampling) which amounted to 111 people. Data analysis was carried out univariately to describe each variable, and bivariate analysis to test the correlation using the Pearson correlation test.

### 3 Results

**Tabel 1.** Screening data

Variable	N = 30	%
<b>Gender</b>		
Male	30	100
Female	0	0
<b>Team based on age</b>		
U13	10	33,3
U14	4	13,3
U16	6	20
U18	6	20
U20	4	13,3

Based on Table 1, can be known that there are 30 male subject that participated in this research, with all of the gender was male. The age range of the subject was between 12-20 years old. The anthropometrical measurements are done to all of the subject with measure their height by microtoice and then body weight, body fat percentages, and BMI by using BIA. The subject's BMI and body fat percentages data was obtained after the measurements are done. Based from the BMI data known that there are 7 subjects (23,3%) categorized underweight, 22 subjects (73,3%) categorized normal, and 1 subject (3,3%) categorized overweight. Body fat percentage data of the subject was categorized based on the standard fat percentage by age from New body fat reference curves for children by Jebb S(2004) . Based on subject's body fat percentage data known that 11 subject (36,7%) categorized underfat, 19 subjects (63,3%) categorized normal, and 0 subjects categorized overfat.

**Table 2.** Intake, BMI, and Body Fat Percentage Category Profile

Category	Component	n (%)
BMI	Underweight (<18,5)	7 (23,3)
	Normal (18,5 – 22,9)	22 (73,3)
	Overweight (>23)	1 (3,3)
Body Fat % (Based on age)	Underfat	11 (36,7)
	Normal	19 (63,3)
	Overfat	0
Calories Intake	Overintake (>120%)	0
	Normal (90% - 119%)	0
	Mild Deficiency (80% - 89%)	2 (6,7)
	Medium Deficiency (70% - 79%)	1 (3,3)
	Severe Deficiency (<70%)	27 (90)

Carbohydrate Intake	Overintake (>120%)	0
	Normal (90% - 119%)	0
	Mild Deficiency (80% - 89%)	0
	Medium Deficiency (70% - 79%)	1 (3,3)
	Severe Deficiency (<70%)	29 (96,7)
Protein Intake	Overintake (>120%)	1 (3,3)
	Normal (90% - 119%)	1 (3,3)
	Mild Deficiency (80% - 89%)	2 (6,7)
	Medium Deficiency (70% - 79%)	3 (10,0)
	Severe Deficiency (<70%)	23 (76,7)
Fat Intake	Overintake (>120%)	4 (13,3)
	Normal (90% - 119%)	8 (26,7)
	Mild Deficiency (80% - 89%)	4 (13,3)
	Medium Deficiency (70% - 79%)	6 (20,0)
	Severe Deficiency (<70%)	8 (26,7)

From the Food Recall 3x24 hours data can be obtained the subject's calorie, carbohydrate, protein, and fat intake. The average intake then being compared to the subjects individuals needs, and after that can be categorized by its percentage fulfilment. The cut off point category is based on Depkes RI 1996. Based on the calorie intake data 2 subjects (6,7%) have mild calorie deficiency, 1 subject (3,3%) have medium calorie deficiency, and 27 subjects (90%) have severe calorie deficiency. Based on the carbohydrate intake 1 subject (3,3%) have medium carbohydrate deficiency, and 29 subjects (96,7%) have severe carbohydrate deficiency. Based on the protein intake data 1 subject (3,3%) have protein overintake, 1 subject (3,3%) have normal protein intake, 2 subjects (6,7%) have mild protein deficiency, 3 subjects (10%) have medium protein deficiency, and 23 subjects (76,7%) have severe protein deficiency. Based on fat intake 4 subject (13,3%) have fat over intake, 8 subjects (26,7) have normal fat intake, 4 subject (13,3%) have mild fat deficiency, 6 subject (20%) have medium fat deficiency, and 8 subjects (26,7%) have severe fat deficiency.

**Table 3. Score of Mean, SD, Minimum, and Maximum**

Variable	Minimum	Maximum	Mean±SD
<b>BMI</b>	15,6	24,0	19,6±1,93
<b>Body fat %</b>	6,6	19,1	13,1±3,12
<b>Intake profile</b>			
Calorie Intake	1444,1	3108,0	1992,2±446,44
Carbohydrate intake	154,1	450,5	268,0±69,57
Protein intake	121,2	157,3	135,6±9,58

Fat intake 71,8 93,2 80,4±5,67

Based from the anthropometric measurement known that the subject's BMI range are between 15,6 and 24,0 with the average BMI 19,6±1,93 and body fat percentage data range are between 6,6% and 19,1% with the average body fat 13,1%±3,12. Based from the Food Recall data, subject's calorie, carbohydrate, protein, and fat intake was obtained. The subject's calorie intake range was between 1444,1 kkal and 3108,0 kkal with the average intake 1992,2 kkal±446,44, carbohydrate intake range between 154,1 gr and 450 gr with the average intake 268,0 gr±69,57, protein intake range between 121,2 gr and 157,3 gr with the average intake 135,6 gr±9,58, and fat intake range between 71,8 gr and 93,2 gr with the average intake 80,4 gr±5,67.

**Table 4. Correlation between food intake and BMI**

		Intake			
		Calorie	Carbohydrate	Protein	Fat
BMI	<i>r</i>	0,077	0,105	0,427	0,427
	<i>p</i>	0,685	0,580	<b>0,019</b>	<b>0,019</b>

The data correlation test was conducted to all of the obtained data. The correlation between nutritional intake with BMI, and nutritional intake with body fat percentage was conducted by using spearman correlation test with  $p < 0,05$ . Correlation test between calorie intake and BMI resulting  $r = 0,077$  and  $p = 0,658$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's calorie intake and BMI. Correlation test between carbohydrate intake and BMI resulting  $r = 0,105$  and  $p = 0,580$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's carbohydrate intake and BMI. Correlation test between protein intake and BMI resulting  $r = 0,427$  and  $p = 0,019$  ( $p < 0,05$ ), based on the result can be concluded that there is a significant positive yet very weak between the subject's protein intake and BMI. Correlation test between fat intake and BMI resulting  $r = 0,427$  and  $p = 0,019$  ( $p < 0,05$ ), based on the result can be concluded that there is a significant positive yet very weak between the subject's fat intake and BMI.

**Table 5. Correlation Between food intake and body fat %**

		Intake			
		Calorie	Carbohydrate	Protein	Fat
Body Fat %	<i>r</i>	-0,025	0,073	-0,078	-0,080
	<i>p</i>	0,895	0,703	0,681	0,675

Correlation test between calorie intake and body fat percentage resulting  $r = -0,025$  and  $p = 0,895$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's calorie intake and body fat percentage. Correlation test between carbohydrate intake and body fat percentage resulting  $r = 0,073$  and  $p = 0,703$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's carbohydrate intake and body fat percentage. Correlation test between protein intake and body fat percentage resulting  $r = -0,078$  and  $p = 0,681$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's protein intake and body fat percentage. Correlation test between fat intake and body fat percentage resulting  $r = -0,080$  and

$p = 0,675$  ( $p > 0,05$ ), based on the result can be concluded that there is no significant correlation between the subject's fat intake and body fat percentage.

#### 4 Discussion

A football athlete especially a teenager football athlete requires at least an adequate food and nutrition intake to support his body's growth, development, and performances. For an athlete performance is really important because it can directly affected the achievement of the team. Based on a study by [13] about the correlation between nutritional status and lifestyle of youth soccer athlete performance describe that nutritional factors found to be have the greatest impact on youth athlete performance. But in reality a lot of teenage athlete not realizing the importance of balanced nutrition because they didn't know what power can a balanced nutrition can do to their performance on the field.

This study aims is to determine the correlation between nutritional intake with BMI and nutritional intake with body fat percentage. Nutritional intake that consist calorie intake, carbohydrate intake, protein intake, and fat intake was investigated then correlation test conducted between each nutritional intake with BMI and body fat percentages. Based on the result of the correlation test can be concluded that there is significant correlation yet very weak between protein intake and fat intake with BMI of the subject in Safin Pati Football Academy. Besides that there is no significant correlation between nutritional intake with body fat percentage on subjects in Safin Pati Football Academy.

The results are slightly not in line with the previous studies conducted by [13] about correlation between dietary intake with anthropometry profile on youth football athlete in Indonesia that describe that calorie intake, carbohydrate intake, and fat intake have significant effect on BMI. Besides that it also described from the same study that fat and carbohydrates affect the somatotype components.

#### 5 Conclusion

Protein and fats intake can affect BMI athlete in Safin Pati Football academy. But further research needs to be done by expanding the range of the respondents in order to be more representative.

Balanced nutrition intake is important for football athlete especially youth football athlete. Based on the nutritional intake data obtained at Safin Pati Football Academy, it is recommended to do an intervene, monitor, and evaluate the nutritional intake on the athlete on a regular basis.

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# Age and Comorbidity Factors Associated with COVID-19 Mortality in Java Island

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**Abstract.** COVID-19 mortality in Java Island was the highest in Indonesia. The COVID-19 mortality can be influenced by various factors, including elderly and comorbidity. This article aims to describe the COVID-19 mortality in elderly and people with comorbidity in Java Island. It was descriptive study with data sources used in this article were secondary data from daily reports of COVID-19 cases in Indonesia, Indonesian health profile, and Indonesian basic health research. The data on COVID-19 cases used are data as of April 5, 2022. The result showed that from six provinces in Java Island, more than 35% of deaths due to COVID-19 occur in the age group over 60 years, with the highest number of deaths in the elderly occurring in Jakarta. Meanwhile, the age group that has the lowest percentage of COVID-19 mortality was the age group 0-5 years. Diabetes mellitus showed the highest prevalence in four of six provinces in Java Island. Based on Indonesian basic health research 2018, five of six provinces in Java Island had a prevalence of diabetes mellitus more than the national prevalence. So, it can be concluded that elderly and diabetes mellitus are the two conditions that can increase mortality due to COVID-19 in Java Island.

**Keywords:** Covid-19, mortality, age.

## 1 Introduction

The COVID-19 pandemic that has spread the whole world has been going on for more than two years. Even so, this pandemic is still a major health problem experienced throughout the world. COVID-19 is a respiratory disease caused by the SARS-CoV-2 virus[1]. The SARS-CoV-2 virus is a new type of virus that belongs to the Coronavirus family. The World Health Organization declared COVID-19 as a pandemic on March 11, 2020 and various countries around the world are trying to control and suppress the spread of COVID-19[2]. One of the steps taken is to know the epidemiological pattern of COVID-19 so that efforts to prevent transmission can be carried out[3]. The risk factors that can lead to the severity and death of COVID-19 are age and comorbidities. The age group that is susceptible to being exposed to COVID-19 and experiencing severity of symptoms due to COVID-19 is the elderly group. Besides that, people who have a history of diabetes are more susceptible to experiencing severity when exposed to COVID-19[4].

In the world, as of April 11, 2022, there were around 500 million people who were confirmed to be exposed to COVID-19 with 6.18 million of them died (1.24%). Indonesia ranks 18th with the highest COVID-19 cases in the world. In Asia, Indonesia is in the top five countries with the highest COVID-19 cases along with India, South Korea, Vietnam, and Japan. Then in

Southeast Asia, Indonesia is in second place after Vietnam which has the highest number of COVID-19 cases[5].

As of April 11, 2022, in Indonesia there were 6,033,903 positive confirmed cases of COVID-19 out of a total of 61,352,083 people (9.8%). Of the total cases, 1.2% were still active cases, 96.3% recovered, and 2.6% died. Java Island is the island in Indonesia with the highest COVID-19 cases. Six provinces in Java Island occupy the top six positions with the highest COVID-19 cases, with Jakarta ranking first, followed by West Java, Central Java, East Java, Banten, and the Special Region of Yogyakarta[6]. Due to the high incidence of COVID-19 on Java Island, the death rate from COVID-19 on Java Island also ranks the highest in Indonesia. Due to the high incidence and mortality of COVID-19 in Java, the authors are interested in presenting data related to the distribution of age and comorbidities that associated with COVID-19 mortality in Java Island.

### **1.1 Objectives**

The objectives of this article are describe distribution of COVID-19 mortality based on the sex, age group, symptoms, and comorbidities in Java Island, Indonesia.

## **2 Literature review**

### **2.1 COVID-19**

COVID-19 is a disease that attacks the respiratory tract which was first discovered in Wuhan, China in December 2019[7]. From Wuhan, then this disease spread to various countries in the world until finally the World Health Organization (WHO) declared that COVID-19 became a global pandemic in March 11, 2020[2]. COVID-19 is caused by a virus named severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2 or 2019-nCoV)[8]. Symptoms of this disease vary, ranging from asymptomatic, mild symptoms, to severe symptoms. Mild symptoms caused by exposure to COVID-19 include fever, dry cough, dyspnea, headache, diarrhea, and so on. Meanwhile, most of the severe symptoms experienced include shortness of breath, Acute Respiratory Distress Syndrome (ARDS), infectious complications, significant hypoxia, and multiorgan failure. The average incubation period for the appearance of symptoms due to COVID-19 is 5 to 6 days[9].

The main organ that is attacked by the SARS-CoV-2 virus is the respiratory tract. However, other organs can also be attacked by the SARS-CoV-2 virus[10]. The life cycle of the SARS-CoV-2 virus in the host can be divided into: attachment, penetration, biosynthesis, maturation, and release[11]. Starting from the attachment which is the attachment of the virus to the host receptors. Then the virus will enter the host body through endocytosis or membrane fusion (penetration). Furthermore, the viral contents enter the host cell, then the viral RNA virus enters the host nucleus and replicates. The viral mRNA is used to make viral proteins (biosynthesis). Then, new viral particles will be formed and undergo maturation, and then released. When the virus has multiplied in the body and reaches the body's tolerance limit to fight the virus, then it will cause inflammation in the body and cause the body to become sick[12].



## 2.2 COVID-19 Mortality and the Risk Factors

COVID-19 mortality is the death experienced by patients diagnosed with COVID-19 and COVID-19 is the main cause of death. Epidemiological studies show that deaths from COVID-19 are more common in the elderly group and the incidence of COVID-19 is more experienced in the adolescent to the elderly age group than in children[13]. Factors that cause death from COVID-19 include age and comorbidities[14]. Based on various studies that have been carried out, age is the main factor that causes death from COVID-19. The elderly group is known to have a greater risk of dying if exposed to COVID-19. As many as 80% of deaths due to COVID-19 occur in the age group over 65 years[15].

COVID-19 mortality has a close relationship with the presence or absence of comorbidities possessed by COVID-19 patients. Patients who have comorbidities have a higher risk of dying from COVID-19 compared to patients who do not have comorbidities. Comorbidities that affect deaths from COVID-19 include cardiovascular disease, hypertension, lung disease, diabetes mellitus, and kidney disease[16]. In addition, smoking habits are also known to have a relationship with COVID-19 mortality. Based on several studies, hypertension and diabetes mellitus are the leading risk factors for the severity and mortality of COVID-19[17].

In addition to these two risk factors, socio-economic status is also known to have a relationship with COVID-19 mortality. Countries that have low socioeconomic levels and social densities are known to have lower mortality rates. This shows that poor socioeconomic status in a country does not have a bad outcome on COVID-19 deaths[18]. However, this is also still a concern for developing countries that have poor infrastructure and health services regarding the impact of this pandemic[19].

## 3 Methods

The type of research used in this article is descriptive analysis research with secondary data as the source. The data sources used consist of daily reports of COVID-19 cases in Indonesia, Indonesian health profiles, and Indonesian basic health research. The data used to analyze the distribution of age and comorbidities on COVID-19 mortality in Java Island is data on April 5, 2022 with the number of new confirmed positive cases of COVID-19 as many as 1,774 cases (77.74%) and new cases of death due to COVID-19 were 44 cases of death (61.11%).

## 4 Results and discussion

Java Island is an island in Indonesia which has 6 provinces, namely Banten, Jakarta, West Java, Central Java, Special Region of Yogyakarta, and East Java. On April 5, 2022, the number of new confirmed positive cases of COVID-19 in the 6 provinces was 1,774 cases (77.74%), with details: 280 cases (15.78%) from Banten, 568 cases (32.02%) from Jakarta, 405 cases (22.83%) from West Java, 288 cases (16.23%) from Central Java, 68 cases (3.83%) from the Special Region of Yogyakarta, and 165 cases (9.3%) from East Java. The number of deaths on April 5, 2022 in Java was 44 cases (61.11%), with details: 1 case (2.27%) from Banten, 5 cases (11.36%) from Jakarta, 6 cases (13.64%) from West Java, 12 cases (27.27%) from Central Java, 4 cases (9.09%) from the Special Region of Yogyakarta, and 16 cases (36.36%) from East Java. The data collected is data on the distribution of COVID-19 mortality based on sex, age group, symptoms, and comorbidities for each province in Java. The data is obtained from the daily report on COVID-19 Indonesia.

#### 4.1 Distribution of COVID-19 Mortality by Sex

Table 1 shows that deaths from COVID-19 do not show a significant percentage difference between male and female. However, deaths from COVID-19 in all provinces on the island of Java are more common in male. The Province of Special Region of Yogyakarta has the highest percentage of male COVID-19 mortality, namely 56.17% and East Java has the lowest percentage with 50.17%. On the other hand, East Java has the highest percentage of COVID-19 mortality in female with 49.83% and the Special Region of Yogyakarta has the lowest percentage with 43.97%. The higher percentage of COVID-19 mortality in males is in line with the cross-sectional study conducted by Albitar, et.al. (2020) which states that 59.1% of deaths due to COVID-19 are male and 40.9% female[20]. However, the difference in the percentage of COVID-19 mortality between women and men did not have a significant difference. The high death rate from COVID-19 in men could be due to the possibility that males have a higher expression of angiotensin-converting enzyme 2 (ACE2) than females. This causes male to be more at risk of exposure to COVID-19 and also tend to have worse clinical symptoms[21].

**Table 1.** Distribution of COVID-19 Mortality by Sex

No	Province	Sex	
		Male	Female
1.	Banten	56.04%	43.96%
2.	Jakarta	52.69%	47.31%
3.	West Java	50.94%	49.06%
4.	Central Java	52.89%	47.11%
5.	Special Region of Yogyakarta	56.03%	43.97%
6.	East Java	50.17%	49.83%

#### 4.2 Distribution of COVID-19 Mortality by Age Group

The distribution of COVID-19 mortality by age group in Java shows that the age group that has the highest percentage of deaths due to COVID-19 is the age group over 60 years. Of the 6 provinces on the island of Java, only Banten has the highest percentage of COVID-19 mortality in the 46-59 year age group. This shows that the distribution of COVID-19 mortality in Java Island is dominated by the elderly. Jakarta Province has the highest percentage of deaths due to COVID-19 in the age group over 60 years, which is 65.08%. Meanwhile, the province with the lowest percentage of deaths from COVID-19 in the age group over 60 years is Banten, which is 39.13%. The condition in Java Island which shows that the age group over 60 years has a higher percentage of COVID-19 mortality is in line with research conducted by Li, et.al. (2020) which stated that 42.2% of COVID-19 mortality in Wuhan was aged 45-64 years and 38.3% were aged over 65 years[22]. In addition, research conducted by Sousa, et.al. (2020) also stated that the risk of death from COVID-19 was 3.7 times higher in the elderly. This shows that old age is one of the risks of COVID-19 mortality[23]. One of the reasons for the increased risk of death from COVID-19 in the elderly is that the level of an individual's immunity tends to decrease with age, so that the body's natural immunity is more difficult to fight off incoming viruses. In addition, in the elderly group, organ function tends to decrease so that it can cause susceptibility to infections and drug reactions[21].

**Table 2.** Distribution of COVID-19 Mortality by Age Group

No	Province	Age (year)					
		0-5	6-18	19-30	31-45	46-59	≥60
1.	Banten	0.48%	0.65%	3.71%	16.49%	39.54%	39.13%
2.	Jakarta	0.26%	0.39%	1.56%	7.9%	24.8%	65.08%
3.	West Java	0.73%	1.2%	4.85%	15.11%	38.08%	40.02%
4.	Central Java	0.61%	0.47%	2.91%	13.24%	37.59%	45.18%
5.	Special Region of Yogyakarta	0.22%	0.45%	2.04%	10.08%	30.53%	56.69%
6.	East Java	0.4%	0.37%	2.82%	13.45%	38.87%	44.09%

### 4.3 Distribution of COVID-19 Mortality by Symptoms

Table 3 shows the distribution of COVID-19 mortality based on symptoms. The graph shows that the dominant symptom experienced by patients who died from COVID-19 was cough, i.e. more than 2% of patients who died from COVID-19 in all provinces on the Java Island had cough symptoms. The highest percentage occurred in Jakarta Province with a percentage of 11.3% and the lowest was in Banten Province with 2.4%. Of the 6 provinces on the island of Java, cough symptoms have the highest percentage compared to other symptoms in 4 provinces. Meanwhile in East Java Province, the symptom with the highest percentage is hard to breathe and in Central Java Province, the symptom with the highest percentage is fever. Research through meta-analysis conducted by Alimohamadi, et.al. (2020) stated that 81.2% of patients with COVID-19 had symptoms of fever, 58.5% had symptoms of cough, 38.5% had symptoms of fatigue, 26.1% had symptoms of dyspnea, and 25.8% had symptoms of sputum[24]. The symptoms that COVID-19 patients have vary widely, ranging from asymptomatic, mild symptoms, to severe symptoms.

**Table 3.** Distribution of COVID-19 Mortality by Symptoms

No	Province	Symptoms				
		Cough	Difficult to Breathe	Fever	Sore throat	Flu
1.	Banten	2.4%	2%	2%	0.8%	0.4%
2.	Jakarta	11.3%	10.3%	4.6%	4%	2.9%
3.	West Java	5.2%	4.9%	4.1%	3.1%	2.6%
4.	Central Java	9.5%	9.3%	10.3%	1.7%	2.1%
5.	Special Region of Yogyakarta	8.9%	7.9%	8.6%	0.2%	1.5%
6.	East Java	7.3%	7.9%	6.8%	3.3%	5.6%

### 4.4 Distribution of COVID-19 Mortality by Comorbidities

Table 4 shows that diabetes mellitus is a comorbid with the highest percentage of patients dying from COVID-19 in 4 of 6 provinces in Java Island. The other two provinces showed hypertension as a comorbid that had the highest percentage of patients dying from COVID-19. The Jakarta Province as the province that has the highest percentage of deaths in Java Island and Indonesia, shows that 16.1% of patients who died from COVID-19 had comorbid

hypertension. Then in Central Java showed that 15% of patients who died from COVID-19 had comorbid diabetes mellitus. Based on data from Indonesia basic health research 2018, it shows that 5 out of 6 provinces in Java Island have a higher prevalence of diabetes mellitus than the national prevalence rate. This shows that the number of people with diabetes mellitus in Java Island is quite high. This condition can also be one of the causes of the high COVID-19 death rate in Java Island, especially in COVID-19 patients with diabetes mellitus.

Based on research conducted by Sousa, et.al. (2020), stated that COVID-19 patients with a history of cardiovascular disease had a 19.3 times higher risk of death due to COVID-19, 14.3 times higher in patients with diabetes mellitus, 32.6 times higher in patients with neurological disease, and 9.9 times higher in patients with renal disease[23]. Comorbid have the possibility to reduce the function of the body's immune response, so that if the body exposed to COVID-19 has aggravating conditions, their immune system cannot fight the virus optimally. These conditions cause COVID-19 mortality is higher in patients with comorbidities[21].

**Table 4.** Distribution of COVID-19 Mortality by Comorbidities

No	Province	Comorbidities			
		Hypertension	Diabetes Mellitus	Heart Disease	Kidney Disease
1.	Banten	4.6%	2.8%	0.9%	1.9%
2.	Jakarta Capital Special Region	16.1%	11.9%	8.3%	3.7%
3.	West Java	6.6%	7%	5.2%	1.7%
4.	Central Java	13%	15%	3.9%	1.7%
5.	Special Region of Yogyakarta	10.8%	13.7%	4.9%	9.8%
6.	East Java	7.8%	8.2%	2.1%	1.1%

## 5 Conclusion

On the Java Island, the percentage of COVID-19 mortality in male is higher than female. The age group over 60 also increases the risk of dying from COVID-19. Furthermore, the most common symptom experienced by patients who died from COVID-19 on the Java Island was cough. Diabetes mellitus has the highest percentage as a comorbid cause of COVID-19 mortality in Java Island. So, it can be concluded that male, elderly, and diabetes mellitus are the conditions that can increase mortality due to COVID-19 in Java Island.

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# Relationship between Leg Muscle Strength and Arm Muscle Strength with The Results of The Landing Accuracy of Paragliding Athletes

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**Abstract.** Paragliding is an extreme sport that is experiencing increasing interest in Indonesia. One of the championship numbers in paragliding is the accuracy of landing. The purpose of this study was to ascertain how paragliding athletes' arm and leg muscle strength correlated with landing precision. 39 paragliding athletes were studied cross-sectionally using a total sampling technique. The following tools were utilized in this study: a hand and back dynamometer for measuring arm muscle strength, a dynamometer for measuring leg muscle strength, and a dynamometer for measuring landing accuracy at the first foot on the ground. The findings indicated that landing precision was substantially correlated with leg muscular strength ( $p = 0.00$ ). In contrast, arm muscle strength was not related to landing accuracy results ( $p \Rightarrow 0.05$ ). This study concludes that leg muscle strength is a significant factor in obtaining good landing accuracy results.

**Keywords:** Leg muscle strength, arm muscle strength, landing accuracy, paragliding.

## 1 Introduction

Sports fly free with a parachute by launching from a mountain or slope and using the wind. Using the wind as a source of lift, the parachute soars far into the air. The two types of wind that make up the flying mechanism are the dynamic lift—a rising wind that hits and follows the contour of the slope—and the thermal lift (thermal lift) [1]. By utilizing these two sources, the pilot can stay in the air and fly high and reach great distances. Interestingly, all that is done is machine-free, solely taking advantage of the wind [2]. FASI is the governing body for paragliding in Indonesia (Federation of Aero Sport Indonesia) [3].

Some people engage in paragliding for recreation or achievement. Some of the numbers competed in the paragliding sport include accuracy in landing, limited-distance trails, and open-distance crossings [4]. The precision of tandem landing, which involves taking off with passengers and landing at a specific location, was one of the additional races that took place in Indonesia. The number of pilots in Indonesia has dramatically expanded in recent years. The rise in the number of competitors in the paragliding competitions, which are held throughout Indonesia, may be seen as a result of the landing accuracy number.

Several factors can influence the landing accuracy number, which is a result. Among these are the wind factor, the level of exertion, the capacity to focus, the adequacy of the parachute for

the user's weight, and physical fitness. The athlete adjusts the height, low, and parachute speed during in flight using the wind's direction and speed. The athlete's capacity to raise or lower the flying position will be impacted by the wind's intensity or size in addition to its direction and speed. However, there is a major risk of getting dragged away if the athlete lands in strong winds because they will be closer to the location [5].

Accidents frequently happen during the championship (landing accuracy number), namely when the athlete makes a landing, and this is because of a variety of circumstances, including: the athlete forces too much to lower the height (this is worsened when lowering the height, the athlete's arm muscle strength is not balanced between togel (steering) right and left that are pulled unbalanced / not as expected), landing is not in the direction of the wind (crosswind / tailwind), this causes the athlete to force the parachute to land on the target by extending its legs as long as possible so that it can touch the target point, athlete's concentration (this can be caused by the athlete's intake (inadequate food or drink), physical fitness (one of the leg muscle strength must be strong, because the weakness of the leg muscles can cause ankle injuries during landing), the parachute's suitability for body weight (underweight or overweight that does not match the parachute's capacity will make the parachute challenging to control)[4].

This study seeks to ascertain whether there is a connection between dietary state, leg muscle strength, and arm muscular strength using the findings of paragliding athletes' landing precision.

### **1.1 Objective**

This study aimed to determine the relationship between leg muscle strength and arm muscle strength with landing accuracy for paragliding athletes.

## **2 Literature review**

### **2.1 Paragliding**

Paragliding is branch sport aero/ aerial recreation where available one pilot operating parachute without use machine and can maintain position wind for can fly, stay be in position certain above or even cross an area. Sport paragliding different with hang-gliding aero sport nor skydiving. As for the difference lies in the type and shape the parachute used, where in paragliding parachute used shaped long and thin material[4]. FAI (Federation Aeronautique Internationale) has set a number of competed in the branch sport paragliding. That is including: Accuracy land, cross natural distance limited and cross natural open[4]. A number of race. The additions that are competed in the State of Indonesia are: accuracy tandem landing, i.e. flying with bring passengers and must landed at the point that has been determined.

### **2.2 Connection between Nutritional Status, Leg Length, Strength Muscle Limbs and Strength Muscle Arm with Accuracy Results Land**

A number of studies related to nutritional status with concentration already once done, that is connection level adequacy energy, protein and nutritional status with concentration study students of SMP Purnama 1 Semarang City. With results there is significant relationship between nutritional status with concentration.

Leg length is another factor that support achievement of sport. On some branch of exercise, the length of limbs is factor determinant result match. At the championship paragliding, long limbs very help when attach to do landing at the target point. Research that has been conducted by Amin (2012) about donation long limbs to start swimmin. The more of limbs length of someone, then the more long / too far reach.

in line with long limbs, strength muscle limbs also become factor main that can support performance athlete. The more of limbs length of someone, structure muscle limbs will the more long too. At the championship paragliding, power muscle limbs used as focus at the moment landed. Happens often an accident (ankle) caused by a less athletes good at the moment landed. Which research support at the moment exercising is connection long limbs, strength muscle limbs and flexibility ankle against kick distance far away. Which shows results there is relationship Among strength muscle limbs with kick. This thing because the stronger muscle limbs someone, eat the more his kick is also strong [5]. Likewise when athlete To do landing, someone 's ankle Becomes strong and not easy injury.

### **3 Methods**

36 paragliding athletes participated in this correlational descriptive study, which used a total sampling methodology. The main parachute, a backup parachute, a harness, a helmet, radio communication, and shoes are all used by athletes to complete the flight. A safety officer in charge of the operations oversees all flights. The launch marshal controls takeoff and is responsible for adjusting the fly distance, advising on acceptable wind direction (for senior athletes, wind should be toward the crosswind hill) and wind speed (0–15 knots) [6],[7]. A judge will measure the accuracy of the landing and determine whether or not athletes fall (in which case they receive a maximum value of 500cm).

### **4 Data collection**

#### **4.1 Measurement of Leg Muscle Strength**

The tools used are the back and leg dynamometer. The measurement of leg muscle strength is done by trying to straighten the leg as hard as possible with a device already attached to the respondent's hip. Respondents were allowed to do three experiments. The resulting figures will be used in data analysis.

#### **4.2 Measurement of Arm Muscle Strength**

The tool used is the hand dynamometer. Measuring the strength of the arm muscles is done by squeezing the tool with all strength and alternating between the right and left arms. Respondents were allowed to do three experiments. The resulting figures will be used in data analysis.



### 4.3 Determination of Landing Accuracy Results

A certified jury performs the measurements using a dead center disc with a digital system whose results are presented on a screen (measuring radius 0-22 cm) and meter (measuring radius 22cm-499 cm). When an athlete lands, measurements are taken, and the first step of the foot that contacts the ground is what is counted. The athlete will receive a maximum score of 500cm if they land in the landing area (fall in the landing area or contact the ground [3].

In order to characterize the key information, ascertain the frequency of all variables, and enable future analysis, secondary data as well as data received from the measurement of leg muscle strength, arm muscle strength, and landing accuracy results were analyzed univariately. Then, using the Spearman's correlation test, a bivariate analysis was carried out to ascertain the link between the variables. The analysis results are said to be related if the test results show a significance value of  $p < 0.05$  and are said to be unrelated if the test results show a significance value of  $p > 0.05$ [8].

## 5. Results and discussion

### 5.1 Characteristics of Study Subject

The paragliding athletes that participated in this study ranged in age from 16 to 45, with a mean age of 29. Because there is no upper age limit for paragliding, the age range is significantly off. The capacity of competitors to pass exams to obtain a pilot license, unlike some sports generally, is a requirement to compete in the paragliding championship—the average response in the PL-1 licensed study (Pilot License 1).

Respondents in this study were paragliding athletes with 22 male athletes and 14 female athletes. At the time of the championship, match numbers are differentiated between men and women. In paragliding, the license category is qualified with the PL-1, PL-2, PL-3, and commercial pilots (master tandem), namely T-1, T2, and T-3. However, at the time of the championship, the participant category was distinguished between juniors (PL-1) who were considered new to be able to master basic paragliding techniques and seniors (PL-2 and PL-3) who had mastered advanced techniques (medium and high techniques). An overview of the characteristics of research subjects can be seen in table 1.

The nutritional status of respondents was almost evenly distributed, only at the lowest underweight nutritional status, namely only two people. In paragliding, athletes have long limbs capable of contributing to a long leg to step on the desired landing point. Based on the correlation test analysis results, it was found that the nutritional status was not related to the results of the landing accuracy of the paragliding athletes. This result is because, in paragliding, athletes use parachutes according to their body weight. Even if they have underweight, overweight, or obese nutritional status, athletes can use a suitable parachute for their body weight. So this does not affect the parachute's performance in going or lowering the altitude for landing.

**Table 1.** Overview of The Characteristics of Study Subjects.

Characteristics	Landing Accuracy Results (N = 36) (476.97 ± 121.49)						Amount		P
	0-22		23-499		500		n	%	
	n	%	n	%	n	%			
<b>Gender</b>									
Male	16	44.4	6	16.6	0	0	22	61.1	0.43
Female	7	19.4	7	19.4	0	0	14	38.9	
<b>License</b>									
PL-1	1	2.7	7	19.4	0	0	8	22.2	0.47
PL-2	10	27.7	6	16.6	0	0	16	44.4	
PL-3	12	33.3	0	0	0	0	12	33.3	
<b>Nutritional Status</b>									
Underweight	1	2.7	1	2.7	0	0	2	5.5	0.40
Normal	5	13.8	9	25	0	0	14	38.9	
Overweight	9	25	1	2.7	0	0	10	27.7	
Obes-1	8	22.2	2	5.5	0	0	10	27.7	

Correlation test using the Spearman's Test

## 5.2 The Relationship between Leg Muscle Strength and Accuracy of Landing Results

In table 2, it can be seen that there is a significant relationship between leg muscle strength and landing accuracy results ( $p = 0.00$ ). This result is because the leg muscles can significantly contribute when the athlete makes a landing by stepping on the desired point.

**Table 2.** The Relationship between Leg Muscle Strength and Accuracy of Landing Results

Characteristics	Landing Accuracy Results (N = 36) (476.97 ± 121.49)						Amount		P-Value
	0-22		23-499		500		n	%	
	n	%	n	%	n	%			
<b>Limb Muscle Strength</b> (2.75 ± 1.40)									
Very less	2	5.5	7	19.4	0	0	9	25	0.00 *
Less	4	11.1	4	11.1	0	0	8	22.2	
Enough	5	13.8	2	5.5	0	0	7	19.4	
Good	7	19.4	0	0	0	0	7	19.4	
Very well	5	13.8	0	0	0	0	5	13.8	

Correlation test using the Spearman's Test

However, the better the leg muscle strength of the respondent, the better the results of the resulting landing accuracy. Strength is the driving force for every physical activity, plays a role in protecting athletes from injury, and can enable athletes to run, jump and support

appropriately. During the championship, accidents often occur when athletes make landings. Namely, one of them when the athlete forces to land at the desired point [9],[10].

### 5.3 The Relationship between Arm Muscle Strength and Landing Accuracy Results

Table 3 shows no significant relationship between arm muscle strength and landing accuracy results ( $p \Rightarrow 0.05$ ). This result can mean that respondents with good arm muscle strength do not necessarily have good landing accuracy results, or respondents with poor strength do not necessarily get the results of poor landing accuracy either. The ability of athletes to regulate wind direction and parachute height, namely by having arm muscle strength, is not a significant factor in getting good landing accuracy results.

**Table 3.** The Relationship between Arm Muscle Strength and Accuracy of Landing Results

Characteristics	Landing Accuracy Results (N = 36) (476.97 ± 121.49)						Amount		P-Value
	0-22		23-499		500		n	%	
	n	%	n	%	n	%			
<b>Right Arm Muscle Strength (2.11 ± 1.00)</b>									0.23
Very less	7	19.4	7	19.4	0	0	14	38.9	
Less	2	5.5	4	11.1	0	0	6	16.6	
Enough	12	33.3	2	5.5	0	0	14	38.9	
Good	2	5.5	0	0	0	0	2	5.5	
Very well	0	0	0	0	0	0	0	0	
<b>Left Arm Muscle Strength (2.11 ± 1.00)</b>									0.29
Very less	7	19.4	7	19.4	0	0	14	38.9	
Less	2	5.5	4	11.1	0	0	6	16.6	
Enough	12	33.3	2	5.5	0	0	14	38.9	
Good	2	5.5	0	0	0	0	2	5.5	
Very well	0	0	0	0	0	0	0	0	

Correlation test using the Spearman's Test

## 6. Conclusion

It can be concluded that leg muscle strength can significantly contribute to the result of landing accuracy. Meanwhile, gender, license, nutritional status, and arm muscle strength were not the main factors in obtaining good landing accuracy results.

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# Youth Center: Social Marketing Strategies to Prevent Child Marriage in the Teenage Community

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**Abstract.** Grobogan Regency is an area in Central Java with the highest cases of female child marriage (<18 years) in the last 3 years. Social marketing models and strategies to prevent child marriage must be carried out massively. Community involvement is allegedly going to determine the success and effectiveness of social marketing carried out. This is a research and development, which aims to develop a social marketing model and strategy to prevent child marriage by optimizing the role of the community. This study uses a mix method approach (quantitative and qualitative). Youth information and counseling center (PIK-R) can be an intervention model to improve community based prevention of child marriage social marketing strategies. The results of the trial and evaluation of the implementation of community based social marketing models and strategies for preventing child marriage through training of peer educators and PIK-R facilitators have increased adolescents' understanding and awareness of the importance of maturing the age of marriage.

**Keywords:** child marriage, youth centre, social marketing.

## 1 Introduction

The maternal mortality rate (MMR) in Indonesia is also still very high. The MMR in 2019 was 305 per 100,000 live births. This figure is much higher than the average MMR in ASEAN countries, which is 40-60 per 100,000 live births. MMR in Indonesia is still far above Singapore, which is only 2-3 per 100,000 live births. The biggest causes were bleeding (30.4%), hypertension in pregnancy (25.3%), and infection (4.9%) [1].

The maternal mortality rate in Indonesia is still very far from the target of the Sustainable Development Goals (SDGs) or sustainable development which targets a reduction in the MMR to 183/100,000 live births in 2024 and to 131/100,000 live births in 2030 [2].

In Central Java, the maternal mortality rate (MMR) is 76.9 per 100,000 live births. Grobogan Regency is one of the areas in Central Java which in recent years has the largest MMR in Central Java and the figure is much higher than the provincial figure [3]. The MMR in Grobogan in 2019 was 167 per 100,000 live births. This figure is higher than 2018 which was 152 per 100,000 live births. Another fact that was also found was that in 2019, Grobogan became the area with the highest maternal mortality cases aged <20 years in Central Java, namely 3 cases) [3].

Maternal mortality is a problem whose causes can be prevented. Improving a woman's health status and readiness for pregnancy, routine antenatal check-ups, proper delivery assistance and improving the quality of maternal care services, especially during labor and immediately after delivery are forms of prevention and reduction in maternal mortality.

Efforts to reduce maternal mortality must always be done because it is the main indicator of public health status. The marriage of women of childbearing age is suspected to be the root of the problem that must be investigated along with its determinants and risks for maternal and child morbidity and mortality. Grobogan Regency is an area in Central Java with the highest cases of female child marriage (<18 years) in the last 3 years [4,5].

## 2 Method

This type of research is research and development using a mix method (quantitative and qualitative). This research is intended to develop a model and social marketing strategy community-based child marriage prevention and the impact to a decrease in the number of child marriages in Grobogan district, Central Java. The stages, subjects and instruments of this research are as follows:

No	Data Collection Stages	Research Design and Subject	Instrument	Data analysis
1.	Child marriage facts	- Descriptive research - Subject: married women aged 16-35 years	Secondary data	Descriptive analysis
2.	Social determinants of behavior that affect the occurrence of child marriages for women	- Correlational research - Subject: married women aged 16-35 years	Questionnaire	Correlative analysis
3.	The role of the Community in the prevention of child marriage	- Case study research - Subject: community leaders and community organizations	In-depth interview guide	Descriptive analysis
4.	Designing social marketing models and strategies for child marriage prevention programs: 1. Product design 2. Design validation 3. Design revision 4. Product trial 5. Product revision 6. Trial usage 7. Product revision 8. Mass production	- Development research - Subjects: experts on health promotion, reproductive health and family planning, media technology experts, practitioners, community leaders	Evaluation and assessment sheet	Descriptive analysis
5.	<b>Pre-Implementation</b> Model implementation trial limited target	- Pre-experimental research - Subjects: community leaders, and limited target groups (children, youth and parents)	Observation sheet	Descriptive analysis

6. <b>Implementation</b>	- Quasi-experimental research - Subjects: community leaders, and target groups (children, youth and parents)	Observation sheet and Questionnaire	Comparative analysis
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### 3 Results and discussion

The latest marriage, namely Law Number 16 of 2019, has regulated the minimum age for marriage for women is the same as for men, which is 19 years. Marriages that occur under the age of 19 are declared early marriages and must get dispensation by the Religious Courts. Grobogan Regency is one of the areas with the highest cases of female marriage at an early age (less than 19 years) in Central Java.

Data from the Office of the Ministry of Religion of Grobogan Regency, states that in the last two years there has been an increase in cases of early marriage of women. According to marriage registration data, women who married at the age of less than 19 years in 2020 were 380 cases, this number increased in the following year. As of July 2021, there have been 453 cases of women getting married at the age of less than 19 years.

Subsequent research was conducted in the Grobogan district where the cases of female marriage at an early age were the highest, namely in the Grobogan sub-district to determine the determinants of early female marriage. The target population in this study were married women. The source population is women with a maximum age of 30 years who have married and gave birth for the first time in the last 3 months, namely August to October 2021. The number of samples was 54 women who were selected by proportional random sampling.

**Table 1.** Determinants of women's early marriage

Determinant		Married Age				PR 95% CI	p value
		Early age (< 20 years)		Mature (20-30 years)			
		f	%	f	%		
Level of education	Elementary school / equivalent	12	22.2	13	24.1	-	0.018
	Middle school/equivalent	3	5.6	18	33.3		
	High school/equivalent	0	0.0	6	11.1		
	College	0	0.0	2	3.7		
Job status	Doesn't work	15	27.8	29	53.7	0.659 (0.533-0.815)	0.046
	Working	0	0.0	10	18.5		

Educational Level of Prospective Husband	Elementary school / equivalent	8	14.8	7	13.0	-	0.049
	Middle school/equivalent	5	9.3	16	29.6		
	High school/equivalent	2	3.7	12	22.2		
	College	0	0.0	4	7.4		
Prospective Husband's Income (UMR)	< IDR 1,890,000	15	27.8	22	40.7	0.595	0.002
	≥ IDR 1,890,000	0	0.0	17	31.5	(0.456-0.776)	
Father's Education Level	Elementary school / equivalent	15	27.8	29	53.7	-	0.094
	Middle school/equivalent	0	0.0	5	9.3		
	High school/equivalent	0	0.0	5	9.3		
	College	0	0.0	0	0.0		
Father's Income (UMR)	< IDR 1,890,000	11	20.4	14	25.9	3,190	0.030
	≥ IDR 1,890,000	4	7.4	25	46.3	(1,160-8,773)	

Research results in areas withThe highest cases of early marriage of women showed that education level (p 0.018), women's employment status (p 0.046), education level of prospective husbands (p 0.049) and husband's income (p 0.002) and parental income (p 0.030) were social determinants. related to the occurrence of female marriage at an early age. Meanwhile, the father's education level was not related to the occurrence of early female marriage (p 0.094 or p > 0.05).

This study is in accordance with the social cognitive theory developed by Bandura. Individual internal factors that may influence child marriage are knowledge, self-efficacy and attitudes, while external factors are family income, family support, access to information, housing, and social norms [6,7].

Child marriage is also associated with a number of socioeconomic characteristics, including family income. Married daughters will live separately from their families and live with their husbands, thereby reducing the economic burden on their families. Inadequate income will also affect the child's low educational status, so that the child gets married early [8,9]. Can early marriage be prevented byself-efficacystrong family, high family income, strong family support, and access to positive information [10]. Social norms also affect the delay in the age of marriage [11].



This study shows that women who marry at an early age are more common in women with low education. One of the efforts to delay marriage is to go to a higher school. The results of this study support previous research which states that Early marriage is directly influenced by family income, family beliefs, culture, and peer influence [12].

Low family incomes have a greater tendency to marry off their children at an early age. This may be passed down to the next generation. Economic factors or poverty is one of the causes of early marriage. Girls are immediately married to reduce the burden on parents [13].

Low family income has an important role in decision making for early marriage. Early marriage is considered as one of the solutions to get a dowry from the male side. Low economic conditions and the assumption that parents are too poor to send their daughters to school, make parents ask their children to marry just to reduce the burden on their parents and be independent. Poverty makes it difficult for parents to send their children to school and parents are attracted by the sweet promise of marriage that will help the family economy [14,15].

### 3.1 The Role of the Community in the Prevention of Child Marriage in Grobogan District

Based on the results of in-depth interviews conducted with 5 informants who are community leaders, namely from the Office of Religious Affairs, Village Heads, Heads of Dusun / Hamlet, Religious Leaders, and Village Health Cadres

No.	Focus Indepth Interview	Information Summary
1.	The problem of child marriage in recent years in Grobogan district	Grobogan District is an area that has experienced an increase in the number of cases of early marriage in the last 2 years (2020-2021)
2.	What is the role of community leaders and religious leaders as well as organizations in efforts to prevent child marriage?	In particular, there has been no education / counseling on the prevention of child marriage by community and religious leaders.
3.	Educational methods and social campaigns that have been carried out for efforts to prevent child marriage in Grobogan District	The campaign is only limited to an appeal by health workers or family planning counselors when there is counseling about family planning with the target of those who are already married
4.	Who are the targets of education (segmentation) and social campaigns that prevent child marriage (primary/main, secondary and tertiary targets)	There has been no special education conducted by community leaders or religious leaders. Education is only carried out by teachers and health workers in schools with the primary target of students and does not involve parents as secondary targets, and youth organizations as tertiary targets.
5.	Targets to be achieved from child marriage education and social campaigns (targeting)	Education and social campaigns that have been carried out so far have not reached the target. This is because there are still many children who drop out of school/no school has never been intervened, and this intervention to prevent child marriage has not been maximally involved involving the potential and strengths that exist in the community.

6.	Examples of messages/materials conveyed in child marriage education and social campaigns carried out in the field	Materials or messages conveyed in reproductive health education materials in general and very limited, because it is only done in schools
7.	Placement of educational messages (positioning) and social campaigns for child marriage	Placement of educational materials and messages is still limited to intra-curricular material of one of the related subjects
8.	Educational strategies and social campaigns for child marriage carried out in the field (marketing mix)	There is no marketing mix for social campaign messages or materials yet
9.	Barriers and obstacles faced in child marriage education and social campaigns	The role of cross-sectors is less than optimal in education and social campaigns for child marriage, especially outside of school. This is related to the lack of coordination and unification of the program's vision and mission which should be understood together by each related sector

### 3.2 Design of Social Marketing Models and Strategies for Prevention of Child Marriage Community Based

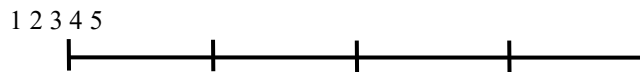
The following is a model design and social marketing strategy for prevention of child marriage based on the “Youth center” community.

Program name	: “Youth Center”
Description	: Program “Youth Center” is a forum for activities that are managed from, by and for youth in order to provide access to information, education, counseling, and services regarding family life planning for adolescents as well as other supporting activities that can be held at school and in the community. The success of the “Youth center” program is highly dependent on the effectiveness of the social marketing strategy implemented in the community. Community involvement will determine the effectiveness of the social marketing.
Marketing strategy	: Social marketing program “Youth center” is carried out through the design, implementation, and control of programs aimed at increasing acceptance of ideas and practices to prevent child marriage in strategic target groups with the right message positioning.
Program marketing target (segmentation)	Primary (adolescents aged 15-19 years), secondary (parents, teachers, ustadz), tertiary (government, schools, mass media, business world)
Target to be achieved (targeting)	Changes in cognitive, behavior and values
Placement of messages (positioning)	Through schools, youth organizations, community and religious activities
Marketing mix	Establishment of PIK-R (Youth Information and Counseling Center) at School and Village level The forms of activities carried out are: 1. Training Peer Educator and PIK-R . Manager

- Provision of adolescent reproductive health materials
  - Training as *Peer Educator*
  - Management training PIK-R at school and at village level
2. Activity simulation (education/campaigns, outreach, counseling, etc.)
  3. Implementation of activities  
*Peer Educator* who have been trained to run the Youth Class program with the target of activities being youth in the village (adolescent reproductive health education/campaign, peer counseling and training *life skills*)

At this stage, the design of social marketing models and strategies for preventing child marriage the community-based research developed in this study was assessed or evaluated by experts on health promotion, reproductive health and family planning, media technology experts, practitioners, community leaders. This evaluation consists of aspects of the suitability of the model with the problem of child marriage, the substance of the model, the innovation of the model, the ability of the community to implement the model and the potential for the sustainability of the model.

Rating Score:



Not suitable      Very suitable

$$\begin{aligned} \text{Maximum score} &= \text{number of judges} \times \text{maximum score} \\ &= 7 \text{ people} \times 5 \\ &= 35 \end{aligned}$$

$$\text{Conformity value} = (\text{number of assessors score} / \text{maximum number of scores}) \times 100\%$$

Interpretation:

Mark	Interpretation
76 – 100	Very suitable
51 – 75	In accordance
26 – 50	It is not in accordance with
0 – 25	Very inappropriate

The following are the results of the assessment carried out, showing that: “Youth center” social marketing model and strategy design

Aspects of the suitability of the model with the problem of child marriage

“Youth center” social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level declared by all assessors to have complied with the problems of child marriage or early marriage currently occurring in the community. This suitability is based on the following: 1) the number of cases of child marriage

has increased in the last 2 years, 2) education and campaigns for child marriage have not been widely carried out in the community, currently limited to materials given at school and considered not yet available. bring maximum results, 3) the need for a more massive marketing model and strategy with more targets (primary, secondary, and tertiary targets).

The scoring results of each assessor are then calculated according to the value of conformity, namely:

Conformity value = (number of assessors score / maximum number of scores) x 100%

Conformity value =  $(34 / 35) \times 100\%$

Conformity value = 97.14%

These results indicate that the "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level stated to be very appropriate and recommended to be applied as an intervention model for preventing child marriage or early childhood in the community.

Aspect of model substance

The substance test of this model is intended to determine the suitability of the model with the goal to be achieved. "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level stated that it is very in accordance with the objectives to be achieved, namely to increase understanding and awareness (attitudes) of adolescents and target parents on the importance of maturing the age of marriage so that in the end this program can reduce the number of cases of child marriage in Grobogan (the proportion of cases decreased from the previous year).

The scoring results of each evaluator are then calculated according to the value of conformity, namely

Conformity value = (number of assessors score / maximum number of scores) x 100%

Conformity value =  $(35 / 35) \times 100\%$

Conformity value = 100%

These results indicate that the "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level stated to be very appropriate and recommended to be applied as an intervention model for preventing child marriage or early childhood in the community.

Aspects of model innovation

Here are the results of the innovation test "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level as a form of education model and community empowerment in preventing child marriage or early childhood in the community. The scoring results of each assessor are then calculated according to the value of conformity, namely:

Conformity value = (number of assessors score / maximum number of scores) x 100%

Conformity value =  $(30 / 35) \times 100\%$

Conformity value = 85.71%

These results indicate that the "Youth center" social marketing model and strategy is stated to be very appropriate and is recommended to be applied as an intervention model to prevent child marriage or early childhood in the community.

The results of this assessment indicate that the "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level has fulfilled the element of novelty and contained new innovations because it was designed with the concept of community empowerment, especially teenagers, supported by innovative media based on digital and online media.

Aspects of the community's ability to run the model

The following is the scoring result of each appraiser which is then calculated according to the value of conformity, namely:

Conformity value = (number of assessors score / maximum number of scores) x 100%

Conformity value = (33 / 35) x 100%

Conformity value = 94.28%

These results indicate that the "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level stated to be very appropriate and recommended to be applied as an intervention model for preventing child marriage or early childhood in the community. Schools and villages have adequate resources and potential to be empowered as peer educators, facilitators/counselors and drivers of change in the community and schools.

The implementation of this model also does not require special infrastructure facilities that are burdensome for schools and villages in the establishment and establishment PIK-R (Center for Youth Information and Counseling) because by optimizing the existing physical infrastructure, but maximizing and optimizing the active participation of youth, teachers, community leaders, religious leaders, and youth organizations.

Aspects of the model's sustainability potential

The following is the scoring result of each appraiser which is then calculated according to the value of conformity, namely:

Conformity value = (number of assessors score / maximum number of scores) x 100%

Conformity value = (30 / 35) x 100%

Conformity value = 85.71%

These results indicate that the "Youth center" social marketing model and strategy with establishment of PIK-R (Adolescent Information and Counseling Center) at School and Village level stated to be very appropriate and recommended to be applied as an intervention model for preventing child marriage or early childhood in the community. This model in its implementation does not require a lot of costs and burdensome physical infrastructure. This model only requires a strong commitment from youth, teachers, community leaders, religious leaders, and youth organizations. Regulations from schools and villages are needed as the legal

basis for the establishment and implementation of the PIK-R social marketing program (Center for Information and Counseling for Youth) in schools and in village areas.

### 3.3 Trial and Evaluation of the Implementation of Models and Strategies Social Marketing Prevention of Child Marriage Community-Based Awareness of Child Marriage Age Maturation in the Community in Grobogan District

PIK-R (Center for Youth Information and Counseling) was started in Grobogan village as a pilot model. There were 13 peer educators and PIK-R facilitators trained in this program. The training was carried out 3 times, with resource persons and trainers from the research team and puskesmas.

Evaluation was conducted to determine the level of success of the Peer educator and PIK-R facilitator training with the parameters of knowledge, and skills. The evaluation instrument used questionnaires, observation sheets, and activity diaries.

Based on the evaluation of the results of the pre-test and post-test knowledge Peer educators and PIK-R facilitators of training participants related to adolescent reproductive health, the dangers of teenage pregnancy, and maturing age at marriage, the post-test score has increased. This is indicated by the difference in knowledge scores between before and after training.

No.	Name	Score <i>Pre-Test</i>	Score <i>Post-Test</i>	Difference
1.	Participant 1	60.0	77.5	17.5
2.	Participant 2	47.5	67.5	20.0
3.	Participant 3	40.0	70.0	30.0
4.	Participant 4	40.0	82.5	42.5
5.	Participant 5	52.5	80.0	27.5
6.	Participant 6	67.5	82.5	15.0
7.	Participant 7	57.5	87.5	30.0
8.	Participants 8	62.5	82.5	20.0
9.	Participants 9	72.5	95.0	22.5
10.	Participants 10	52.5	70.0	17.5
11.	Participant 11	52.5	80.0	27.5
12.	Participants 12	50.0	77.5	27.5
13.	Participants 13	65.0	80.0	15.0
		55.38	79.42	
<i>P value</i>				0.0001

These results indicate that there is a significant difference between knowledge before and after training. After training the knowledge score increased significantly (p value 0.0001). The average score before training was 55.38 and increased to 79.42 after being given training.

Besides that, based on the simulation results after the training, several peer educators and PIK-R facilitators participated in the training has been skilled in practicing adolescent reproductive health education activities, especially adolescent reproductive health materials by using the material provided by the facilitator with the target of other training participants' friends.

The results of this study indicate that PIK-R Becomes models developed to improve social marketing strategies prevention of child marriage community based, especially in schools and

in rural areas. This is in accordance with the principles of development PIK-Ras a forum for services to adolescents, including:

Adolescents have the right to obtain complete and appropriate information and reproductive health services according to their needs

Adolescents have the right to be involved in program implementation, starting from planning, implementation, monitoring, and evaluation

Adolescents need to have healthy and responsible attitudes and behaviors regarding their reproductive health.

PIK-R one of whose activities is providing peer education has been able to increase the knowledge of reproductive health of targeted adolescents in partner villages. This is in accordance with research which states that there is a significant effect between the provision of reproductive health education on the level of knowledge about free sex in adolescents [16]. This is also according to research which states that the delivery of health education by peer groups has an effect on increasing adolescent knowledge [17]. Reproductive education in adolescents need to be adapted to development in adolescents [18]. At the age of adolescence in learning tends to be curious to something. Learning methods which is more suitable is the method discussion to accept a conclusion and not rigid in the delivery of material. The learning method aims at so that educational messages can be received and according to their developmental tasks.

Reproductive health education is very important for adolescents because it can increase the knowledge and attitudes of adolescents so that they have high awareness and responsibility for their reproductive health. Reproductive health and sexuality education has the main objective of providing information to adolescents to empower them to build values and relationship skills that enable them to make responsible decisions to become sexually healthy adults reproductive health education and sexual importance to provide [19].

Adolescent reproductive health education through the Youth Class program has been able to increase youth awareness of the importance of maturing at the age of marriage. They began to realize that marriage at a young age would have an impact on the occurrence of high-risk pregnancies.

#### **4 Conclusion**

Education level (p 0.018), women's employment status (p 0.046), education level of prospective husbands (p 0.049) and husband's income (p 0.002) and parents' income (p 0.030) are social determinants related to the occurrence of early female marriage. Meanwhile, the father's education level was not related to the occurrence of early female marriage (p 0.094 or p > 0.05).

Youth information and counseling centers (PIK-R) established at schools and in villages can become intervention model to improve social marketing strategy prevention of child marriage community based. Test results and evaluation of the implementation of models and strategies social marketing prevention of child marriage community-based training through peer educators and PIK-R facilitators has increased youth understanding and awareness of the importance of maturing the age of child marriage.

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# Tapering in the Sport of Karate: Narrative Review

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**Abstract.** Karate is a sport that involves physical contact and has been very popular all over the world, one of which aims to achieve achievements. Participation in martial arts is considered to be a sport that attaches great importance to physical exercise, psychology and physiology that must be well fostered by the coach. Therefore, a correct training program must be prepared and understand the decrease in training weights for the few weeks before the game. Tapering strategy in karate martial arts is an effort to improve the performance of the competition. Tapering is a decrease in the weight of exercise carried out about 8-14 days aimed at maximizing psychological, physiological and physical adaptations resulting from the loading of previous exercises. The results of research and empirical evidence have proven that tapering can improve athletes' performance and are widely practiced in the world of sports achievements that take place two weeks before the competition. After the preparation of this paper, coaches and athletes, especially in the karate martial arts branch, can understand and apply tapering methods so that the highest achievements can be achieved.

**Keywords:** Sport Performance, Tapering Strategy, Karate Martial Arts

## 1 Introduction

Karate is a martial art that is very popular all over the world not only among adults but among teenagers and children already practicing karate martial arts [24]. Karate comes from Japan which combines physical movement with aerobic and anerobic energy systems [11][8][12]. Participation in martial arts is seen as a sport that attaches great importance to physical exercise, psychology, physiology that must be well fostered [12]. It is reinforced by some experts that the most important goal of a coach and athlete in sports achievement is to improve technical, psychic, physiological and physical abilities as much as possible and be able to control the exercise program so that exercise does not cause overtraining [18]. It is reinforced by other literature that during high volume exercise with limited recovery can lead to accumulated fatigue that can interfere with physical and physiological adaptation [17].

The strategy of reducing training weights in the world of sports achievement is often applied before the eve of the main game for several weeks or periods called tapering [27]. Sports coaches and scientists often reduce the training load before entering the main match to manage fitness so that the highest performance is achieved [29]. The purpose of tapering is to maximize psychological adaptation, physiology and while eliminating fatigue resulting from the loading of more exercise [17]. Based on other literature that tapering aims to reduce psychological fatigue, and physiology and optimize exercise performance [27][29][14][6].

This is in line with previous research that tapering is proven to improve athlete performance and has been widely demonstrated in the world of sports achievements that take place two weeks before the competition [6]. Exercise load in sports achievement can be described as a combination and combination of the volume, intensity and frequency of exercise [17]. Therefore trainers are required to determine the extent to which the exercise load is reduced and able to maintain or improve psychological, physiological and physical adaptations [17][14]. Reduction in exercise load can stimulate exercise programs such as reducing exercise frequency, reducing exercise volume or shortening the duration of training sessions [19].

The sport of achievement, especially karate, is very important to understand tapering strategies to optimize match performance, but the peroblematics faced is that there is still a little discussion about tapering strategies or reducing training weights in martial arts. This is in accordance with the opinion of scientists that the lack of knowledge and evidence of tapering strategies in martial arts[7], reinforced by the opinion of other experts that the information used to be a guide for coaches in strategizing tapering is still relatively little [6] [10].

### **1.1 Objectives**

The purpose of this study is to provide a brief review and recommendations to be a practical guide for karate coaches and be information for academics who pursue the sport of karate and physical trainers.

## **2 Literature Review**

Speaking of exercise programs, of course, you must understand about tapering strategies. Tapering is a strategy to reduce the volume of practice before the main game [26]. Scientific evidence states that setting tapering before carrying out matches is very important. But please note that the tapering strategy needs to be considered. The effect of improper tapering can eliminate some performance such as biomechanical aspects and athlete physiology, besides that when not applying tapering will cause overtraining in athletes [28]. Studies in cycling sports have implemented tapering gradually which is carried out for 2 weeks able to increase anaerobic resistance [28]. Another study stated that applying tapering exponentially is able to significantly increase maximum strength and jump in the sport of rugby [26]. Interesting research from Lovell, Bousson & McLellan (2013) states that, in addition to maximizing performance in tapering strategies by increasing and maintaining exercise intensity and lowering exercise weights gradually proven to reduce body fat by 8.5% [18]. Based on the literatur study, it is stated that the management of the training program, especially in the competition preparation period, needs to be considered carefully by implementing a tapering strategy.

## **3 Material and Methods**

This study is a narrative review study, which provides scientific evidence from previous research by examining it more deeply[4]. Databases to search for scientific articles from google scholar, ScienceDirect, and Scopus are then supported by ebooks and books that are relevant on the subject of tapering strategies in sports achievement.

## 4 Results and Discussion

### 4.1 Intensity

In the tapering phase, the intensity of the exercise is maintained to maintain the athlete's skills and physical condition[15]. In line with the research of experts that maintaining the intensity of exercise in the tapering phase is the most effective method of optimizing performance for most athletes[6]. Exercise intensity is key in maintaining exercise performance during the tapering phase[24]. Based on the literature when the intensity of 70% exercise will produce and maintain strength, then the intensity of 90% in the tapering phase will improve performance better[5]. This is similar to Mujika's research (2010). That with intensive exercise with high intensity or often called anaerobic threshold can encourage increased performance  $Vo_{2max}$ , then reinforced by some literature that the intensity is maintained or may be raised slightly higher but the duration of rest must be long enough to provide a chance of recovery properly[7]. Based on the description above, it can be explained that the intensity of exercise in the tapering phase is maintained to maintain physical and technical aspects.

### 4.2 Volume and Frequency

Reporting from some literature that the volume of exercise in the tapering phase can be markedly reduced because it can inhibit and make performance declines in terms of physical, physiological, or psychological [18]. Research shows that lowering the volume of exercise can result in better performance and physiology of athletes [6]. This is to other literature that athlete performance will be better if it reduces the volume of exercise by 42%-60% by reducing the duration of training rather than reducing the frequency of exercise [18]. Then found empirical evidence of a decrease in exercise load on the aspect of aerobic sustenance, the results showed that there had been an improvement in sustained performance by reducing exercise load for 2 weeks by applying an exponential volume reduction by 41%-60 without reducing exercise intensity and exercise frequency [5]. It is to other literature that in the first and second micro cycles the volume of exercise decreases in the range of 40%-50% [1].

This is reinforced by some experts that the tapering method by lowering the volume of exercise will result in greater profits than maintaining the volume of exercise or increasing the volume of exercise[5][18][1]. Tapering by lowering the volume lower is better than tapering done moderately [16]. Recently also found evidence that tapering periods carried out over two weeks by reducing exercise volume by 50% while maintaining intensity were shown to increase strength significantly (Could 2019). In line with the description above found research evidence on taekwondo martial arts with the purpose of research is to analyze the influence of tapering periods on the improvement of anaerobic power on taekwondo kick performance, it has been concluded that by applying 2 weeks of tapering with the linear type (progressive) can optimize anaerobic power in male taekwondo athletes [2]. Based on the above description, it can be concluded that reducing the volume of exercise by 42%-60% for 2 weeks can optimize athlete performance.

Bompa & Buzzichelli (2019) explained that reducing exercise frequency is a classic method often used by trainers during the tapering phase [5]. Heiko & Boris (2018) explained that the application of exercise by lowering the frequency between the number of training sessions per week has not been significant evidence of improving exercise performance [14]. But based on other literature found that lowering the frequency of exercise is very closely related to the

volume and intensity of exercise that which makes it difficult to see the effect of reducing exercise frequency [18]. Previous research stated that a 50% reduction in the number of exercises in the tapering phase was able to improve athletes' performance by reducing the amount of exercise for 2 to 4 weeks with results to maintain psychics in training and competition in athletics [3]. This opinion is reinforced by Bompa & Buzzichelli (2019) that a 50% reduction in the frequency of exercise can improve athletes' performance [5]. The frequency of exercise in trained athletes is recommended to be maintained at 80% or more who have the goal of maintaining technical ability [21]. Based on the description above, it can be concluded that the frequency of exercise during the tapering phase must be adjusted to the sport and the situation of the athlete's condition

#### **4.3 Duration**

The duration or length of this tapering phase is difficult to determine because each sport has a different characteristic tapering duration, some are several days before the game and some are done 1 to 2 weeks before the match [7]. Literature studies state that it takes a tapering duration of 8 to 14 days to minimize and eliminate psychological, psychic, and physical fatigue properly [16]. It is reported that physical and psychic fatigue will return to its original state when tapering is performed for 15 days [13]. Recently Ramirez et al (2021) conducted research on plyometrics training squads by implementing tapering strategies, in conclusion, it was explained that the intervention of plyometrics exercises with the application of decreased volume and duration of exercise per session led to a significant improvement in jumping performance in athletes [25]. Based on the description above in general the duration of tapering in sports achievement is carried out 8 to 14 days.

#### **4.4 Tapering Model**

The literature states that the tapering model is divided into two, namely tapering progressively and non-progressively [16]. Progressive tapering is characterized by a gradual decrease in exercise weights, while non-progressive decrease in exercise weights using strict exercise standardization. Progressive tapering is still divided into 3 types, namely linearly, exponential decline slowly and exponential decline rapidly [21]. Linear tapering is characterized by a higher exercise load than tapering slowly and quickly, then non-progressive tapering is characterized by a sudden decrease in load that leads to possible loss of physical and physiological performance [21]. The effectiveness of exponential tapering quickly seems to be better and gives more significant results than tapering linearly and exponentially slowly [21]. Mujika & Padilla (2003) in his research explained that linear progressive exercise weight gain resulted in an increase of 1.2% to 1.5% then tapering exponentially resulted in an increase of 4.0% to 5.0% [21]. Based on the description above, it can be concluded that the use of tapering progressively inear is very dependent on factors such as training loads before entering the tapering phase, then tapering can be exponentially used to achieve the highest performance in a competition [22]. The following can be seen in the tapering curve image:

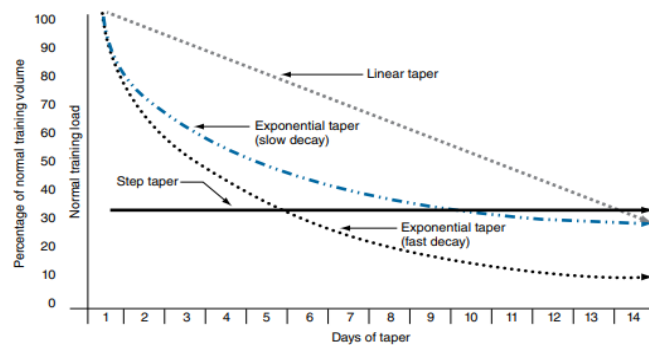


Fig. 1. Types of Tapering Source : Bompa & Buzzichelli (2019:214)

## 5 Conclusion

Based on the description above, the author can conclude that the importance of coaches and athletes, especially in karate martial arts, must understand the strategies and stages of tapering to achieve the highest performance. In theory tapering in sports achievement is the same, it's just that the coach must understand and adjust the age of the athlete, the level of athletes, and the situation of conditions in their respective sports. It should be emphasized that karate martial arts are a martial arts that is physical contact and one of the most important factors to achieving victory is the physical aspect because the regulation of the volume and intensity of training here becomes an important part of achieving the highest achievements. 14 days or 7 days before the game the coach must reduce the training volume by approximately 41% to 60% so as not to cause overtraining and excessive fatigue, then the coach can maintain intensity or increase the intensity of the exercise gradually with an extended recovery record.

Scientific evidence has been proven that tapering strategies can improve the appearance of athletes for the better.

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# Availability of Open Space in Subdistrict Purwodadi Grobogan Regency (Reviewed from the Sport Development Index)

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**Abstract.** The problem in this study is whether the ratio of open space area in Purwodadi Kabupaten Grobogan District with residents over 7 years old has met the standard (decent) aspects of open space reviewed from the Sport Development Index? The method used in research is quantitative descriptive with survey techniques. This research was conducted in Grobogan Regency, Purwodadi District. The instruments used in this study are observation, interviews and documentation. Data collection includes the area of the area, the population of the >7 years, and the number of open spaces of sports. Then the data is analyzed with the Sport development index of the dimensions of the open space of the sport. The results of the sports open space index research amounting to: Purwodadi District include: Ngraji Village: 0.196382, Danyang Village: 0.582771, and Purwodadi Village: 0.760678. Based on these data, the open space sports in purwodadi district of Grobogan regency is included in the low category. This research advice is that every village should have an open space of sports that is in accordance with the standards of the sports committee. The existence of adequate facilities and infrastructure as a driver of children's interest and talent in exercising so that they can be channeled and developed properly.

**Keywords:** Open space sports, Sport, Development index

## 1 Introduction

Exercise becomes a very important need because it is inseparable from the basic needs in carrying out daily movement activities. Basically exercise is a series of regular and planned exercises to maintain and improve the ability to move, and aim to maintain, and improve the quality of life of a person.

This is in line with the National Sports System Law Number 3 of 2005 that, "Sports is all activities that systematically have a function to encourage, foster, and develop physical, spiritual, and social potential". In simple terms, sports can be done by anyone, anytime, anywhere, regardless of and distinguish gender, tribe, race, and so on.

Open space refers to a place intended for sports activities by a number of people (communities) in the form of buildings and / or land. The building and /or land can be a standard sports field or not, which is closed (in-door) or open (out-door) or in the form of land that is intended for community sports activities. The number of open spaces is measured based on the ratio of open space area with the number of residents aged 7 years and over in a wizard. Open space is a necessity for people to do physical activity. The existence of an open space of sports that is easily accessible to all levels of society can encourage the creation of a society that likes to exercise or think physically.



The most expected impact of open space availability is thorough sports participation without being hampered by race, gender, economy, ability or abnormalities both individually and communally. Things that can be done for the development of open space include: 1) Preserving and Empowering Open Space, 2) Creating and Developing Open Space, and 3) Creating Integrated Open Space. According to Mutohir & Maksum (2007: 68) that the standard number of open spaces that can be jamah by the wider community for physical activities (exercise) is 3.5 m<sup>2</sup> / person. With the requirement of standard numbers to be called as open spaces that are suitable for use, namely at least 0 and a maximum of 3.5 m<sup>2</sup> / person, has Purwodadi District of Grobogan Regency raised the standard of open space?

From the brief explanation above, the author is interested in conducting research with the title "AVAILABILITY OF OPEN SPACE IN PURWODADI DISTRICT GROBOGAN REGENCY (Reviewed From Sport Development Index)".

## 2 Literature Review

The term sportsmanship comes from the Javanese languages of "olah" and "rogo". "Olah" means practicing or doing activities while "rogo" means physical or physical. So exercise means doing physical activity. In Law No.3 of 2005 mentioned sports is all systematic activities to encourage, foster, develop physical, spiritual and social potential. The purpose of sports according to the Law of the Republic of Indonesia Number 3 of 2005 concerning the National Sports System Chapter III Article 4 which reads: National sports aims to maintain and improve health and fitness, achievements, human qualities, instill moral values and noble morals, disciplinary sportsmanship, strengthen and foster the unity and unity of the nation, strengthen national resilience, and lift the dignity, dignity, and honor of the nation. Giri Wiarto (2015: 16-23) argues that "Exercise has many benefits for the health of our body both physical health and spiritual health.

An Indian woman named Maitreyee once asked her husband, Yajnavalkya: "If all that is in this world we could have, would we be able to guarantee immortality in life?", "No, you will only live like any other rich man, but never will reach immortality. What exactly is the meaning and essence of development for man and humanity? According to Amartya Sen, the basic problem is not in eternal life, because it is impossible. The basic problem is how to live longer, and have a good and quality life. Therefore, development is not enough to solve the problem.

economics by forgetting the more basic problem, namely the nature of development for humans. Economic growth is important for development, but economic development alone does not always bring positive things to development goals. This thinking is what prompted Amartya Sen and Mahbub ul Haq, an economist from Pakistan, to give birth to an idea that is the Human Development Index (HDI) or in Indonesian means Human Development Index (HDI). Ali Maksum in 2002 engaged in an informal discussion and after contemplation, came up with the idea of curiosity. Which raises a question "how to measure the progress of the sport? If the development of sports is only measured by the acquisition of medals" certainly not. There is a new alternaltif to measure the level of sports development initiated by Toho Cholik Mutohir and Ali Maksum, namely the Sport Development Index (SDI).

### 3 Methods

This study is a method of surveying, interviewing, observation, and documentation, Index of Open Space aspects in Purwodadi Kabupaten Grobogan District. The research site was conducted in Grobogan Regency in Purwodadi District. The research time was conducted on February 28, 2022 until March 20, 2022, namely research on the sports open space index in Purwodadi District of Grobogan Regency. Variabel in this study there is 1 aspect of the Sport Development Index, namely the aspect of open space sports in Purwodadi District, Grobogan. This research follows the guidelines for the method of determining the open space aspect sample of the Sport Development Index (SDI) quoted from the book Sport Development Index (Mutohir & Maksum, 2007: 59-62) explained that "For individual data in the Subdistrict obtained from 30 samples taken randomly based on the age category of children (7-14 years), adolescents (15-24 years) and adults (25-40 years)". in order to be generalized to find out the Sport Development Index in Purwodadi District according to the standard standards set by the Ministry of Transport referred by Prof. Drs. Toho Cholik M, M.A, Ph.D. For the research sample using 3 villages in Purwodadi Subdistrict with 30 people for each village. With criteria of 10 children (5 men and 5 women), 10 adolescents (5 men and 5 women), and 10 adults (5 men and 5 women). So the total sample amounted are 90 people.

### 4 Data Collection

As seen and observed. Grobogan County has a lot of sports open space. However, many of the open spaces of this sport are still not enough to be said to be perfect in terms of sports development. This can be seen from the public's own awareness to do sports and take advantage of the open space of the sport, even some of the open spaces of the sport are abandoned and need updates in terms of sports facilities and infrastructure to support sports activities in the surrounding environment.

After obtaining the data "open space sports and population population" then the results of observation of the amount of sports open space area will be divided by the number of populations whose age >7 years in the research sample area to get actual value. After the actual value is obtained then only can be known the index of open space sports. The maximum value of sports open space is 3.5 while the minimum value is 0. The actual values and indexes of sports open spaces from each region of the study sample are as follows:

$$\text{Actual Value : } \frac{\text{Amount of Sports Open Space Area}}{\text{Population of >7 Years}}$$

**Table 1.** Actual indigo

Number	Village/ district	Open space	>7 years	Actual value
1	Ngraji	6.489,15	9.441	0,687337
2	Danyang	17.669,90	8.663	2,039697
3	Purwodadi	56.868,36	21.360	2,662376

"calculate the index of open space sports" using rumus specified, then the value of "sports open space index" in Brati Subdistrict, Grobogan Subdistrict and Purwodadi Subdistrict adalah as follows: Table 4. 11 Purwodadi Actual Value Data Source: Results of data analysis

$$\text{Open Space Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

Number	Village/ district	Actual value	Min	Max	Index of space sports	categories
1	Ngraji	0,687337	0	3,5	0,196382	Rendah
2	Danyang	2,039697	0	3,5	0,582771	Rendah
3	Purwodadi	2,662376	0	3,5	0,760678	Rendah

Purwodadi Open Space Index Source: Results of Research Data analysis

### 3. Discussion

#### a.. Availability of Sports Open Space

Based on hasil observations, interviews and documentation studies on the availability of sports open spaces in Purwodadi Subdistrict, namely: with 3 samples of sports open space villages as well as

79,600.17 m<sup>2</sup> and the results of the sports open space index in Ngraji Village: 0.196382, Danyang Village: 0.582771, and Purwodadi Village: 0.760678.

Based on the data above the open space index in Purwodadi District, there is still in the low category, providing and developing olahraga development in Purwodadi District. There is a lot of open space, however, the open space is widely used for creative activities, trading and party or even activities. Therefore, the open space does not participate in the study of open space olahraga. "According to Mutohir and Maksum" (2007: 38) the requirements to be regarded as an open space of sports there are three, namely:

(1) Designed for sports (2) Used for sports and (3) Accessible to the public.

### 4 Conclusion

1. We recommend that every village must have an open space for sports that is in accordance with the standards of the sports committee.

2. The existence of adequate facilities and infrastructure as a driver of children's interest and talent in exercising so that they can be channeled and developed properly.
3. The community must take good care of the open space of sports that has been provided by the government and private parties, so that it can be utilized to the maximum.

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## Approach Model Aktif Mandiri to Prevent Filariasis

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**Abstract.** Filariasis is an infectious disease that is still a burden to the world, including Indonesia. The burden of filariasis endemicity in Indonesia is known to be found in Kertoharjo Village and Jenggot Village, Pekalongan City, Central Java with an *mfrate* in 2012 of 2.4% and 5%, respectively. This study applies the innovative mentoring model Action for the Elimination of Filariasis - Media Reads to Avoid Filariasis (AKTIF MANDIRI) as an effort to complete acceleration elimination of filariasis to increase the level of public knowledge. This research method uses *quasi-experimental design* with before and after intervention using a control group. The number of research samples was 25 respondents in the intervention group and 52 respondents in the control group using *proportional random sampling technique*. The results showed that 32% of respondents had a good level of basic knowledge of filariasis and 60% of respondents had a good level of knowledge of filariasis POMP in the intervention group. In the intervention group, after the implementation of the AKTIF MANDIRI mentoring model, the level of basic knowledge of filariasis increased significantly to 76%. However, the mentoring model did not significantly increase knowledge about filariasis POMP to 68%. The difference in the level of knowledge can be influenced by the level of understanding of community leaders as agents who deliver health education to the community. While the results in the control area did not show a significant difference.

**Keywords:** Filariasis, Model Aktif Mandiri, Knowledge

### 1 Introduction

Filariasis is an infectious disease caused by parasitic worms (*Brugia malayi*, *Brugia timori*, and *Wuchereria bancrofti*) and attacks the lymph nodes which can cause lymphangitis and lymphadenitis[9]. Filariasis is also known to be capable of causing psychological impacts on sufferers due to social exclusion due to their disability[10]. In addition, economically filariasis is known to cause Indonesia a loss of Rp. 1.34 T due to not providing filariasis POMP to at-risk populations (people living in endemic areas)[4].

The burden of filariasis in Indonesia, especially on the island of Java, is known to be in Pekalongan City, Central Java. In 2015, Pekalongan City was in the highest order of filariasis cases in Central Java, namely 108 cases. In addition to the highest filariasis cases in Central Java, Pekalongan City is also included in the filariasis endemic area with an MF rate > 1% [3]. One of the areas in Pekalongan City that has the highest mf rate is Kertoharjo Village and Jenggot Village with *mfrates* in 2012 of 2.4% and 5% [2].

One of the factors that can trigger the incidence of filariasis and the high level of filariasis endemicity is community compliance in the Filariasis Prevention Mass Drug Administration (POMP) program. Data from the Health Office of Pekalongan City stated that adherence to taking filariasis prevention drugs tended to decrease from 2011 to 2014 namely 63.01%, 60.89%, and 55.86%. It is feared that the decrease in the level of adherence to taking medication will cause the continued POMP program in 2017-2018 to be threatened with failure and increase the risk of transmission because people who do not take filariasis prevention drugs are known to be more at risk of becoming patients and transmitting filariasis. Based on the research of the first year Arum Siwiendrayanti et al (2015) it is known that the level of basic knowledge about filariasis and POMP in the community in Kertoarjo Village which is stated to be lacking is 68% and 40%, respectively. It was also stated by Septiarini's research (2010) that the dominant factor (79.8%) causing low medication adherence was the low level of public knowledge about filariasis and POMP.

Based on these problems, the AKTIF MANDIRI model is expected to be a solution to reduce filariasis rates. The AKTIF MANDIRI model was initiated from research by Afrida (2011) which stated that the coverage of adherence to taking filariasis prevention drugs increased 7.9% higher after being accompanied by health workers[1]. However, due to the limited number of assistants, the model of mentoring by health workers to take medication is considered to be less effective in improving medication adherence. Therefore, the researchers applied assistance sourced from community resources, namely the AKTIF MANDIRI model as an innovative solution in preventing filariasis in filariasis endemic areas.

The AKTIF MANDIRI model is a mentoring method that can be used in an effort to increase knowledge and rates of adherence to taking filariasis prevention drugs as a complement to the filariasis elimination program. The AKTIF-MANDIRI model stands for Action to Eliminate Filariasis (AKTIF) with Reading Media to Avoid Filariasis (MANDIRI). The concept of the AKTIF MANDIRI model is in the form of educational activities by utilizing religious leaders as educators (AKTIF points) and using Reading Media to Avoid Filariasis so that prevention can be carried out by the community (MANDIRI points). Media Read Avoid Filariasis (MANDIRI) contains written information accompanied by illustrations of filariasis prevention steps that can be done by the community themselves. In addition to using Reading Media to Avoid Filariasis, the AKTIF MANDIRI model also applies interventions in the form of filariasis film screenings and limited group discussions. In general, the AKTIF MANDIRI model aims to increase community knowledge and behavior in preventing filariasis while still being guided by the local characteristics of the local community. The local culture of the Kertoharjo Village community is still thick with religious principles, therefore the community component that is being re-empowered is religious leaders.

## **2 Research Methods**

This study used a *quasi-experimental pre-post test control group* to analyze the potential of the AKTIF MANDIRI program in increasing the knowledge level of the community. The sample in this study was 25 respondents as an intervention group in Kertoharjo Village (given an AKTIF-MANDIRI mentoring intervention model) and 52 respondents as a control group in Jenggot Village (given an intervention in the form of leaflets) with sample acquisition carried

out using *proportional random sampling technique*. The intervention group was taken from the residents of Kertoharjo Village who were given an intervention in the form of the AKTIF MANDIRI program through booklets, religious lectures from religious leaders and limited discussions. Meanwhile, the control group was taken from residents of Jenggog Village who were only given an intervention in the form of leaflets posted in public places. Kelurahan Jenggog was chosen as the control group with the consideration that the residents of Kelurahan Jenggog have habits and the same type as the residents of Kelurahan Kertoharjo and the location of the two villages is next to each other.

Data collection techniques were carried out by means of interviews and instruments in the form of questionnaires. Sources of data used are primary data obtained through interviews before (*pre*) and after (*post*) treatment, either through the MANDIRI ACTIVE method and leaflets.

The data analysis used in this study was univariate and bivariate. Univariately, the research results were analyzed descriptively. While the bivariate method was carried out using the Mc Nemar test to see the difference in the level of knowledge before and after treatment.

### 3 Results and Discussion

#### Knowledge Level Before and After Intervention

The following is a description of the level of knowledge of respondents about filariasis and filariasis Prevention Mass Drugs (POMP) in the intervention group and control group before and after the intervention is given, can be seen in table 1 below:

**Table 1.** Description Knowledge Level About Filariasis Before and After Intervention

Variables		Intervention Group		Control Group	
		%	F	%	F
Basic Knowledge of Filariasis	Before Intervention				
	Less	17	68	28	53.8
	Good	8	32	24	46.2
	After Intervention				
	Less	6	24	35	67.3
	Good	19	76	17	32.7
Knowledge of POMP	Before Intervention				
	Less	10	40	27	51.9
	Good	15	60	25	48.1
	After Intervention				
	Less	8	32	40	76.9
	Good	17	68	12	23.1

From table 1 it can be seen that the number of respondents who have less knowledge about filariasis disease and the program for filariasis Prevention of Drinking Drugs (POMP) are more than those who respond den whose knowledge is in the good category, except for the level of knowledge in the control group. In the intervention group, the level of knowledge of 25 respondents before being given treatment about basic knowledge of filariasis using the AKTIF MANDIRI method was 17 (68%) respondents who had a low level of knowledge.

After being given treatment on basic knowledge of filariasis using the AKTIF MANDIRI method, the number of respondents who had a low level of knowledge decreased to 6 respondents (24%). This shows that with the intervention with the AKTIF MANDIRI method, the public will understand the flow of filariasis transmission, how to prevent filariasis and know that filariasis is not a cursed disease. Meanwhile, in the control group, before the intervention, the number of respondents who had a low level of knowledge about filariasis was 28 respondents (53.8%) of the 52 respondents who were sampled. After being given an intervention in the form of leaflets in the dick group, the basic knowledge about filariasis in the less category increased to 35 respondents (67.3%).

Judging from the level of knowledge regarding the Administration of Mass Drug Prevention (POMP) filariasis, it is known that there are 15 people (60%) of respondents who lack knowledge before treatment, while after treatment (application of the AKTIF MANDIRI model) it is known that there are 17 people (68%) of respondents who are knowledgeable. Meanwhile, in the control group before being given the intervention there were 25 respondents (48.1%) who had a low level of knowledge about MDA and after being given the intervention it decreased to 12 respondents (23.1%).

#### Differences in the level of knowledge regarding filariasis and POMP filariasis before and after the intervention

**Table 2.** Differences in the level of knowledge regarding filariasis and POMP filariasis before and after the intervention

Sample group	Community		knowledge level (post)		Total	<i>p</i> value
			Poor	Control		
Control	Basic Knowledge of Filariasis (pre)	Less	19	9	28	0.230
		Good	16	8	24	
		Total	35	17	52	
	Knowledge of POMP (pre)	Poor	20	7	27	0.021
		Good	20	5	25	
		Total	40	12	52	
Intervention	Basic Knowledge of Filariasis (pre)	Poor	4	13	17	0.007
		Good	2	6	8	
		Total	6	19	25	
	Knowledge of POMP (pre)	Less	4	6	10	0.754
		Good	4	11	15	
		Total	8	17	25	

Table 2 shows that after the AKTIF MANDIRI intervention was carried out, the number of respondents who had good knowledge about filariasis transmission in the intervention group increased (to be better). In addition, based on the results of a different test using Mc Nemar's test, it also showed a significant difference between before and after the application of the AKTIF MANDIRI model with the level of basic knowledge of the community regarding the prevention of filariasis in the intervention group (*p* value 0.007). While in the control group there was no significant difference between the level of basic knowledge of filariasis before and after treatment with a *p* value of 0.230 (*p* value > 0.05).



Based on the results of this study, it can be seen that mentoring with the AKTIF MANDIRI model is more effective and has the potential to increase public knowledge about filariasis compared to mentoring through leaflets. Therefore, assistance with the AKTIF MANDIRI model really needs to be applied as a method of perfecting the filariasis elimination program in increasing the level of public knowledge, which in the long term can change people's habits to always prevent the transmission of filariasis disease through behavior and environmental management. This is in accordance with the opinion of Notoatmodjo (2003) that the formation of awareness and behavior change towards a better direction will be lasting if it is based on knowledge. People who already have awareness will be able to independently carry out efforts to prevent filariasis transmission by changing behavior.

Health education with the AKTIF MANDIRI model is more effective in increasing public knowledge if it is carried out using lectures, booklets, and audiovisual media. This is in accordance with research conducted by Santi et al (2014) which states that health education through audiovisuals is effective in increasing community knowledge, attitudes, and actions in preventing filariasis ( $p$  value = 0.000) [8]. The same study also shows that lecture education can increase knowledge about leptospirosis and tends to be liked by the people of Bantul Regency compared to health education through billboards or leaflets[7].

The level of knowledge has a significant correlation with the incidence of disease. The results of Nasrin's research (2008) show that respondents who do not know about filariasis transmission and prevention will have a 3 times greater chance of contracting filariasis compared to respondents who know about filariasis transmission[5].

In the statistical test results of the knowledge variable for Mass Drug Administration for Prevention (POMP) of Filariasis in the intervention group, it is known that the  $p$ -value is 0.754 ( $p > 0.05$ ), which means that there is no significant difference between before and after being given the ACTIVE-INDEPENDENT model in the community of Kelurahan Kertoharjo Kota. Pekalongan. However, the control group showed different things that the intervention with leaflet media had different levels of knowledge of POMP filariasis before and after the intervention with  $p$  value 0.021 ( $p$  value  $< 0.05$ ).

The absence of a significant difference in the knowledge score about MDA in the community before and after being given intervention through the AKTIF MANDIRI model could be influenced by the ability of the assistant staff in the field, which in this context is the level of understanding of religious leaders as agents who convey information or knowledge to the community. Therefore, the AKTIF MANDIRI mentoring model can be applied, but intensive assistance is needed to ensure the knowledge ability of religious leaders as companions is at the expected level.

Appropriate health education must use the right methods and media, so that the material presented in health promotion will be easily accepted and absorbed by the target whose final impact will further increase public knowledge and more easily realize public awareness in disease prevention[6]. Health education often fails because of the inaccurate selection of educational methods, educational media and application of methods in the field. The advantages of the ACTIVE-INDEPENDENT model of health education method are that the public will be more concerned because the people who convey information are people they respect (religious leaders), have more potential in forming public awareness and community shops, as well as the formation of a guide book for religious leaders and the public regarding

filariasis. which can be read over and over again in the future. Therefore, mentoring with the AKTIF MANDIRI model is effective and has the potential to increase public knowledge about filariasis. However, based on the evaluation of the implementation of the "AKTIF MANDIRI" mentoring model, to get more optimal results it is necessary to have several consequences of choices such as the need for assistance to religious leaders and monitoring of the rotation of booklets carried out in reading because what is found in the field is not everything that is given the book. read.

#### 4 Conclusion

Health education with the AKTIF MANDIRI model (Action to Eliminate Filariasis - Media Reads to Avoid Filariasis) is effective in increasing basic knowledge about filariasis. However, there was no difference in the level of knowledge about filariasis POMP before and after the intervention. Therefore, to make the application of the AKTIF MANDIRI model effective in increasing public knowledge about filariasis in full, there is a need for more intensive assistance to religious leaders to ensure that the level of understanding of religious leaders regarding filariasis is as expected and it is also necessary to monitor the circulation of media booklets to ensure that every citizen read the media booklet.

**Acknowledgments.** We would like to thank the Directorate of Research and Community Service, Directorate General of Higher Education, Ministry of Education and Culture for funding this research through the Competitive Grant research scheme.

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# Forehand Overhead Drop Shot Analysis for Men's Under-15 Badminton Athletes

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**Abstract.** As a result of observation of men's under-15 athletes, many athletes still failed when they hit the forehand overhead drop shot. The formulation of the problem in this study is how to hit the badminton forehand overhead drop shot. This study aims to analyze the forehand overhead drop shot in badminton athletes. The research was conducted on the male under-15 athlete of The Satria Badminton Club, totaling 12 samples. The sampling technique used is random sampling. The data was obtained by analyzing the forehand overhead drop shot for 20 strokes with one recording using kinovea software on the racket grip, standing posture, footwork movement, arm swing, impact, and flight direction of the shuttlecock and continued by making the percentage of forehand overhead drop shot capabilities. The results showed that the men under-15 athletes of The Satria Badminton Club, Tegal regency, totaled 12. The forehand overhead drop shot assessment results are in a reasonably good category. The mistakes made by the athlete when making a forehand overhead drop shot were that the shuttlecock fell far from the net, the flight direction of the shuttlecock was too high, and the shuttlecock was not directed to the target. This study suggests that coaches need a training program to improve badminton athletes' forehand overhead drop shots in The Satria Badminton Club, Tegal regency.

**Keywords:** forehand overhead drop shot analysis, men's under-15 badminton athletes.

## 1 Introduction

Badminton is a sport that most Indonesian people love. According to Cohen, Texier, Quéré, & Clanet (2015: 1), badminton is a sport that uses a racket played by two people (for singles) or two pairs (for doubles) who take a starting position on the field of the field which is divided in half by a net (net)[2]. Phomsoupha & Laffaye (2015:474) argue that badminton balls are not reflected and must be played in the air, so this game is a fast game that requires good reflexes and a high level of fitness. In conclusion, badminton is a game that one person can play against one person or two people against two people[7]. This game uses a racket as a bat, and a shuttlecock as an object to hit, and the movement can be done with fast and slow reflexes. How to do this by bouncing the shuttlecock towards the opponent's court to get points.

A good badminton player must master the basic techniques of badminton. According to Nanang Kusnadi (2020:2), the basic badminton techniques are divided into; (1) How to hold the racket. (2) Body position; (3) Footwork; (4) Blow[5]. Mastery of basic techniques needs to be developed to achieve achievement. The basic techniques of badminton must be studied first to develop the quality of badminton performance because winning or losing a player in a

match is determined by mastery of basic playing techniques (Zainul, Bagus, and Tomi, 2020:313). Badminton has several techniques that athletes must master, including racket grip, footwork, serve, lob, smash, drop shot and drive [7].

Dropshot is a shot that launches or places the shuttlecock into the opponent's court area as close as possible to the net. Dropshots often interfere with the opponent's movement to change the play pattern from attacking to defending because the opponent is forced to take the shuttlecock from below. Hitting a Drop shot is like doing a smash; the difference is in the position of the hit; the shuttlecock is hit with a softer push and touch than a smash and always falls close to the net in the opponent's court area. The determining factors for the success of a drop shot are the racket grip factor, leg movement, arm swing, movement during impact or impact on the shuttlecock, shuttlecock flight rate, and follow-up movement. Racket grip is done by forehand grip, like a person shaking hands. When making a drop shot, the body's position is behind, so foot movements must be done quickly to pick up the shuttlecock in the correct position. The arm swing is done with a gentle touch so that the shuttlecock falls as close to the net as possible. Movement at impact is when the racket is in contact with the shuttlecock; the hand must be straight to reach the shuttlecock and push with a smooth touch. Dropshot is a cut punch that contains aspects of the subtlety of emotion and deception. When making a good drop shot, the shuttlecock's flight speed does not exceed the service line. After the shuttlecock is hit, the next movement is to continue the swing movement. Do a swing towards the net; the hand holding the racket rotates and crosses in front of the opposite body position, then the body moves back to the center of the court and is ready in the middle of the court to receive the shuttlecock again.

The Satria Badminton Club Tegal regency has produced talented athletes. However, based on the author's observations and interviews with the coach, there are still shortcomings that must be addressed; many athletes are not good at hitting the forehand overhead drop shot. The identification of the problems that the authors found was that the racket's grip was not solid and stiff, causing the athlete to find it challenging to direct the shuttlecock to enter the drop shot target area, the unprepared stance. The position of the feet being opened, not shoulder-width apart, makes it difficult for the athlete to take a drop shot. Footwork that is not fast enough causes the athlete to be late in reaching the shuttlecock behind, the position of the body when hitting the shuttlecock is not rotated and turned towards the incoming shuttle, causing the shuttle to not match the target, the arm swing does not follow the angle of the shuttlecock movement causing the drop shot to be directional make a stroke, the athlete does not return to the center of the court quickly causing the athlete to be late for the next stroke.

The conditions experienced by the Satria Badminton Club Players in Tegal Regency are the reason for the importance of this research. The problem is, how is the forehand overhead drop shot for the Men's Under-15 athlete at the Satria Badminton Club, Tegal Regency?

### **1.1 Objectives**

This study aimed to present the forehand overhead drop shot ability of U-15 Men's athletes at the Satria Badminton Club, Tegal Regency.

## 2 Literature Review

- 1) Mahmuda Permata Sari, Oni Bagus Januarto, Tatok Sugiarto (2019). Improving Forehand Drop Shot Stroke Skill in Badminton Through the Drill Method for Children. The results showed that the success rate of drop shot forehand in the first cycle was 60.7% from the first observer and 59% from the second observer, while in the second cycle, the success rate was 79.3% from the first observer and 80.1% from the observer.
- 2) Ramli, Alif Syamim Syazwan., Kamalden, Tengku Fadilah Tengku., Sharir, Raihana., Harith, Hazreen Haizi., Hana, Marsyita., Gasibat,Oais., Samsudin, Shamsularin. (2021). Mechanical Interaction Within Badminton Forehand Shot Technique: A Review Paper. The results managed to present a synthesis of the literature review and provided constructive discussions as a basis to propose a performance outcome model that illustrates mechanical interactions that contribute to badminton forehand and shot technique performance.
- 3) Kurnia, Rahmadi., Abdian Pasmai, Abdian., Elfitri, Ikhwana. (2020). [Analysis of the Smash and Dropshot Movement Patterns in Badminton Sports using Pearson Correlation.](#) From the results, that athletes had a large similarity pattern compared to participant players with a similarity of more than 50%.

## 3 Methods

As many as 12 under-15 male players at the Satria Tegal Badminton Club in 2021 were ordered to do forehand overhead drop shots in as many as 20 trials, and they were recorded to choose the best result. The best overhead drop shot practice results were then analyzed using Kinovea software. There are 14 stages of motion assessed, namely racket grip, standing position, arm swing, bodyweight position, reaction to reach the shuttlecock, body twisting movement to reach the shuttlecock, backswing motion, forward swing, racket reach to shuttlecock, racket head movement, racket position with the shuttlecock, swinging motion following the angle of the shuttlecock movement, Step Back to the center of the court, and stand ready at the center of the court. Each movement recorded correctly gets a value of 1, and the wrong one gets a value of 0. Furthermore, the data is analyzed to obtain data in very good, good, sufficient, less, and significantly less. Furthermore, the data is percentage based on the frequency of each data. The data that has been processed in the data table is then displayed in the form of a graph.

## 4 Data Collection

**Table 1.** Research Data

Number	Sample	Stages														Total score
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	X1	1	1	1	1	0	1	1	0	1	1	0	1	0	1	10
2	X2	0	1	1	0	1	1	0	0	1	1	0	1	0	1	8
3	X3	1	0	1	1	1	1	0	0	1	1	1	1	0	1	10
4	X4	1	0	1	0	0	1	0	0	1	1	1	1	1	1	9
5	X5	0	1	1	0	1	1	1	1	1	1	1	0	1	1	11
6	X6	0	0	0	1	1	0	0	0	1	1	1	1	0	1	7
7	X7	0	0	0	0	1	1	0	0	1	1	1	1	1	1	8
8	X8	1	0	1	0	0	0	1	1	1	1	1	0	1	1	9
9	X9	0	1	0	0	1	1	1	1	0	1	1	1	0	1	9
10	X10	1	1	0	1	1	0	0	0	0	1	1	1	1	1	9
11	X11	1	0	1	1	1	0	1	1	1	0	0	0	1	1	9
12	X12	1	1	1	1	1	1	0	0	1	1	1	0	1	1	11

Source: Research data

## 5 Results and Discussion

### 5.1 Numerical Results

To determine the category of the sample who took the test according to the total score obtained, a percentage of the total score for each sample was calculated. The percentage categories are as follows:

**Table 2.** Category of The Sample

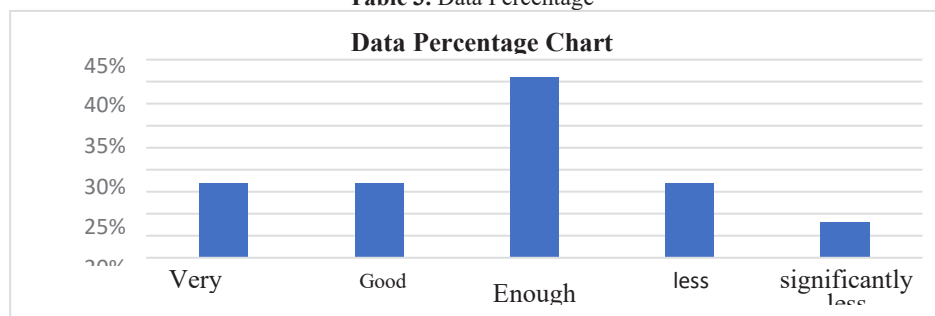
Number	Score	Category	Frequency	Presents
1	11-14	very good	2	17%
2	10	good	2	17%
3	9	enough	5	41%
4	8	less	2	17%
5	1-7	significantly less	1	8%
Total			12	100%

Source: Research data

## 5.2 Graphical Results

The following is a graph of the percentage of data descriptions based on the results of the forehand overhead drop shot assessment

**Table 3.** Data Percentage



Source: Research data

## 5.3 Proposed Improvements

This research is still limited to the badminton club Satria Tegal regency, the numerical and graphic results do not represent every badminton player, and the conclusions cannot be generalized; researchers who will continue the results of this study are advised to conduct research with a larger sample and come from many badminton clubs and various regions so that the results can be generalized

## 5.4 Validation

This research is descriptive research that does not test the truth of a theory, so there is no research hypothesis testing. However, the instrument in this study has a validity test of the instrument, namely the Kinovea software. The results of the validity of the instrument are contained in the following table 4.

**Table 4.** Kinovea Software Instrument Trial Results

N	Validity	Reliability	Minimum	Maximum	Mean	St. Deviation
12	0.98	0.94	7	12	9.25	1.299

Source: Research data

## 6 Conclusion

Research and analysis on the forehand overhead drop shot concluded that the Men's Under-15 Athlete of the Satria Badminton Association of Tegal Regency in 2021 was considered sufficient to do the forehand overhead drop shot, with a percentage value of 41% or five athletes. The mistakes made by the athlete in making the forehand overhead drop shot were the shuttlecock falling too far from the net, the flight direction of the shuttlecock being high, and the shuttlecock flying not on target.



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# The Satisfaction Index of the Central Java Persani Association towards the Implementation of the Virtual Gymnastics Championships

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**Abstract.** The purpose of this study was to determine the user satisfaction index with the implementation of a virtual-based gymnastics championship held in the provincial environment, Central Java. The research method is a survey research method using a questionnaire as a data collection instrument. Respondents used were from 25 City/Regency Governments throughout Central Java. The results of this study indicate that the average satisfaction index of the Central Java Association entry is 3.2 points (enough). The satisfaction index for the residencies of Banyumas, Semarang, Pati, and Pekalongan came in at 3.4 points. The satisfaction index for the residences of Kedu and Surakarta came in at 3.0 points. This study concludes that from the five dimensions, the overall satisfaction of the Central Java gymnastics association is in the sufficient zone. The satisfaction zone is suitable for the residencies of Banyumas, Semarang, Pati, and Pekalongan residencies, while it is in the moderate category for the residences of Kedu and Surakarta.

**Keywords:** satisfaction index, gymnastics, virtual gymnastics championship.

## 1 Introduction

Currently, the world is facing an ongoing virus pandemic, restricting activities in various sectors [1]. Since the first outbreak in Wuhan, China, in December 2019, the coronavirus disease 2019 (Covid-19) has spread rapidly globally. The covid-19 variant is increasingly mutating to produce a new variant known as the omicron variant. As a result of the development of this variant, the response to various forms of policies was carried out by all world leaders, including in Indonesia [2], [3]. Covid-19 has proven to be a pandemic that can bring society, the economy, and education to their knees. One of the severe impacts caused by Covid-19 is in the travel sector and the tourism industry [4]. New developments/adaptations are also implemented in the face of the spread of COVID-19. In March 2020, several countries banned unnecessary outdoor activities during Covid-19, commonly called 'lockdown' [5]. This lockdown has the potential to have an impact on the level of associated physical activity, including significant implications in particular in the sports sector [6].

The coaching and development of elite sports, especially in the gymnastics branch, is arranged in a planned, systematic, tiered, and sustainable manner to achieve national sports achievements. In the era of the Covid-19 pandemic, the coaching system is said to have decreased, as was the case with the postponement of the National Sports Week, including

coaching at sports clubs due to concerns about the risk of Covid-19 transmission [7], [8]. The coaching carried out by the sports club also encountered problems. The implementation of the routine exercise schedule is also limited by the maximum number so that the training schedule is disrupted [5], [12]. Covid-19 has dramatically impacted the coaching and management system of sports coaching, and the implementation of physical activity has also decreased. The training schedule that has reduced the quality and quantity of training has disrupted the coaching system [9]. The reduction in the frequency of exercise causes the athlete's muscle strength and endurance to decrease. A significant decrease occurred due to the reduced exercise duration factor [10], [11].

During the pandemic, the gymnastics association Provincial tried to keep the wheels of competition running. One of them is by implementing a virtual-based championship held in Central Java. The implementation of competition at the Central Java level is also carried out online. The online title invited various responses from the regency/city government in Central Java. The satisfaction index is an important thing in the sustainability of the virtual-based championships that are carried out. In this regard, the researcher seeks to determine the user satisfaction index, in this case the district/city government in Central Java, for virtual-based gymnastics championships.

The impact of the coronavirus pandemic in particular on the sports sector, with many sporting events being postponed, including automotive, football, golf, tennis, bicycle racing, Olympics, basketball, and athletics [13], [14]. Since the Covid-19 pandemic spread, governments in various countries have begun to enforce strict health protocols, such as regulations for maintaining social distance and large-scale social restrictions, which certainly disrupt sports events and several other aspects. To maintain the health of athletes and other parties involved, most sporting events at the national, regional, and international levels have been temporarily canceled/postponed [15]. The existence of Covid-19, in addition to hampering economic inflation, also hampers athletes who are practicing. So changes in training models and training programs may affect the performance of athletes and require coaches to implement some of the latest policies [16]. And decisions regarding the resumption of sporting activities should be based on objective medical information regarding the transmission of Covid-19 within the region. They should be carefully consulted in decisions regarding the timing of the resumption of sporting activities [17].

The role of a referee in sports is immeasurable, in this case is, gymnastics, because it has a very central position. The qualifications of gymnastics referees also affect the success of athletes in achieving achievements. During the Covid-19 pandemic, it is not possible to conduct face-to-face training as well as competition activities [20]. Over the past decade, the sports industry has been impacted by the global Covid-19 virus pandemic as entire seasons have been shortened, races have been canceled, athletes have been infected, and sports study programs have moved online. So the incorporation of information technology in education and sports has become an important research topic. Many people are forced to use virtual sports training technology to stay active [21]. Of course, athletes face many challenges in trying to keep busy and healthy when all competitions are canceled [22].

## 2 Method

The research implementation time is six months, with the research location in the gymnastics association Provincial in Central Java, with 25 Regency/City Government officials throughout Central Java. The subjects in this study were all Regency/City City Government officials throughout Central Java, a total of 25 Regency/City City Councils. Respondents prepared in the study were the General Chairperson of the Regency/City City Governments throughout Central Java. The latter were users of the virtual-based Championship activities held in the gymnastics association Provincial environment of Central Java. The data collected came from the General Chairperson of City/Regency Governments throughout Central Java as respondents to assess the satisfaction of the virtual-based championship system. The data collection technique to determine the satisfaction index of this virtual-based championship system is by using a questionnaire or Questionnaire. A questionnaire or Questionnaire is a technique or method of collecting data indirectly (researchers do not directly ask and answer questions with respondents). The instrument or data collection tool is in the form of a questionnaire containing several questions that must be answered or responded to by the respondent.

Data analysis in this study used descriptive statistical analysis techniques. Descriptive statistics are statistics that describe or provide an overview of the object under study through sample or population data as it is, without analyzing and making conclusions that apply to the public. The measurement technique used for data collection uses a Likert Scale. The Likert scale measures attitudes, opinions, and perceptions of a person or group of people about social phenomena. The Likert scale has a gradation from very positive to very negative. Using a Likert scale makes it easier for respondents to choose answers.

Achievement Level (%)	Qualification
81 – 100 %	Very good
61 – 80 %	Good
41 – 60 %	Enough
21 – 40 %	Not Good
< 20 %	Very Not Good

## 3 Result

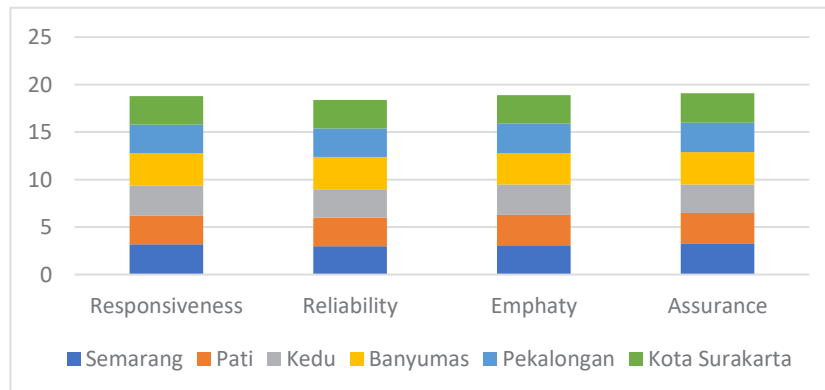
This research was conducted on 25 district/city administrators in Central Java. As many as 25 administrators, in this case, were represented by the head of gymnastics association Regency/City filling out the questionnaire given. The description of the level of satisfaction of the regency/city government cannot be separated from the characteristics of the respondents. The characteristics of the respondents who were included in this study were gender and the characteristics of their respective regions. The list of districts and cities that became the research sample was taken from 6 residencies in Central Java, as shown in table 2. Descriptive

analysis was used to determine the level of satisfaction and importance of the quality of online-based championships received by users. In measuring user satisfaction, in this case, the gymnastics association regency/city government in Central Java, the steps are taken are: (1) Determining the dimensions of service quality for a service that can provide satisfaction to the district/city government, which consists of Dimensions of Real Evidence (Tangibles), This dimension consists of two parts, namely facilities and content. Dimensions of Reliability (Reliability) consists of 2 variables: Careful access services and fast administrative affairs services. Responsiveness Dimension. This dimension consists of 5 variables: The readiness of the lecturers to answer student questions, the enthusiasm of the thesis supervisor in serving users, the ease of communicating with the committee, the committee's responsive to the needs of the participants, and the readiness of the committee in regulating the rotation of athletes before the competition starts. Dimensions of Assurance, the committee is disciplined in setting the schedule.

**Table 2.** Distribution of Research Regencies/Cities

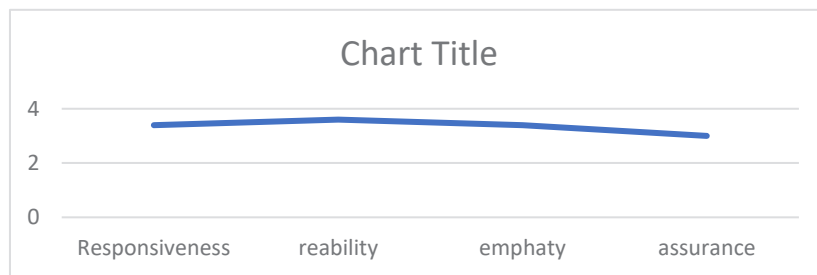
Regencies	Cities
Semarang	Semarang City, District of Semarang, Kendal, Grobogan
Pati	Rembang, Pati, Jepara, Blora, Kudus
Pekalongan	Pekalongan City, District of Pekalongan, Tegal, Tegal, Brebes
Banyumas	Banyumas, Cilacap, Purworejo, Kebumen, Banjarnegara
Kedu	Temanggung, Wonosobo, Magelang
Surakarta	Surakarta, Karanganyar, Sragen

The overall satisfaction index analysis of district/city government is presented in Figure 1. The total satisfaction index is formed from four dimensions of service quality, namely responsiveness, reliability, empathy, and assurance. These four dimensions describe the customer's satisfaction, in this case, the regency/city government in Central Java. It can be seen from Figure 1 that the overall satisfaction index for Banyumas, Semarang, Pati, and Pekalongan districts is above 3.4, and this figure is in the high satisfaction zone. However, it can also be seen that the satisfaction index of district/city government officials from Kedu and Surakarta City is below 3.0, so it is included in the good category.



**Fig. 1.** Satisfaction index

Meanwhile, the satisfaction index of each residency also needs to be analyzed. In the following, a more detailed analysis of the satisfaction index of district/city governments is carried out according to their respective residencies. Overall, the satisfaction index of various dimensions in the residences of Banyumas, Semarang, Pati, and Pekalongan shows that almost all sizes have a satisfaction index above 3.4. This means that the four dimensions, responsiveness, reliability, empathy, and assurance, are in the high satisfaction zone. Only, on the empathy dimension, the satisfaction index is the lowest compared to other sizes.



**Fig. 2.** Residency Satisfaction Index Banyumas, Semarang, Pati, Pekalongan

The average satisfaction of the district administrators from the residencies of Kedu and Surakarta City is 3.0. This means that the district administrations in the residences of Kedu and Surakarta City are pretty satisfied with the services provided by the executive committee. The dimensions of responsiveness and reliability are the most significant. At the same time, assurance and empathy are the most diminutive dimensions explaining student satisfaction with the services of the online championship organizing committee. Therefore, it is necessary to improve the dimensions of assurance and empathy.

The results of this analysis strengthen Rahadian's findings [1] that service quality (reliability, responsiveness, assurance, and empathy, simultaneously has a significant effect on user satisfaction in using the training ground at the University of North Sumatra (USU). Responsiveness, compassion, and direct evidence substantially affect student satisfaction, while the assurance dimension does not have a significant impact. As well as the results of research conducted by Amaliyyah [2] that the ability of managers to deliver lecture material and administrative staff skills at work guarantees the right UAS scores time, giving her exams on time and the accuracy of lecturers teaching in class Amin [3] by using a structural equation modeling (SEM) approach with maximum likelihood estimation, it is concluded that student loyalty can be built from learning variables through student satisfaction variables. Students can also be made from service quality variables through student satisfaction variables. The results of this study also prove the hypothesis that there is a positive influence between service quality variables and student satisfaction variables. Student satisfaction is 3.4. This means that this batch of students is quite satisfied with the services provided by the institution.

## 4 Conclusion

Based on the discussion, it can be said that the total satisfaction index is formed from four service quality dimensions: responsiveness, reliability, empathy, and assurance. The four dimensions describe customers' satisfaction. The average satisfaction index in Central Java is in the moderate zone. The four dimensions for measuring customer satisfaction, namely responsiveness, reliability, empathy, tangibles, and assurance, are in the satisfaction zone, both at the destination residencies, Banyumas residencies, Semarang, Pati, and Pekalongan, while in the good category in Kedu residencies and Surakarta cities.

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# Screening for Sport Injuries Based on Android Application

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**Abstract.** Massage is a manual therapy that helps in the recovery process of injuries for athletes and non-athletes. A masseur must do a screening first. Treatment errors can be minimized by carrying out a screening process. The screening process is a process of looking at the injury criteria and the chronology of the injury. This study was conducted to assist the screening process so that the SOP for handling injuries remains in accordance with the rules for handling injuries with the conclusion that not all complaints that look the same will be given the same treatment, because it can be seen from the history of each individual who has a complaint. This study uses a research and development design from Borg and Gall, includes analyze the product to be developed; develop the initial product; expert validation; field trials; product revision; final result; and test the effectiveness of product development. Instruments used are questionnaire and interviews.

**Keywords:** Screening, sport injury massage, android, application.

## 1 Introduction

The development of news technology has developed very rapidly. Existing facilities provide convenience for users. applications are given for formal and non-formal activities to be used as support for work activities so that they can meet the needs of the organization using very fast, timely, relevant, and thorough work, one of the supporting work activities of an agency or company is to use the availability of supporting resources such as applications reliable benefits [1]. The positive consequences of the digital era have penetrated into mobile devices related to sports injuries in carrying out the screening process through applications on Android.

Stat Counter Android is an operating system that exists as the primary choice of citizens. The rapid development of Android indicates that there are interesting features and ease of operation. The number of android users in Indonesia for the July 2017 period was 84.09%, which has increased compared to 2016 as many as 73.80% [2]. Android is a very popular operating system used by the people, especially teachers. But in fact, the use of smartphones is not maximized to support learning [3]. Sharen (2015) smartphone use in Indonesia continues to increase every year, reaching the fifth largest global ranking in smartphone use. With the high use of smartphones and followed by the development of health services in the form of sports injury massage, it is hoped that it will help in the screening process [4].

The screening process helps to reduce consultation service time and is used as an indicator of criteria to state that an injury suffered by an athlete or non-athlete can be massaged. With these criteria, it is expected to minimize the occurrence of errors in handling sports injuries.

The development of android-based technology can help the screening process credible for athletes and non-athletes.

### **1.1 Objectives**

Develop android-based application technology to help the performance of the team of the sports injury masase service center targeting athletes and non-athletes

## **2 Literature review**

According to Pressman & Bruce (2014: 9) mobile apps or mobile applications are computer programs that are specifically made to run on mobile phone or tablet handheld devices [5]. Applications also have the meaning of problem solving that uses one of the application data processing techniques which usually races on a computing or data processing that is expected [6]. There are many types of applications on smartphones that function to serve activity needs, including communication between humans, seeking information or knowledge, for shopping, playing music or videos, conducting business activities and managing finances, utilities and productivity, reading news, the latest updates about sports, playing games. games and many more various types of applications are being developed to meet human needs [7].

According to Frazy [8], android studio is a developer software used to create an android application. Before there was Android Studio, Android applications were usually developed using Eclipse, which is an application development tool that was classified as an IDE (integrated development environment), because it provided various facilities for making applications [9]. This application has tools based on drag and drop and visual blocks programming. Drag and drop is a term used for coding which is done by dragging and dropping program code into the blocks editor. While visual blocks programming is a feature that can transform text-based programming language coding into visual language in the form of program codes [10].

## **3 Method**

The type and design of this research is included in Research and Development (R&D). This research will produce a product in the form of an application prototype, namely Physical Screening for sports injuries. The stages carried out in this research include; a) Analysis; b) Planning and design; c) Development; d) Application; e) Evaluation.

## **4 Data collection**

The population in this study were athletes and nonathletes. The sampling technique was carried out using a simple random sampling technique based on the needs of researchers in the field.

In general, the principles of handling and rehabilitation of knee injuries are divided into 3 goals, namely;

1. To achieve a normal and pain-free knee joint range of motion,
2. To achieve recovery of quadriceps and hamstrings muscle strength,
3. To achieve the normal proprioceptive function of the knee joint.

The duration of each target depends on the structure and onset of injury.

In conservative management, evaluation of individual risk factors should be carried out. The goals that must be achieved are reducing inflammation, maintaining joint range of motion, increasing and maintaining the muscles around the knee in terms of endurance and strength, getting normal gait, achieving knee proprioception as well as possible and keeping the body active.

The prototype is designed with features including:

- a. Name
  - b. Athletes/non athletes who will be scheduled for sports injury massage treatment
  - c. Activity history and chronology of injury
- with the initial design view

#### 4. Results and discussions

the results of the first step of development research make the application display design. After being designed, it makes the existing menu display for the screening process and concludes that the injury suffered can be treated with massage or not. Applications that have been installed on the Playstore have been tested on a small scale and on a large scale. After being designed, it makes the existing menu display for the screening process and concludes that the injury suffered can be treated with massage or not. Applications that have been installed on the Playstore have been tested on a small scale and on a large scale

the results of small-scale trials there are evaluations from media expert validators, the evaluations given are in the form of applications that are less attractive in color display so that they are corrected for color display

for user satisfaction, getting a response of 80% from users on a small scale is reinforced by giving a star rating in the playstore.

Tabel 1. User Satisfication

<b>Linguistic expressions</b>	<b>5 levels of satisfaction</b>	<b>7 levels of satisfaction</b>
<b>Extremely Unsatisfied</b>	-	1
<b>Very Unsatisfied</b>	1	2
<b>Unsatisfied</b>	2	3
<b>Neutral</b>	3	4
<b>Satisfied</b>	4	5

Tabel 2. Categories

<b>No.</b>	<b>Level of Needed</b>	<b>Scores (%)</b>
<b>1</b>	<b>Very Unimportant</b>	<b>&lt; 20%</b>
<b>2</b>	<b>Not Important</b>	<b>21 % - 40 %</b>
<b>3</b>	<b>Doubt</b>	<b>41 % - 60%</b>
<b>4</b>	<b>Important</b>	<b>61% - 80%</b>
<b>5</b>	<b>Very Important</b>	<b>81% - 100%</b>

(Ampa, 2013)

After evaluating from the small-scale trial stage, large-scale trials were carried out and the results of user satisfaction increased to 82%, meaning that the applications made were acceptable for athletes and non-athletes alike.

From the data used, it was found that the threshold value was inappropriate for 1 item in the questionnaire which meant "good for use". This is done by reducing the choice of answers. the optimal scores in the response categories 2,3, and 4 are combined into 1 category. These data were also subjected to random threshold tests resulting in a 3-step scale being used in the remaining analyses. the same thing was done for the other 14 items.

There was no significant DIF for the athlete or non-athlete categories. The demographic description of the respondents includes the intervention group, age group or gender. For the entire data, 16 of the remaining 91 relationships failed to meet the relative value threshold ( $r$ ) of 0.14. The three components examined clearly indicate that each individual experiences negative experiences, positive experiences, and lifestyle consequences and the use of application solutions. The results of the t test indicate that as many as 20 out of 112 respondents or 19.9% are outside the desired estimate, namely -1.96 to 1.96.

The narrowed selection of responses from 2,3,4 provides three categories. after eliminating the two items that do not fit according to the scale used, the residuals are recalculated and get points close to the recommended estimate of + 2.5. these results did not differentiate the function of the items between the intervention group, age group or gender. The separation index obtained was 0.79. these results indicate that the scale's ability to differentiate people's leniency is acceptable for groups but not applicable to individual categories. In addition, some of the items show local dependability and three fundamental dimensions emerge: negative experiences, positive experiences, and lifestyle consequences of using an application solution..

## 5. Conclusions

In times where apps and digital solutions are given more attention, the application Satisfaction Questionnaire provides a new possibility to measure user satisfaction to ensure usability and improve development of new apps. Our study is one of only a few cases where application has been used to evaluate the usability of such an instrument. There is, though, a need for further development of the application Satisfaction Questionnaire, including the addition of more items

and consideration of further response options. The application Satisfaction Questionnaire should also be evaluated in a larger sample and with other apps and in other contexts.

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# How Social Media Used to Attract Participants in Sport Event? A Case Study of Kudus Futsal Championship's Marketing Strategy

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**Abstract.** Social media, nowadays, is widely used as a marketing medium with various advantages. However, how big the advantages of social media as a marketing medium to attract participant to join in sport events needs to be studied more deeply. Moreover, the Kudus Futsal Championship, a new sport event conducted for the second time, now has various reviews and feedback from the community. Through this research, the new sports event committee will be able to understand how important using social media to build their product image. This quantitative research using a survey method with a modified Likert Scale has variables such as communication of committee and social media users, communication between social media users, brand equity, and brand attitude. With the population from the Kudus Futsal Championship's participants and using purposive sampling which has requirements such as being willing to be a respondent and participant who registers the team, there were 31 respondents who filled out the questionnaire. Result showed that social media had an effect of 52.1% on attracting community to join in sport events. This is caused by communication factor between the committee and community through social media and brand attitude that focuses on how the community evaluates a brand. Based on these results, it can be concluded that the committee must maximize social media as a communication tool to introduce their product, namely sport events. In addition, through social media as well, the committee must also create a good image of the sport event, including good reviews.

**Keywords:** Sports Management, Sport Event, Sport Marketing, Social Media, Futsal.

## 1 Introduction

Social media is currently one of the trending mediums for all ages, old, young and even children. There are several active social media used by the public, such as YouTube which ranks first with a usage percentage of 43%, in second place Facebook with a usage percentage of 41%, then Whatsapp with a usage percentage of 40% [1]. Based on other studies, it can be seen that female social media users are the largest with a total percentage of 56%, while for

male sex it is 44%, where they are in the age range between 21-23 years which is 54%, then the second position by 35% is in the age range of 18-20 years. While the age range of 24-26 years is only 11% [2]. Social media is widely used for daily purposes because of the various benefits obtained from social media, such as a place to interact, work together, share, communicate with other users so as to form virtual social bonds [3] [4]. In addition to these benefits, social media also provides benefits in disseminating information from an activity. One of the activities that require social media assistance is sporting events.

Sports events are a place to show abilities and positive activities carried out by students, students, to the general public, of course requiring a good means of disseminating information, one of the media that can be used is social media. Kudus as a place for one of the badminton clubs that has produced many national athletes, namely PB Djarum, has held many sporting events which were later used as an annual event. Not only badminton, other sports such as futsal are also very popular in running annual events.

From the various events held, there is one championship, namely the Kudus Futsal Championship 2020, which is an annual futsal event that has been held for three years by students of the Department of Physical Education, Universitas Negeri Semarang. This event is included as a successful event if it is seen from the number of participants who always meet the target and the audience that reaches thousands of people. This event, which is held for high school/vocational/MA student participants, always uses social media as part of their promotional media. As expressed by Ettania Agustina as the Committee for the Kudus Futsal Championship 2020 that the promotions carried out mostly use social media, be it Instagram or Whatsapp, because the costs are cheap and can reach many people. This is also supported by a statement submitted by Catur as the Chair of the Regency Futsal Association (AFK) in Kudus Regency who said that social media had a very large influence in disseminating information about an event. This is what makes social media widely used as a place of promotion in various sports championships.

Promotion as an important part of a sporting event is a process and effort in marketing its products or services. This can be done by disseminating information and providing encouragement to potential consumers which aims to influence consumer behavior and actions so that they want to buy the products being sold. In terms of promotion, [5] stated that social media can be used as a means of promotion and marketing to increase participants' interest in participating in an activity. This is due to the ability of social media to provide added value and affect brand equity like an advertisement. However, the extent to which promotion through social media has an impact on organizing sporting events, particularly in attracting participants, in Kudus Regency needs to be discussed in more depth. Through this research, it can be a reference for event organizers when they will carry out an event, whether it is a social, cultural, or sport program in order to promote it easily, quickly, effectively through social media so that it can attract as many participants as possible.

### **1.1 Objectives**

Based on the background that has been described previously, it can be seen that the purpose of this study is to identify how media social used to affect participants' decisions to take part in the Kudus Futsal Championship Series 2020.

## 2 Literature Review

### 2.1 Marketing Strategy

As an activity that must be carried out by a company in maximizing sales and getting as much profit as possible, marketing is a series of various processes of communicating a product and conveying it to consumers. This action aims to create a relationship with consumers so that sales can increase. In marketing, there is the term marketing mix which is an important part for successful sales. The marketing mix consists of four marketing components, including:

#### Product [6]

Rahmawati (2016) explains that the product is a variety of things that are offered to the market..

#### Price

In marketing, the price is the value of the product offered which is then accepted by the public by exchanging money to get it [7].

#### Place

Place in marketing is affected by accessibility, location, channel type, exposure, and transportation, because the product must be available wherever and whenever consumers need it [8].

#### Promotion

This marketing component helps manufacturers to increase consumer awareness of their products [9]

In its application, marketing also requires a strategy to maximize the efforts made. Strategy is a method taken to achieve the objectives of the implementation of an activity [10], while marketing strategy is an action taken by the company to obtain maximum sales results by establishing policies and rules [11]. To implement a good marketing, the seller must understand the scope in the field of marketing, such as market selection, product planning, pricing, distribution systems, and marketing communications [10].

### 2.2 Social media

Social media is a media that accommodates collaboration between users who produce content (user generated content) [4]. There are several types of social media that appear very diverse, ranging from facebook, twitter, instagram, foursquare, path, and so on. Each of these types of social media has different and unique content. However, if we understand deeply, all of them have the same function, namely that we are facilitated to communicate and socialize with each other in cyberspace without being constrained by space and time.

Social media expansion has also penetrated every level of Indonesian society. For Indonesia alone, according to the Ministry of Communication and Information, as many as 63 million people in Indonesia are internet users and 95 percent of them are users of social networking sites. Indonesia is ranked 4th as the country with the largest number of Facebook users in the world with 65 million active users and 5th as the country with the most Twitter users in the



world, which is 19.5 million active users. Besides Facebook and Twitter, Indonesian people also use blogs, Tumblr, Path, Instagram, Line, and other social networks. Meanwhile, there are various types of social media into 6 (six) types, namely:

Collaborative Projects, namely a social media that can create content and in its manufacture can be accessed by a global audience. Categories included in Collaborative Projects in social media, namely WIKI or Wikipedia which are now very popular in various countries

Blogs and Microblogs, namely applications that can help users to write in a detailed and sequential manner about news, opinions, experiences, or daily activities, either in the form of text, images, videos, or a combination of the three.

Content Communities, which is an application that aims to share with someone either directly or indirectly, where in this application the user or users can share videos, or photos. Social media can be used to publish a form of positive activity.

Social Networking Sites or Social Networking Sites, which are sites that can help a person or internet user create a profile and connect it with other users. Social networking sites allow users to upload personal things such as photos, videos, collections of writings, and interact personally with other users through private messages that can only be accessed and managed by the account owner.

Virtual Game Worlds, namely multiplayer games where hundreds of players can simultaneously be supported. This social media is very supportive in terms of attracting the attention of consumers to know more with striking graphic designs and interesting color games, so that it feels more informative and interactive.

Virtual Social Worlds, namely applications that simulate real life on the internet. This application allows users to interact in a three-dimensional platform using avatars that are similar to real life.

### **3 Methods**

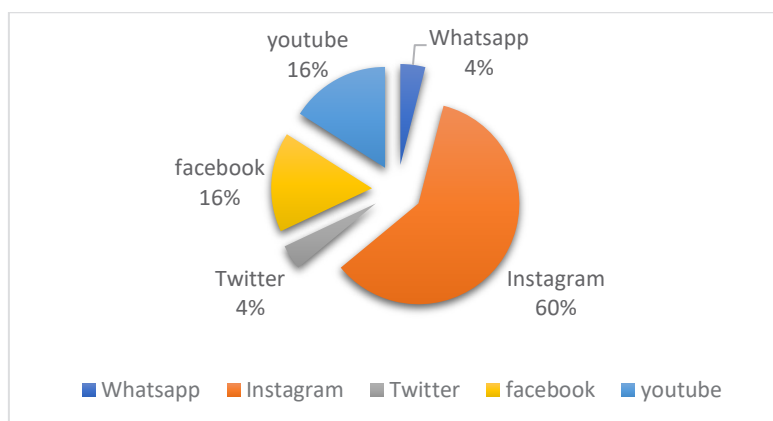
By using a survey method, this quantitative descriptive research collects data using a questionnaire distributed to the participants who have participated in the Kudus Futsal Championship. The questionnaire was prepared using a Likert scale with variables consisting of committee communication with social media users, communication between social media users, brand equity, brand attitude, and the decision to take part in the Kudus Futsal Championship. Furthermore, as many as 31 respondents who have been selected with a sampling technique, namely purposive sampling. The selected respondents are respondents who have met the criteria, including 1) Declaring that they are willing to be respondents, 2) Participants of the Kudus Futsal Championship, 3) Person in Charge who registers. After the data was obtained, the data were analyzed using multiple linear regression with the help of SPSS.

## 4 Data collection

Before conducting the research, the researcher had conducted preliminary research as a stage to test the validity of the questionnaire using expert judgment. After the questionnaire was declared valid, the researchers conducted research on participants who had registered at the Kudus Futsal Championship. Participants were asked to fill in the data using a google form and when the respondent filled out the questionnaire, the researcher accompanied the respondent. Collecting data using a questionnaire with a modified Likert scale 1 to 4 which has four alternative answers, namely, Strongly Agree, Agree, Disagree, and Strongly Disagree.

## 5 Results and discussion

After the data collection process, it is known that respondents who have an age range of 15-29 years have differences in the use of social media.



**Fig. 1.** Social Media used by the Respondent

Based on the results of data analysis using multiple linear regression from the ANOVA test, it was found that social media had an influence on decisions to participate in activities, the results were shown through the ANOVA test where the significance was below 0.05.

**Table 1.** Mean

		ANOVA <sup>a</sup>				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.762	4	.690	7.081	.001 <sup>b</sup>
	Residual	2.535	26	.098		
	Total	5.297	30			

a. Dependent Variable: Y

b. Predictors: (Constant), X4, X1, X3, X2

The results of the ANOVA test show that there is an influence of the independent variable on the dependent variable because the results show that the significance value is <0.05 or has an

F value > F table, so there is an influence from social media on participants' decisions to participate in the event.

When viewed from table 2, it can be seen that R Square has a value of 0.521 so it can be stated that social media has an influence of 52.1%, while the rest are factors that are not measured in this study.

Table 2.

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.722 <sup>a</sup>	.521	.448	.312
a. Predictors: (Constant), X4, X1, X3, X2				

One of the impacts of the development of information technology is the increasing popularity of social media which is marked by the increasing number of users. In Indonesia alone in 2017 around 106 million or 40% of the total Indonesian population are active users of social media. From the results of research that has been carried out by researchers, it is stated that there are only a few variables that have a significant effect on purchasing decisions. The effect of social media on buying interest is 0.001. This result shows that social media variables have a significant effect on consumer decisions to participate as participants. The results of this study are reinforced by previous research conducted by Putri (2016) that social media has a significant direct effect on consumer buying interest [12]. In addition, social media is widely used to find information before deciding to purchase a product. This facilitates and improves the flow of information by making it easy to disseminate information to consumers so that consumers can make informed purchasing decisions.

In addition, it can be seen from the demographics above that social media Instagram is the most widely used social media. This is because Instagram has its own advantages to attract participants who are in the 15-29 year age range. Where the advantages of Instagram social media include having attractive and easily accessible features so that it can support the information to be conveyed, especially those that focus on the use of images and videos [13]. Instagram also has a new feature that is currently very popular, namely Instagram Stories. This feature is a brief feature that can be used to create a preview of the product to be sold. So, indirectly, Instagram story users can promote what they record using a short duration so that consumers can easily see our products. In addition, social media also has advantages over marketing because the process of buying goods or services can be done via the internet or online buying and selling services without having to meet face-to-face with the seller or buyer directly. For online purchase process, the offer is also not difficult, simply by selecting the image available on the Instagram account, then the buyer just has to order it, and pay by transfer. This is the attraction or influence of Instagram.

Social media can be used as a promotional medium because with the help of the internet it can allow an individual to interact with other individuals without any distance restrictions. According to Oktaviani and Fatchiya (2019), promotion through Instagram is said to be effective because the characteristics of Instagram (completeness of information, frequency of messages, clarity of information, and attractiveness of photos) can affect the effectiveness of

promotions [14]. Promotion is one of the determining factors for the success of a marketing program to provide information about the existence of a product. Social media is currently one of the tools widely used by sellers in disseminating information about a product to consumers so that using social media as a promotional medium can provide promising things in promotion. However, the problem is how to make social media known and have many followers so that the published content can be seen and accepted by many people. In addition to changing human behavior, in communicating, the internet also provides significant changes in marketing efforts. However, the research above also shows that social media only has an influence of 52.1%. Therefore, there are other factors that also influence consumer behavior in purchasing decisions. Consumer buying behavior is influenced by cultural, social, personal, and psychological factors.

## 6 Conclusion

Based on the analysis that has been done, social media has a significant influence on the participant's decision to take part in the Kudus Futsal Championship 2020 activity with a percentage showing 52.1% this happens because promotion through social media and the internet can allow an individual to interact with other individuals without any distance limitation. In addition, promotion through Instagram is said to be effective because the characteristics of Instagram (completeness of information, frequency of messages, clarity of information, and attractiveness of photos) can affect the effectiveness of promotions so that social media is one of the tools widely used by sellers in disseminating information about a product to consumers.

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# Edu-Ecowisata as A Media of Character Education through Sports Tourism

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**Abstract.** The development and management of sports tourism destinations requires cooperation between parties from the government or from the private sector. A clear and structured pattern of development and grand design of tourism development will be able to build and advance the tourism industry, especially sports tourism, which will have an impact on various groups such as domestic/foreign tourists, athletes, tour managers/guides, the surrounding community and of course will affect assets. What is meant by ecotourism in Indonesian is translated into "ecotourism" which is environmentally friendly tourism which is defined as activities related to nature, when tourists are invited to see nature up close and enjoy the authenticity of nature and the environment, so that they are moved to love nature.

**Keywords:** ecowisata, media, education, sport, tourism.

## 1 Introduction

Children are the hope of a country or nation, which in time will become a substitute or successor to the struggle in leading a country. Human resources that have been properly guarded from an early age by a country will become qualified human resources in maintaining the sovereignty and customs of a country. This role cannot be separated from the realm of education to the realm of society which has an important and major role in maintaining human resources. A great nation must have culture and customs inherent in a country, this is what makes this country continue to develop without leaving the culture of its predecessors. The Indonesian nation has a diversity of customs that cannot be separated from the character of a nation, this character strengthens the Indonesian state. become a country that is respected and respected by many other countries. Character is a reflection of a nation, a great nation certainly cannot be separated from a strong, decisive and responsible character, this character exists in every human being, both individually and in groups. People who are divided into several groups are known to have different characteristics, character and character, the character of adults will certainly be different from children and vice versa.

The development and management of sports tourism destinations requires cooperation between parties from the government or from the private sector. A clear and structured pattern of development and grand design of tourism development will be able to build and advance the tourism industry, especially sports tourism, which will have an impact on various groups such as domestic/foreign tourists, athletes, tour managers/guides, the surrounding community

and of course will affect assets. area. The tourism industry theoretically has a very large contribution in creating a multiplier effect for the regions and related communities (Sunaryo, 2013:37). Sectors that affect this industry include tax revenues, industry, hotels, restaurants (culinary), trade, construction/building, transportation, communications, banks (money changers, tour operations), agriculture and animal husbandry. Sports tourism will have an impact not only on the tourism industry, but will also have an impact on the enthusiasm of regional athletes to carry out training or compete in regional level championships or other higher levels, so that local governments have a role to be able to organize regional sports competitions. The word tourism literally in the dictionary means “a journey where, the perpetrator returns to his starting place; circular travel undertaken for business, pleasure, or educational purposes in which various places are visited and usually using a planned itinerary” Murphy (1985:4-5) in Pitana and Gayatri (2005:43). This limitation has a very wide space, because various motivations are included in it, so it is difficult to measure it. Looking at and re-reading the issues in the field, that the meeting of the two ministers in Indonesia, namely the Minister of Pankraf and Menpora in overcoming and improving the people's economy after the pandemic era through sport tourism, encouraged servants to help the program. Through eco-edutourism as a medium for character education for children through sports tourism programs in their respective areas. In addition to the character, this writer will also create a data collection program for children in the selection of sports from an early age who will then be given knowledge about sports that can be used as skills and jobs for the future through sports tourism (sport tourism) with certainty according to the conditions and maps in their respective areas. respectively. Sports tourism will be expected to have an impact on villages or areas that have potential, so that they can contribute and generate income for the community. Skills possessed through sports-based knowledge that are developed from an early age will provide quality human resources in the future. Skills that are processed properly by qualified human resources from an early age are the targets of dedication. Human resources that are managed from an early age through this service not only hone and explore potential but are accompanied by developing and introducing deeper self-character through sports based on ecotourism education, because the potential in sports-based tourism contains many characters such as discipline, responsible and interact well.

The potential of this village in developing sports tourism is very supportive, by having water sources, hills and roads that have not been touched by asphalt and cast. This condition is believed to be able to make this village develop with the existence of a sports tourism village. The packaging in this program certainly involves many parties and good minds and strong energy, to make a village that has the hope of becoming a tourist village of national standard. Seeing the potential that exists today, there are many things that can be promoted in increasing the potential of this sports tourism village. The development of tourism based on sports tourism is one of the means of education and character education. One of the tourism activities that is widely considered by several researchers is the development of ecotourism (ecotourism) as a nature tourism activity based on environmental education. According to Nugroho (2015) the principle of ecotourism is to minimize impacts, foster environmental and cultural awareness, provide positive experiences for tourists (visitors) and recipients (hosts), provide benefits and empower local communities. Environmentally-based Edu-Ecotourism is also a solution to children's understanding through environmental education as mandated in the Joint Decree of the Minister of the Environment and the Minister of National Education No. Kep.07/MenLH/06/2005 and No. 05/VI/KB/2005 concerning the Guidance and

Development of Environmental Education. Several previous studies, such as the study of Berlia (2008), the integration of environmental education was carried out through an approach. Environmental-based character education (Afandi, 2013). While the purpose of environmental education is more emphasized on instilling the right perspective and attitude towards nature, so that it is expected to have a high concern for the environment (Keraf 2014). Thus it is clear that edu-ecotourism in the era of environmentally sound development is an alternative tourism development mission. Edu-ecotourism in principle not only sells natural destinations, but also sells local science and philosophy, or ecosystem and socio-system philosophy. To reduce community pressure on forests, communities around forests need to be empowered in tourism activities. The potential of Human Resources is one of the factors that influence the good and progress of a village with various programs that have been provided and designed. Human Resources who have a sense of belonging and occupy the village certainly want to elevate and advance the village. The youths who have strong and intelligent characters will become the village leaders. Strong and great thinking is one of the impetus in leading the village to increase village capacity and regional income through sports tourism programs, children both boys and girls can learn and have character through sports-based edu-ecotourism. The concept of ecotourism (ecotourism) that emerged since the 1980s has been stated in Permendagri No. 33 of 2009. Its foundation is the development of sustainable tourism to support environmental conservation (nature and culture) and increase community participation in management, thereby providing economic benefits to the community and local government. Ecotourism is not just a concept of traveling in the natural environment but also focuses on observing and understanding nature and culture, supporting conservation, and prioritizing the facilities and services provided by the local community. Ecotourism is a form of tourism that is closely related to conservation principles. Even in the strategy of developing ecotourism, it also uses a conservation strategy. Thus, ecotourism is very appropriate and efficient in maintaining the integrity and authenticity of ecosystems in unspoiled areas. Even with ecotourism, nature conservation can be improved because of the pressure and demands of eco-travelers. Edu-ecotourism is a development of ecotourism which was first introduced by the organization The Ecotourism Society in 1990, which is a form of responsible tourism with attention to conservation. Ecotourism itself basically guarantees environmental sustainability with almost the same intent as conservation, namely: maintaining the ongoing ecological processes that continue to support life, protect biodiversity and ensure the sustainability and use of species and their ecosystems (Alamsyah, 2013). As for edu-ecotourism itself, in essence there is a factor where the intensity of cultural introduction and learning from an early age begins to occur, through learning designs that are deliberately presented according to environmental materials in the format of tourist objects. This was developed because so far the concept of edu-ecotourism has only stopped at environmental conservation campaign activities. What is meant by ecotourism in Indonesian is translated into "ecotourism" which is environmentally friendly tourism which is defined as activities related to nature, when tourists are invited to see nature up close and enjoy the authenticity of nature and the environment, so that they are moved to love nature. As Nandi (2013:4) in his research concludes that being near nature, makes us aware of the greatness of God the creator of the universe, believes that there is no single creature that can resemble and create something like what God created. The pattern of utilization of natural resources by the community and the government has not been able to fully support sustainability. The increasing awareness of various parties to the environment and issues regarding environmentally sound development have contributed to the



view of the importance of the principles of sustainable tourism. The principle of tourism is expected to maintain environmental quality, maintain culture, improve the quality of education, empower local communities, and provide economic benefits to local communities, regions and government.

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# Kinematics Analysis of Volleyball Open Spike in the Elite Athletes

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**Abstract.** The aim of this study was to analyse the Open Spike motion in volleyball in the implementation of elite athletes perform in Semarang. This study used analytical research with One Short Case Design. This study was conducted at the Semarang volleyball association with 11 participants and all sample were agreed to participated in this study with full fill the inform consent. Study analysis using a video analysis software Dartfish version 8 and then processed to find kinematics data. This study found that Open Spike Volleyball in Semarang elite athletes is in a good category. The data showed that the average of the open spike time was 1.01 second and impact was 0.57 second. These results stated that open spike in this study was in the category quite appropriate the biomechanics aspect. The limitation in this study was only measure the kinematics data, and for future research, hopefully future research measure kinetics data on the arm power and leg power to the open spike.

**Keywords:** motion analysis, kinetics, open spike, volleyball

## 1 Introduction

Volleyball is a team game using a large ball and played by two teams facing each other and each team contain six people [1]. Volleyball is one of the sports that are known by all levels of society to the world, the reason was volleyball has been competed a lot [2]. The Indonesian men's national volleyball team in February 2020 was ranked 70th in the FIVB World Ranking. Therefore, volleyball athlete in Indonesia must also develop skills in volleyball games in order to provide better performance. Palao et al., (2004) stated that competing abilities or levels affect the appearance of the displayed skills [3]. The higher level of the athletes or a team that will compete, it will have an impact on the level of play and the technical appearance will be displayed by the athlete in the game. If athletes do not dominate the good technique, it will allow technical errors which are certainly very determined to the team. One way to improve achievement it is to always practice with the right technique or movement and have maximum results in a volleyball game. Thus, mastery of basic technique must be optimized.

There are several basic techniques in volleyball game, according to Sujarwo (2009) volleyball has at least 6 basic techniques that must be mastered by everyone who will play it [4]. The 6

basic techniques in the volleyball game are: serve, forearm pass, overhand pass, smash, block, and sliding. Meanwhile, according to Gintungan & Kembangbahu, (2016) the basic techniques consist of passing, service, block, and smash. Novia et al., (2020) explained that volleyball consist of seven basic game phases (serve, pass, set, spike, attack coverage, block and field defence) [5][6]. Some of basic techniques have been mentioned that when team in volleyball wants to win they have to collect as many points as possible, where volleyball players need to master attacking techniques and strategies to win. Dearing, (2019) convey attacking is pleasant and a good place to start because almost everyone likes the idea of floating over the net and slamming the ball into the field [7]. Similarly, Huang and Liu, (2000) said spike volleyball as one of the most important offensive weapons in competition. The technique in attacking is usually called a smash or spike to carry out an attack there are 3 movements that must be done, among others running, jumping, and hovering. The aim of the attack is to hit and reach the ball while it is in the air at high speed to kill the ball and get points in the game. The spike technique has several kinds, namely Open Spike, Semi Spike, Quick Spike, and Back Attack Spike Bujang et al., (2019) [8]. Spike movement is a very dangerous weapon and very useful in volleyball games to make it difficult for opponents to overcome the movement of the ball. Besides that, there are three spikes; high spike, slow spike and hard spike. The most famous spike movement is open spike because very complicated so a lot of practice is needed in the long term.

Based on Serrien et al., (2016) the Open Spike Volleyball technique divided into several stages that must be considered, namely preparation, prefix, repulsion, stroke, and landing [9]. According to Santoso et al., (2018) Open Spike carried out when the position of the ball scores high enough that is more than 3 meters and the ball is in a calm state [10]. The open spike movement requires a lot of energy and can make players tired quickly, therefore the physical condition of volleyball players must always be in the best performance because it will affect the Open Spike Movement. Rahayu et al., (2018) conveyed several factors that can affect the Open Spike movement, including prefixes, repulsions, snap, and landings [11]. Thus, the attacking movement is very dominant or mostly done in volleyball games rather than defensive movements. In observations on volleyball elite athletes in Semarang that 80% of athletes are feel less appropriate in performing Open Spike movement, they are not suitable for doing Open Spike movements that are carried out are felt incomplete because the movements are done carelessly or they still don't understand the Open Spike movement, the athlete should be able to do correctly and be accompanied by the Open Spike technique in the optimal movement perform.

### **1.1 Objectives**

Based on the research that has been done and from observation data that the Semarang volleyball elite athletes have not been optimal in carrying out the Open Spike movement so it is very necessary to get the targeted achievement so they must mastering attacks, and one of that is Open Spike. The purpose of this study was to analyse the Open Spike motion of volleyball in the implementation of achievement development in Volleyball athletes in Semarang. Therefore, the authors are interested in conducting research related to Open Spike Volleyball Motion Analysis in the Implementation of Achievement Development in Volleyball Athletes in Semarang. And hope that this research can be useful for volleyball athletes and for coaches so that they can be used as evaluations.

## **2 Literature review**

In a previous study entitled Analysis of Open Smash Technique in Volleyball Coaching College Students by Putra et al., (2021) which was published on June 22, 2021 with result based on the result of analysis and discussion that the average open smash technique at the initial stage of taking where the distance from the net is 3.47 m, with a 3-step approach, arm swing angle 87, leg angle 149, elbow angle 80, back angle, jump height 53 cm, at a distance of ball and hand which is about 35 cm high and lands on 2 feet [12]. With an evaluation note that trainers can develop Open Spike techniques using kinesiology applications to be able to analyse Open Spike movements, trainers can provide practice based on biomechanical theory and for researchers to develop and continue aspect that influence Open Spike movements. Previous researcher who discussed the Open Spike ability were also conveyed by Wagner et al., (2009) where the research was to determine the effect of upper and lower extremities on the Open Spike Jump movement in volleyball [13]. The result obtained are that the importance of optimizing the correct technical approach to get maximum results at jump height in Open Spike jump performance is very important.

## **3 Methods**

This study using analytical research with One Short Case Design. This study was conducted at the Badminton Association City Council of PBVSI Semarang City. This study used a motion analyses instrument to find out every detail of the kinematic data of volleyball athletes in Semarang City. The population in this study amounted 11 athletes with the sample in this study being male volleyball elite athletes from Semarang who made preparations for the 2022 Province Sports Event (PORPROV). All participants were in good health in accordance with the health protocol Covid-19 and according to the Ethical Clearance at KPEK and also not suffering from any injuries.

## **4 Data collection**

The sampling technique in this study used a total sampling technique that all athlete actively participated in this study. All athletes in this study were asked to full fill the identity and informed consent forms in requirement to participate in this study. Data collection in this study using video recordings with analysis using Dartfis series 8.0. The kinematic data used in the study consisted of time, speed, distance, and body segment angle. The data is then presented with previous research data to obtain new findings and recommendations for the research conducted.

## **5 Results and discussion**

The result of this study focuses on kinematic data in the Open Spike movement technique in volleyball. The data includes speed, distance, time, and body segment angles. The description

of the research in the analysis of open spike movements in volleyball elite athletes in Semarang is presented in table 1 below. The result of the research data obtained are as follows:

**Table 1.** Athletes Personal Data

n = 11	Mean $\pm$ SD	Minimum	Maximum
Age (Year)	18,9 $\pm$ 2,662	12	22
Height (Meter)	1,73 $\pm$ 0,063	1,618	1,815
Weight (Kilogram)	68 $\pm$ 8,852	49	80
BMI (Kg/m <sup>2</sup> )	23 $\pm$ 2,386	18	26

The study data was obtained with a sample of 11 volleyball athletes in the Semarang. The data description of the average age of the sample is 18,9  $\pm$  2,662 years, with an average height of 1,73  $\pm$  0,063 m, an average of weight of 69  $\pm$  8,852 kg, and an average BMI (Body Mass Index) of 23  $\pm$  2,386 kg/m<sup>2</sup>. The data results, 11 samples of volleyball athletes in Semarang are shown in table 1 with minimum age of 12 years and a maximum age of 22 years. The minimum height is 1,618 meters and the maximum is 1,815 meters. Minimum weight 49 kg and maximum 80 kg. and BMI with a minimum of 18 kg/m<sup>2</sup> and maximum 26 kg/m<sup>2</sup>.

The researcher analysed kinematic data which consisted of stroke speed, time, jump height, leg flexion angle, trunk extension angle, arm rotation angle, and elbow flexion angle. Kinematic data is presented in table 2.

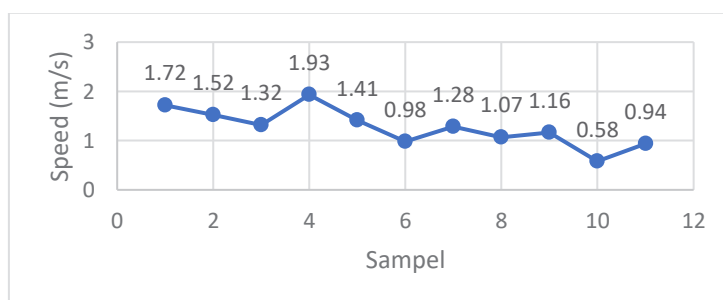
**Table 2.** Kinematics result of Open Spike Volleyball Technique

Indicators	Mean $\pm$ SD	Min	Max
Open Spike Speed (m/s)	1,26 $\pm$ 0,380	0,57	1,92
Open Spike Time (s)	1,98 $\pm$ 0,138	1,78	2,32
Distance of Repulsion to Landing (m)	2,49 $\pm$ 0,750	1,15	3,74
<b>Initial Phase</b>			
Leg Flexion Angle (°)	129,2 $\pm$ 39,667	26	163,9
Angle of Torso Extension (°)	164,7 $\pm$ 9,225	152,3	179,2
Rejection to Landing Distance (°)	25,8 $\pm$ 20,563	3	75,1
<b>Repulsion Phase</b>			
Repulsion Time (s)	1,01 $\pm$ 0,134	0,86	1,28
Leg Flexion Angle (°)	103,5 $\pm$ 7467	89,2	116,8
Angle of Torso Extension (°)	157,7 $\pm$ 11,801	133,5	174,5
Arm Rotation Angle (°)	40,5 $\pm$ 24,960	7	77,3
Elbow Flexion Angle (°)	153 $\pm$ 18,027	128,1	177,4
<b>Impact Phase</b>			
Impact Time (s)	0,57 $\pm$ 0,028	0,5	0,62
Jump Height (m)	4,8 $\pm$ 1,510	3,54	7,12
Leg Extension Angle (°)	147,8 $\pm$ 28,695	99,6	179,7
Angle of Torso Extension (°)	167,1 $\pm$ 11,92	144	178,8
Arm Rotation Angle (°)	160,3 $\pm$ 14,789	127,4	178,4
Elbow Flexion Angle (°)	166,4 $\pm$ 6,178	155,4	178,9

Landing Phase			
Landing Time (s)	0,39 ± 0,075	0,3	0,56
Leg Flexion Angle (°)	141,3 ± 28,531	89,2	178,8
Angle of Torso Extension (°)	159,8 ± 14,073	129	176,4
Arm Rotation Angle (°)	47,3 ± 14,073	17,1	139,5
Elbow Flexion Angle (°)	179,9 ± 36,354	67	179,9

Table 2 describes the Open Spike technique in study divided into several phases consisting of; 1) initial phase, 2) repulsion phase, 3) impact phase and 4) landing phase. The data from the kinematic analysis of the Open Spike technique shows that the average Open Spike speed is  $1,26 \pm 0,380$  m/s, the Open Spike circuit time is  $1,98 \pm 0,138$  s, and the distance from repulsion to landing is  $2,49 \pm 0,750$  m. the Open Spike technique performed in the initial phase showed a leg flexion angle of  $129,2 \pm 39,667^\circ$ , an angle of torso extension of  $164,7 \pm 9,225^\circ$ , and an arm rotation angle of  $25,8 \pm 20,563^\circ$ . In the repulsion phase, the repulsion time is  $1,01 \pm 0,134$  second, the leg flexion angle is  $103,5 \pm 74,67^\circ$ , the trunk extension angle is  $157,7 \pm 11,801^\circ$ , the arm rotation angle is  $40,5 \pm 24,960^\circ$ , and the elbow flexion angle is  $153 \pm 18,027^\circ$ . In the impact phase, the impact time is  $0,57 \pm 0,028$  second, the jump height is  $4,8 \pm 1,510$  meter, the leg extension angle is  $147,8 \pm 28,695^\circ$ , and the elbow flexion angle is  $166,4 \pm 6,178^\circ$ . While in the landing phase, the landing time is  $0,39 \pm 0,075$  second, the trunk extension angle is  $141,3 \pm 28,531$ , the angle of torso extension is  $159,8 \pm 14,073^\circ$ , the arm rotation angle is  $47,3 \pm 34,867^\circ$ , and elbow flexion angle is  $179,9 \pm 36,354^\circ$ .

The Open Spike technique for volleyball inn Semarang has been measured based on the Open Spike indicator as described above, namely four phases including: 1) initial phase, 2) the repulsion phase, 3) the impact phase, and 4) the landing phase. The result of the kinematic data is presented in table 2 with the speed indicator presented in the following figure.

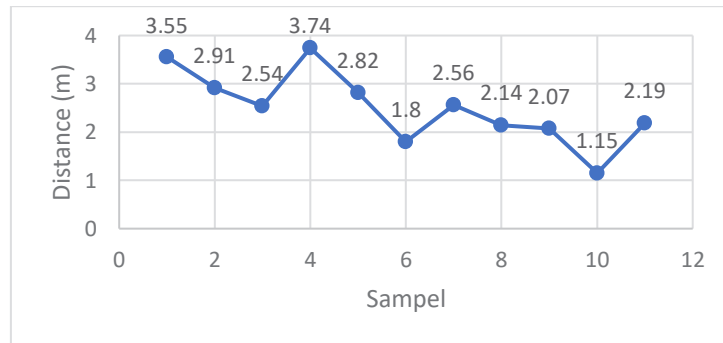


**Fig. 1.** Open Spike Data for Volleyball Elite Athletes

Figure 1 showed the result of the Open Spike speed Volleyball athletes in Semarang. The highest speed value is shown by sample 4 with a result of 1,93 m/s and the lowest velocity value is shown by sample 10 with a result of 0,58 m/s. the other result are shown in sample 1 with a yield of 1,72 m/s, sample 2 1,52 m/s, sample 3 1,32 m/s, sample 4 1,93 m/s, sample 5 1,41 m/s, sample 6 0,98 m/s, sample 7 1,28 m/s, sample 8 1,07 m/s, and then sample 9 with the result 0,58 m/s, and the last sample 11 0,94 m/s.

This study counts 2 steps before doing the repulsion. At the end there will be a change in speed to acceleration because the last step will be longer when doing repulsion. The final step

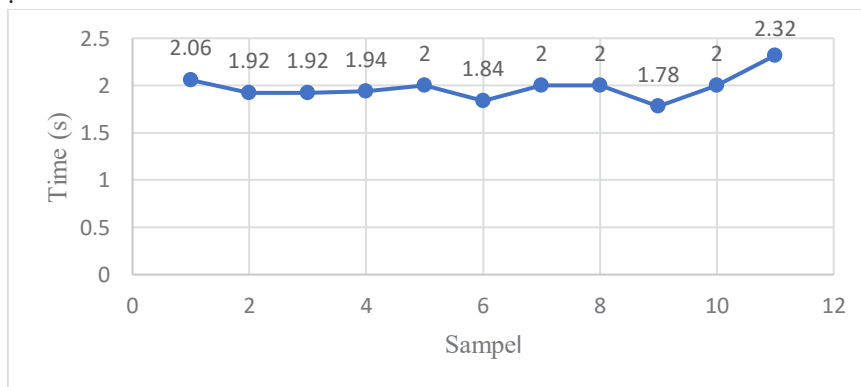
length in the study was not calculated, it was replaced by calculating the distance from the repulsion position to the landing position. To find out the distance from repulsion to landing, the author presents the distance from repulsion to landing in figure 4 below.



**Fig. 2.** Repulsion Distance Data to Landing

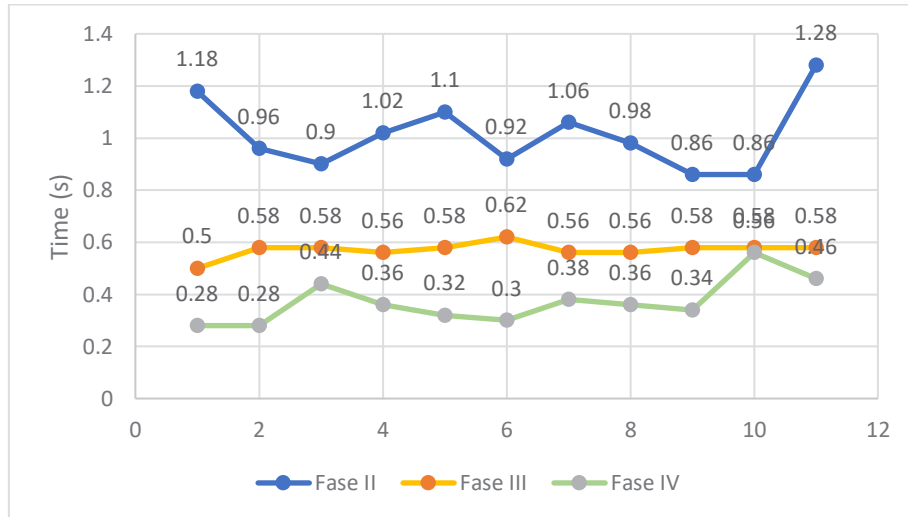
In this study there are the results of the shortest and farthest values, the shortest result on the distance of repulsion to landing is shown by sample 10 with a result of 1,15 m for the farthest distance of repulsion shown in sample 4 with a result 3,74. For all the result shown in figure 4 on sample 1 3,55 m, on sample 2 2,91 m, on sample 3 with the result of 2,54 m, sample 4 3,74 m, sample 5 2,82 m, sample 6 1,8 m, sample 7 2,56 m, sample 8 with the result of 2,14m, sample 9 2,07m, sample 10 1,5 m, sample 11 2,19 m. when performing a footstep in the initial phase, the long stride and the small angle of the torso help position the heel of the dominant foot further forward. This helps in efficient movement towards the repulsion phase. The results of this study showed that the angle of extension of the trunk of the body in the repulsion phase is  $157,7 \pm 11,801^\circ$ .

Researchers calculate the Open Spike time by grouping it into 4 based on stages, namely repulsion, impact, landing and series or overall time. In the initial phase, time is not counted because in that position only preparations are made to prepare for the initial movement, namely stepping. The Open Spike time series data for this study is presented in the image below :



**Fig. 3.** Time Data of Open Spike Volleyball Athletes in Semarang

Figure 3 shows the Open Spike circuit time with the results, sample 1 2,06 seconds, sample 2 1,92 seconds, sample 3 1,92 seconds, sample 4 1,94 seconds, sample 5 2,00 seconds, sample 6 1,84 seconds, sample 7 2,00 seconds, sample 8 2,00 seconds, sample 9 1,78 seconds, sample 10 2,00 seconds, and sample 11 with the result 2,32 seconds. The results of the time series get the largest and the smallest value, for the smallest value of 1,78 seconds obtained by sample 9 and for the largest result obtained by sample 11 which is 2.32 seconds. The result of the time data based on the Open Spike phase are presented in figure 6.



**Fig. 4.** Open Spike Time Data Based Phases of Semarang Volleyball Athletes

The distribution of the Open Spikes time in figure 4 is grouped based on the open Spike phase, namely repulsion phase, impact phase, and landing phase. The results of the time in the repulsion phase are: sample 1 with a time of 1.18 seconds, sample 2 0,96 seconds, sample 3 0,90 seconds, sample 4 with of 1.02 seconds, sample 5 with a time of 1.10 seconds, sample 6 0,92 seconds, sample 8 0,98 seconds, sample 9 and 10 0,86 seconds, and sample 11 with a time of 1,28 seconds. The Open Spike in impact phase results in sample 1 requiring 0,50 seconds, sample 2 0,58 seconds, sample 3 0,58 seconds, sample 4 0,56 seconds, sample 5 0,58 seconds, sample 6 0,62 seconds, sample 7 0,56 seconds, sample 8 0,56 seconds, sample 9 takes 0,58 seconds, sample 10 0,56 seconds, and sample 11 with a time of 0,46 seconds.

The repulsion phase is marked by the player doing a repulsion from the dominant foot position as a support and the knee forming a flexion angle. Dominant foot support when doing a push supported by good lower leg muscle strength will form a leg flexion angle that reproduces as well, so that the resulting jump will be higher. The results showed that the leg flexion angle in the repulsion phase was on average  $103,5 \pm 746,7^\circ$  with the dominant foot as the right foot support. The position of the legs that is not too wide during the push helps the athlete to transfer speed efficiently for jumping. The result of the segment angle in the repulsion phase, the angle of the trunk extension  $157,7 \pm 11,801^\circ$ . The rotation angle of the arm  $40,5 \pm 24,960^\circ$  and the elbow flexion angle of  $153 \pm 18,027^\circ$ . If the lower leg flexion angle is smaller, it can be influenced by lower leg muscle strength which will affect the jump height.



Previous research on the motion analysis of the volleyball spike by Serrien et al., (2016) explained that the analysis for men and women of elite junior volleyball players in spikes, namely offensive actions is very important [9]. Senior class players have a higher impact speed and jump height than juniors. For three-dimensional kinematic analysis of the pelvis, torso, shoulders, elbow angle and angular velocity, parametric mapping statistics were used. The initial step on the spike will have an impact on the force generated when taking off [10]. Previous research conducted by Kuhlmann et al., (2007) regarding aspects of Open Spike analysis in high-level competitions revealed that to achieve higher jump heights it seems useful to emphasize jumping technique training it is possible to perform faster vertical speeds during take-off with practice jump coordination [14]. Also related Zahálka et al., (2017) that explosive movements and vertical jumps are carried out during repulsion [15]. To be able to do an open spike, several determining factors are needed, namely: (1) preparatory steps or prefixes, (2) repulsion or jumps, (3) hitting the ball when the ball is in the air, (4) landing [16]. Open Spike volleyball games will not be able to do a counter-attack spike strongly and deliberately without being supported by the ability of the joints of the body, shoulders, legs, and arms [17]. Based on the statement above, it is necessary for players to always pay attention to the right techniques. Before doing an Open Spike, an athlete must find the right momentum to execute a pass into points. During the hovering position or before entering the impact phase, the dominant arm used to perform the Open Spike is focused on taking the prefix and preparing energy first, while the other hand aims at the ball positions at the arm rotation angle, the arm rotation angle in this study is  $160,3 \pm 14,789^\circ$ .

Regarding the speed of the ball on the arm through the momentum of the upper body it is not based on the strength in the shoulder joint but because of the coordinator between the arm and the upper body [18]. The result showed that the loss of leg extension in the impact phase was  $147,8 \pm 28,695^\circ$  with a trunk angle of  $167,1 \pm 11,92^\circ$ . The arm flexion angle by Pramantiara & Herdyanto, (2018) obtained 63 degrees, measured when the athlete is in the Open Spike position, where the arm flexion angle produces optimal power [19]. In contrast to this study, which formed a flexion angle based on when the subject's arm touched the impact ball with a magnitude of  $166,4 \pm 6,178$  degrees.

Knowledge of biomechanics in sports [20][21] can help improve performance and detect injuries as early as possible Pramantiara & Herdyanto, (2018). In addition, an understanding of the correctness of the motion of a technique [19] to achieve maximum results must be given to athletes. The researcher's recommendation is to be able to provide good footwork pattern exercises, namely with a single line step pattern. This will help athletes in producing maximum power. You can also train leg muscle power with the squat jump exercise method to increase jump power and timing in Open Spike.

## 6 Conclusion

The conclusion in this study found that the analysis of open spike volleyball motion in the volleyball elite athletes is in a good category with the open spike time was 1.01 second and impact was 0.57 second. These results stated that open spike in this study was in the category quite appropriate the biomechanics aspect. The limitation in this study was only measure the

kinematics data, and for future research, hopefully future research measure kinetics data on the arm power and leg power to the open spike.

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# Relationship between Eye-hand Coordination Ability and Flexibility Toward Overhand Throw Accuracy

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**Abstract.** The purpose of this study was to determine the relationship between eye-hand coordination, flexibility and the accuracy of overhand throwing of female softball athletes. This study uses survey and test methods with correlation data analysis. The sample used in this study were 22 athletes who were female softball athletes in Semarang City. sampling technique using total sampling. The data analysis technique used in this study is bivariate correlation analysis. The results of this study explain that there is a relationship between hand eye coordination and the accuracy of the athlete's throwing results with a correlation of 0.72 with a significance value of 0.000. Furthermore, there is no relationship between flexibility and the accuracy of the athlete's throwing results with a sig value.  $0.265 > 0.005$ . between eye and hand coordination and flexibility, what has a contribution is eye-hand coordination.

**Keywords:** *physical ability, throwing accuracy, softball technique, skill performance.*

## 1 Introduction

In a softball game when the condition is defending one of the dominant and important techniques is the throwing technique. Softball is a sport played in groups consisting of two teams, namely the defending and attacking teams. The techniques in softball games are throwing the ball (throwing), catching the ball (catching), hitting the ball (batting), running from base to base (baserunning), and sliding (sliding). The technique of throwing the ball is a technique that all softball players must master. Players who are said to be successful in throwing techniques are athletes who can perform throwing techniques with power and precisely from one point to another [1].

The overhand throw is one of the throwing techniques found in softball games. Overhand throws involve complex motor skills of the whole body. The development of important techniques and tactics is carried out in sports such as tennis, handball, American football, softball, and baseball [2]. Accuracy and speed are the main variables of the resulting throw. The overhand throw mechanism consists of six phases, namely 1) wind up, (2) stride, (3) arm cocking, (4) arm acceleration, (5) arm deceleration, and (6) follow-through [2]. The overhand throw is one of the throwing techniques in softball that all players must master. Throwing

movements that are fast, accurate, and timely are things that the infielder must do while the outfielder takes advantage of wind conditions to maximize the throw's speed and distance [3].

Softball and hockey are demanding sports that require different physical abilities. This sport requires excellent eye-hand coordination skills, upper extremity strength, handgrip strength, and well-coordinated hip, shoulder, arm, and wrist movements [4]. Some of the physical components that affect overhand throw skills in softball are arm muscle explosive power, eye-hand coordination, and the accuracy required to produce precise and accurate throws. Throwing speed and accuracy is the key in softball games when defending to kill runners from the opposing team [5]. Many factors affect the throwing technique in softball games, both overhand throws, arm throws, and side throws. The result of an effective throw is the result of good technique and the contribution of several physical components possessed by the player. Athletes must have good flexibility, muscle strength, coordination, muscle synchronization, and neuromuscular efficiency to perform overhand throw movements well [6].

The throwing technique is an important basic technique in softball games, especially when defending [7]. Throwing accuracy is the key to success in softball games, especially in turning off runners heading to base. Based on previous research, hand-eye coordination and flexibility contribute to throwing skills in softball games. These two physical components contribute to the quality of the throws produced in softball games. The quality of the throw in a good softball game is if the resulting throw is on target, fast, and reaches a predetermined distance. Previous research has shown that eye-hand coordination positively contributes to throwing accuracy. However, no data informs the contribution of flexibility to the overhand throwing accuracy in softball games.

## 2 Method

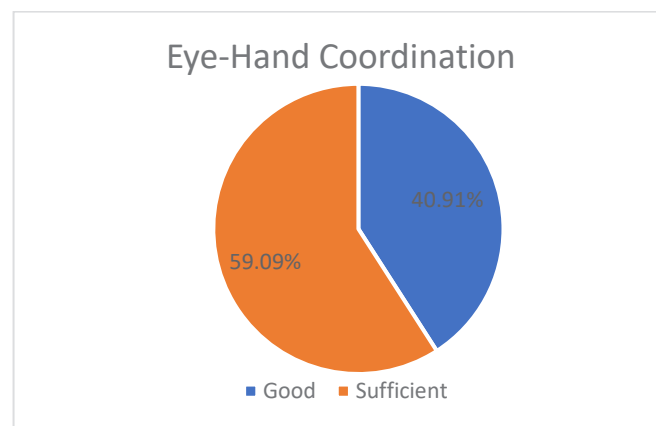
This is a correlational study using survey and tests. The sample in this study were female softball athletes in Semarang City, totalling 22 athletes. The sampling technique used is total sampling. The data collection instrument used was a test and measurement consisting of three tests: throwing and catching tennis balls to measure hand-eye coordination skills, sit and reach tests to measure flexibility, and overhand throw softball accuracy tests. Data analysis used bivariate correlation analysis using SPSS 21. The significance value of  $0.05 \leq p < 0.05$  will be considered for data interpretation with the prerequisite test before analysis.

Tennis ball throw and catch test procedures: (1) Throw with one hand and catch with the other. (2) Before doing the test, the sample may make a trial, (3) Each sample is given the opportunity ten times to throw and catch with the preferred hand, followed by ten chances to throw with the preferred hand and catch with the other hand [8]. Sit and reach test procedures: 1) Sit on the floor, with legs straight and feet on the instrument, 2) Place hands on the measuring device with one hand on top of the other and elbows straight, 3) Push the measuring device forward using your fingers slowly and allowed to bend the back, 4) Hold the maximum reach position for 2 seconds [9]. The procedure of overhand throw softball accuracy: (1) Sample throw the ball using the overhand throw technique with a target in the form of a circle with a distance of 65 feet for men and 40 feet for women, (2) 10 experiments were carried out, (3) Throws that hit the target in the middle circle get a score of 3, the second

circle scores 2 and the outer circle scores 1, (4) The score is the total number of points obtained in 10 throw attempts [10].

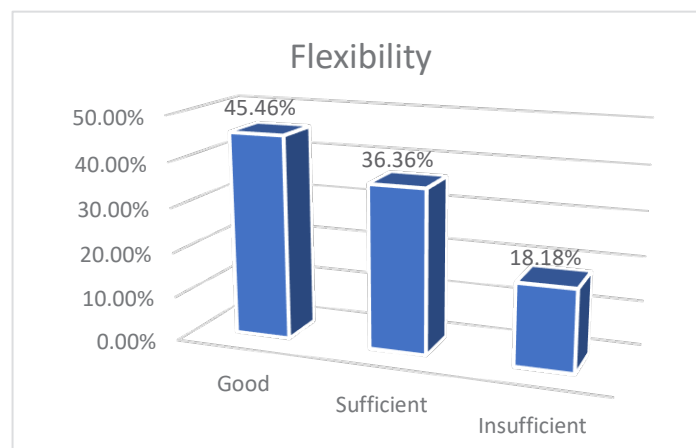
### 3 Result and discussion

Based on the result data, 40,91% of athlete have good eye-hand coordination, 59,09% of athlete have sufficient eye-hand coordination, and no athlete has insufficient eye hand coordination.



**Fig. 1.** Eye-Hand Coordination Data

Meanwhile, for flexibility, data obtained by 45.46% of athletes have good flexibility, 36.36% of athletes have sufficient flexibility, and 18.18% of athletes have insufficient flexibility.



**Fig. 2.** Flexibility Data of Female Softball Athletes

The data that has been obtained influences the games that take place in sports such as baseball, softball, handball, basketball and cricket. With different throwing techniques, every throw in the game uses the same muscles. other factors and physical conditions affect the power and accuracy of this throw. thus good throwing results result from a variety of influencing contributions [12].

Throwing skills are the dominant defensive skills in softball. Overhand throwing in softball involves flexibility and mobility conditions of the shoulder joint, where this shoulder joint is a multi-axial joint group with three degrees of freedom. the range of motion provided by the shoulder joint allows the projectile to be released over the shoulder by optimizing the long arm moment for rotation of the shoulder and spine[11].

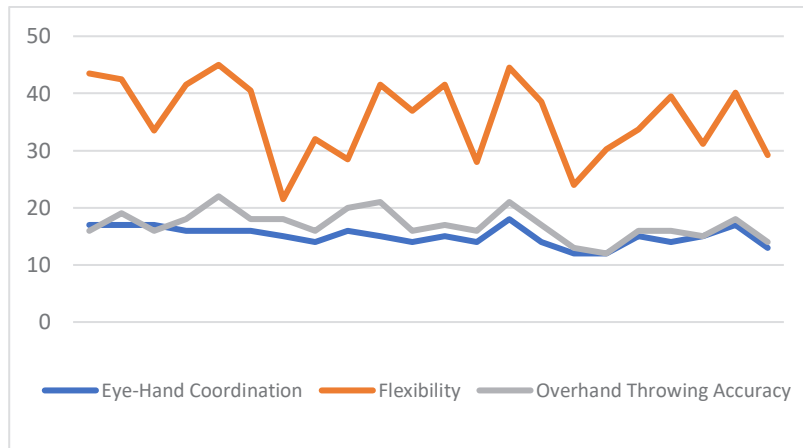


Fig. 3. Eye-Hand Coordination, Flexibility, and Overhand Throwing Accuracy Data

From the results of data analysis using correlation analysis, it was found that there was a significant relationship between hand coordination and overhand throwing accuracy with a correlation value of 0.702 and a sig. 0.000 (Table 1). In the results between flexibility and accuracy of overhead throws, there is no significant relationship with a correlation value of 0.248 and a sig. 0.265. (Table. 2)

Table 1. The Correlation Result of Eye-Hand Coordination and Overhand Throwing Accuracy

Eye-hand coordination	Overhand throwing accuracy	
	Correlation value	.702**
	Sig. (2-tailed)	.000
N	22	

Table 2. The Correlation Result of Flexibility and Overhand Throwing Accuracy

Flexibility	Overhand throwing accuracy	
	Correlation value	.248
	Sig. (2-tailed)	.265
N	22	

Softball is a fun and not boring sport, besides that there are many benefits that can be obtained from playing softball, such as health benefits which in this case are related to physical fitness,

agility strength and upper and lower body coordination. The overhead throw technique in softball is a motor skill that requires complex whole body movements [12]. Many sports require technical and tactical skills such as tennis, handball, rugby baseball and softball in the development of these skills because they are considered important. The throwing mechanism is divided into 6 stages, namely (1) wind up, (2) stride, (3) arm cocking, (4) arm acceleration, (5) arm deceleration, and (6) follow-through. In general, the movement resulting from an overhead throw is a whole body movement that starts from the lower body and then advances to the upper body ending with a whip-like movement that is thrown when the projectile is released. practicing and mastering these skills is important of course by developing manipulative movements and hand-eye coordination.[2].

Based on the skills, the overhead throw is one of the important skills that require special attention to improve softball performance because all softball players must use this skill no matter what position they are in during fielding [13]. In the overhand throw, several physical conditions can affect a softball athlete's throw, such as arm muscle explosion, hand-eye coordination, and the precision needed to produce a precise and accurate throw [5]. Eye-hand coordination is the element that has the most significant relationship and contribution to the accuracy of the top throw in softball games. Eye-hand coordination relates to a player's ability to direct the ball into the target. Coordination is a person's ability to integrate different movements into a single, effective movement pattern. Whether or not a person's movement coordination is reflected in his ability to perform a movement smoothly, precisely, and efficiently. Someone who has good coordination is not only able to complete a skill perfectly but also can easily and quickly acquire new skills [14].

Throwing, being a basic skill, plays an important role in successful participation in softball. Softball features three common throw-overhead, sidearm, and underhand-overhead most often used<sup>2</sup>. To perform the overhead throw successfully, the athlete must demonstrate significant flexibility, muscle strength, coordination, muscle shot synchronicity, and neuromuscular efficiency. Throwing skills in male softball players are associated with physiological parameters such as aerobic fitness, speed, explosive power, flexibility, and right and left-hand grip strength [6]. Softball is a physically demanding sport consisting of several specialties such as hitting, throwing, throwing, throwing, running, etc., requiring different skills and fitness types. It requires upper extremity strength, hand grip strength, excellent eye-to-hand coordination, and coordinated movement of the hips, shoulders, arms, and wrists. It requires speed, strength, and endurance [15].

#### **4 Conclusion**

There is a relationship between eye-hand coordination and overhand throwing accuracy of the female softball athletes in Semarang city. There is no relationship between female softball athletes' flexibility and overhand throwing accuracy in Semarang city. Eye-hand coordination contributes to the overhand throwing accuracy, while flexibility does not contribute to the overhand throwing accuracy in female softball athletes in Semarang. Studying more variables related to throwing skills, especially throwing speeds, is necessary for further research.



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# Dominant Motion Patterns of Gymnastics Activities for Elementary School

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**Abstract.** The dominant movement pattern in gymnastics is a pattern that underlies all gymnastics skills, especially dexterity gymnastics. In elementary schools, the material about dominant movement patterns is one of the scopes of physical education studied. The dominant movement patterns in agility gymnastics are landing, static positioning, locomotion, jumping, floating motion, and swinging. The provision of strong basic exercises of dominant movement patterns at primary school age will develop skills in gymnastics to the mastery of complex movements with difficulties high motion.

**Keywords:** Dominant movement patterns, gymnastics, elementary school.

## 1 Introduction

Sports are structured to be able to maximize the potential of human movement so that it will develop more complex and great. In accordance with the olympic motto, namely hendiatis Citius, Altius, Fortius which means faster, higher and stronger. [1] The Olympics is the event that the greatest achievements in human exercise will be recorded in the history of human sports. It is the process of achieving the peak of this achievement that will be learned from the different experiences of coaches, coaches to produce olympic athletes. Coaching athletes begins from a tiered early age to a mature age of achievement. The proximity of coaching the development of biomotor abilities of early age athletes can be carried out by going through a special concentration of training as is done in the country of China, or can be done in general by entrusting to the private sector or school as the beginning of the coaching process. [2] The pros and cons of this training approach each have opinions that are believed to be true. The centralization approach has the advantage of emphasizing motion patterns in detail and specifically. But it has a psychological weakness that early athletes experience special training pressures. In the opinion of Popi sotiriadou argues that the development of athlete coaching will be influenced by a well-structured management system and control mechanism. [3] Whereas the exercise approach in general lacks emphasis on motion development specifically depending on the ability of the physical education teacher or student club coach but provides the advantage of psychological pressure leeway. According to Aine Mac Amara (2010) that in developing the advancement of their talents at an early age, it is necessary to apply

psychological behavior vigilance in the early stages of age to further optimize the development of the performance of prospective athletes. [3] Based on the foregoing, it is necessary in the preparation of the physical education curriculum to include the elements of complete biomotor formation needed by each sport. The element of movement that shapes the skills of each sport is what is called the dominant movement pattern of the sport. In each sport there is an analysis of the dominant use of physical skills [5][6]. Gymnastics is one of the sports that involves a lot of all muscles and joints in doing a movement. Movements in gymnastics are broad and beautiful movements with certain criteria or free. Dexterity gymnastics involves the ability of biomotors , physical and technique in producing motion with difficult difficulty factors. Floor gymnastics, Jumping tables and tools in artistic gymnastics are strongly influenced by the development of biomotor abilities and their biological lifespan. [7] In order to get maximum achievement for artistic gymnastics coaching, of course, it should involve education teachers in schools in shaping and developing their biomotor abilities. [8]. The discussion in this article is aboutthe dominant movement patterns in the sport of gymnastics and the work system that is suitable for gymnastics coaching in general.

## 2 Method

The method used in this study is the Systematic mapping study. This paper pre-sents a study of 4 main areas of study. The methods used revolve around the main variable entities of the study of dominant motion patterns, learning levels, elementary school age students and gymnastics movement patterns. Articles found and peer reviewed were identified by the search engines PubMed, Crossref, GoogleScholar articles, Scopus and publications by local universities from 2012 to 2022. Here is a concept map of this study approach

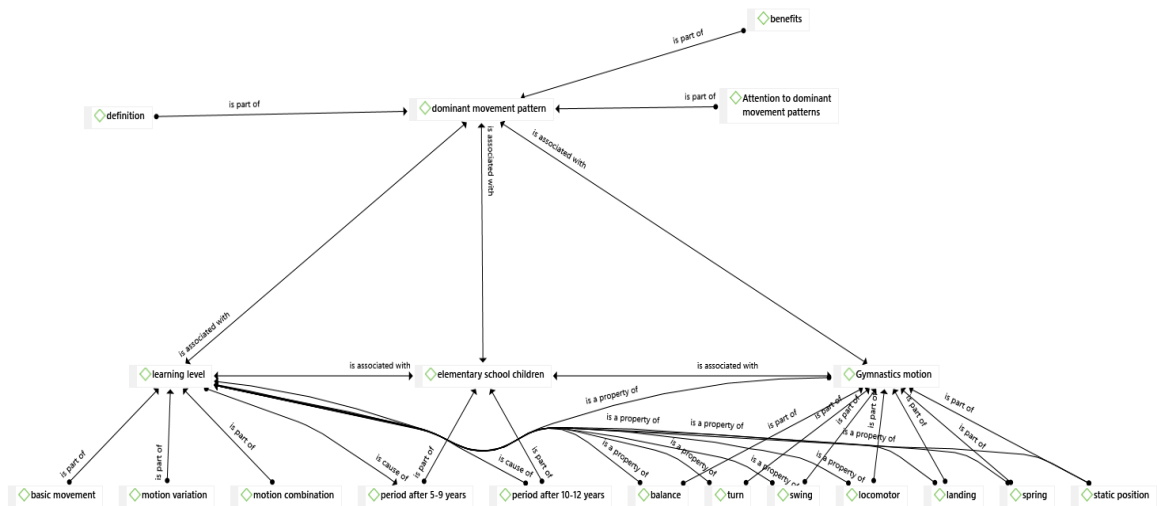


Fig. 1. Inter Connection Concept Map Field of study.

### **3 Results and discussions**

#### **3.1 Dominant Motion Pattern**

The dominant movement pattern (PGD) is an element of movement that is widely carried out as the basis for specific movements in certain sports. If basic motor skills are learned, it will support the achievement of the development of these basic skills. The improvement of the quality of motor skills depends largely on the maturity of the motion of each phase of basic skills. The quality of motion in question is a broader, controlled, effective and correct movement. Correct basic motion skills will support mastery of more complex skills [9][10]. At the elementary school level, the dominant movement pattern approach to the scope of physical education becomes important in physical education learning. Advantages in the PGD approach the coach can estimate, plan, assign and monitor mastery of basic skills that useful in the development of the child's movements [11]. Details of dominant motion patterns may be conveyed on the basis, their variations and combinations to support further skills. The basis of motion. The division of learning skills in the dominant movement of the scope of physical education will be more specific at each level according to the growth and development of the child. Mastery of the elements of motion in the dominant pattern of motion requires the ability of certain physical conditions so that it is appropriately given for the physical development of the child as well [12]

The maturity of basic motion through the dominant motion pattern approach becomes the main goal at an early age. For this reason, it is necessary to take more detail in providing this learning. This attention is particularly concerned with how the movement is formed, the suitability and correctness of the motion with the breadth and function of the joints of motion, the emphasis on the exertion of controlled forces on the pedestal.

#### **3.2 Physical education learning in elementary school**

Physical education is one of the main teaching materials given to learning in schools. The emphasis of physical education on the development of physical condition, biomotor and sports movement skills. Physical education teachers can understand the paradigm of the curriculum so that the basic competencies that should be mastered at every level can be achieved [13].

Physical education in elementary schools has been compiled based on the motor development of children aged 7 to 12 years. This is interesting because there are characteristics of growth and development in the age range of 7 to 12 years. There are drastic physical changes including height, weight and body proportions, nervous system that affects intellectual and emotional development, muscle strength that affects the development of motor skills [14]. Based on the characteristics of physical growth and psychological development of elementary school children, it is divided into two, namely the learning class 1 to grade III, the age of 7 to 9 years and the class IV to the class VI, the age of 10 to 12 years [15]. Physically aged 7 to 9 years girls are shorter and lighter than boys, while at the age of 10-12 years girls become taller and heavier than boys, this physical development causes the child to strive to adapt in developing basic motor abilities for balance, strengthening and flexibility of muscles. Metacognitive development is also different in the phase of young children aged 7 to 9 years belum can independently solve problems effectively while the phase of large children 10 to 12 years old sudah begins to be able to fightrol emotions, trying to solve problems based on

experience [16]. Based on the above characteristics, physical education material is adjusted to the physical growth and metacognitive development of children in 2 categories of young children and large children [17][18].

### **3.3 Stages of motor learning for elementary school children**

Material Physical education refers to the development and growth according to the basic level by paying attention to the motor abilities of the child. His learning of structured physical education ranged from simple movements to more complex movements, from movements that easily increased to more difficult movements, movements that used the strength of lightly pickled muscles increased towards movements that used and involved large strong muscles. The order of matter is a). Materi the basis of movements that contain basic motions that are naturally studied during development. Motor i.e. walking, running, jumping and throwing. These types of movements are divided into locomotor movements (moving places, non-locomotor (in place) and manipulative (using tools in a controlled manner) [17]. b). Materi about variation of motion which contains from the development of basic motion without reducing the corresponding motion key of motion the basis of motion. Developed variations of motion can be in the form of variations in the direction of movement and variations in forces or ways of performing movements. c). The material is a combination of motions that contain a series of movements that have been studied. To be able to development combination of motion perfectly the child at least mastered the basic elements of motion and their variations maturely. So that it will produce a perfect series of motions. Teaching materials for the combination of physical activity and attention exercises display a positive effect on students' visual retention rates, perception, attention, and motor skills [19].

### **3.4 Dominant movement patterns in Gymnastics Activity**

Gymnastic activity is carried out by involving the entire limb in its movements. All Motion joints function optimally to support the combination of the elements. Gymnastics training is carried out by paying attention to the structure of the exercise sequence which includes 3 (three) phases, namely phase 1 (one) is a warm-up movement where the characteristic is to prepare all physiological functions of the body to move. The warm-up movement contains a static and dynamically rotating movement [20] to expand the space for joint motion in the form of a strengthening movement to balance the fulcrum in moving. There is a significant relationship between warming up and the risk of injury to gymnasts [21]. Sufficient warm up will prevent injuries from occurring due to extreme sports activities. Phase 2 (two) is the core movement. In this phase the movement is carried out with a combination of complex motions powered [22][23] with a difficult movement difficulty factor. Phase 3 (three) is a cooling that contains movements to normalize all physiological functions. The content of this phase movement is the movement of the thumping and relaxing of dynamic motion. Gymnastics activities have a movement key consisting of elements of motion that will be combined in one performance. The key to the movement is called the dominant movement pattern in gymnastics. Proficiency in the appearance of gymnastic movements is obtained when the basis of the dominant movement pattern is perfectly mastered and continues to be developed at the highest level. The following is the dominant movement pattern in question, namely:

1). Landing. Landing is the end in the framework of motion, which requires physical conditions to resist gravity and control of movement [24]. The type of landing movement

depends on the fulcrum when landing, one foot, hand, or a combination of hand and foot, or a combination of hand and foot and roll.

2) Static Position. The static position in the dominant motion in gymnastics is when holding the posture in a certain pose. Static position movement is essentially a movement of equilibrium with various pedestals [25][26]. The type of static position movement depends on the pedestal when the balance movement is static, for example the attitude of the flying boat using the pedestal of one foot, using the pedestal of the hands and feet, or the pedestal of the back, abdomen and even the movement of the headstand using the fulcrum of the head and hands.

3). Jumping / jumping (Spring). The essence of this jumping movement is the explosive power of the muscles to catapult the body [27]. Jumping can use a foot or two foot pedestal or even use a pedestal of the hands and feet. Jumping movements require the prefix and explosive power of the muscles to develop the height of the stepping.

4). Floating. The essence of floating motion is how to form various positions of gestures when hovering in the air [28][29]. The type of drifting movements in gymnastics can be in a perpendicular position, bending or squatting. Examples of movements are split leap, tucked jump,

5). Rotation. Rotational movement in gymnastics is a rotating motion of the body with various rotating axes, namely the longitudinal axis, the transverse axis and the medial axis [30]. The type of rotational movement in the longitudinal axis is the twist of the rotation in a perpendicular position. The rotation in the transverse axis is a rotating motion towards the front and back while rotating the left and right side collars using the medial axis.

6) Swing. A swing movement is a combination of movements consisting of a pedestal or hanger and a scut. The swinging motion requires a strong and sturdy pedestal or hanger on his weight arm that is in the shape of a movement that depends on the axis of the joint. Examples of this motion are swinging the limbs on the parallel crossbar, pocketing and swinging on the single-bar.

7). Locomotor. Locomotor movement is a movement of moving places that aims to gain momentum of motion [31][32]. This movement consists of using a type of fulcrum for example, it can use a foot pedestal, a hand pedestal or a combination of various pedestals for movements running, stepping wide and so on.

#### **4 Conclusion**

The dominant movement pattern is an approach to learning gymnastics using the main motion key developed in various basic levels, variations and combinations are generally given to children from an early age through primary school learning. It is appropriate if the physical education curriculum in the gymnastics activity material contains the dominant movement patterns developed at each level of the elementary school class.

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# The Contribution of Sports Student Exchange Experience toward Students' Self Confidence

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**Abstract.** Student exchange programs host many benefits for students' self-development, one of which is self-confidence. Having self-confidence is critical for students with sports backgrounds in pursuing careers as physical education teachers, athletes, coaches, sports therapists, and other sports-related jobs. However, few research aware of the importance of environment and life experience, such as joining an exchange program, in boosting students' self-confidence. This study examined the contribution of student exchange experience's to sports students' self-confidence. A structured interview was conducted with students from the Department of sports science, Faculty of Sports Science, UNNES, who run an overseas community service project at the department of physical and health education, the Faculty of Education, UiTM. The study adopts Lauster's theory of self-confidence, one of which is believing in yourself. It revealed that students who conducted this international exchange showed a high trust to their own abilities and reflected in their actions during the program and after completing the program. Seeing that self-confidence could direct students to accomplish their International project goals, this research would suggest students enhance their self-confidence by immersing themselves in a supportive environment and challenging themselves in productive activities to get more life-skill experiences. Further research should elaborate on all factors which shape students' self-confidence.

**Keywords:** Personality, development, overseas, community service

## 1 Introduction

The student exchange program gained a lot of attention in universities worldwide due to its benefits on the students' professional development [1]. The IISMA program (Indonesia International Students Mobility Awards) held by the Ministry of Education in 2021 and 2022, is evidence of strong support from the Indonesian government to conduct an exchange program. In the faculty of Sports Science (FSS), Universitas Negeri Semarang (UNNES), the Internationalization and students exchange program has been an integral part of the faculty [2] especially since the Faculty joined an association name ACPES (ASEAN Council of Physical Education and Sports) in 2011 which incorporate some sports faculties across South East Asia. The faculty also validates the IISMA program by giving funding to each department including

the Department of Sports Science to have their Duolingo test as an IISMA pre-requisite. This support, which comes in the form of preparation courses and funding, comes with a deep analysis of the importance of the sports exchange program.

The FSS UNNES has been hosting and supporting several exchange programs namely academic student exchange, cultural exchange, an academic field trip, overseas community practice, teaching practice, and internship [3]. The overseas community service, as the main theme of this research, is a minimum of two weeks of overseas project bringing certain missions such as introducing Indonesian sports and culture, promoting conservation, introducing Indonesian literacy, promoting Indonesian traditions, and giving health education. Within this program, the students find a place to share their knowledge, plan the programs, organize and run them with the supervision of the FSS lecturer.

The exchange students between UNNES and UiTM constructed an international community. Being part of the international community might raise the students' confidence. In addition, as an International students, the opportunity of experiencing different teaching styles and norms when communicating with the host-country teacher is something to be learned (Hsu et al., 2021). While self-confidence has been seen as a dominant factor which influences athlete success and performance [4], it can be achieved from real-life experience such as being part of an International student exchange program. The students who participate in the exchange programme are surrounded by peers who courageously push their boundaries by travelling overseas, leaving their comfort zone and environment to surf the world beyond their reach, teaching sports and displaying their talent in foreign countries. They are, therefore, surrounded by an environment that makes it possible for them to achieve success of the sports exchange project.

Many researches are discussing the importance of self-confidence for athletes and sports students [5]. While at the same time research has agreed on the benefits of an exchange program for students' self-development [6], not to mention self-confidence, limited research discusses the relationship between an exchange program and students' self-confidence in Sports students context. This research bridges the gap by explaining the sports student exchange experience's contribution to their self-confidence. This study aims to explain Indonesian students' sense of believing in themselves after participating in the exchange program at UiTM, Malaysia. It is collaborative research between FSS UNNES and the Faculty of Physical Education and Health (FPEH), UiTM. Both Faculties have been collaborating for years and have conducted several exchanges, one of which is the Overseas Community Service Project, a two weeks project initiated by FSS UNNES to introduce Indonesian sports and culture to FPEH UiTM, Malaysia.

## **2 Literature review**

### **2.1 The importance of sports student exchange**

The Sports Student Exchange Program (SSE) run in the FSS is a program where students from sports majors such as Sports Science, Sports Coaching, Physical Education, and Public Health, worldwide come to join several weeks of the courses in The FSS and vice versa [3]. The students participate an international education, activities, and programs that initiate collaboration and exchange of ideas between students from diverse cultures and borders [4]. The SSE provides a lot of benefits for institutions and the country. Hinojo\_lucena emphasized that the partnership between universities across countries promotes cognitive and knowledge

exchange [7]. It also helps students to develop their personality and perceived self-efficacy (Petersdotter et al., 2017). Interestingly study by Aoyama and Takahashi (2020) indicates a strong correlation between self-confidence and willingness to talk a foreign language for international students. An exchange programme is an ideal approach to becoming fluent in a second language and building a strong international resume [8][9]. Students' basic networking abilities and cultural competency skills are also enhanced through international collaboration [10].

Research emphasized the benefits of the student exchange program such as developing intercultural competence [11], learning a language and technology [12], and having a global vision which encourages students to be global-minded students [13]. Further, this global-mindedness will likely influence students' perception (in a positive nuance) toward their future profession [14]. Additionally, the students get an up-to-date understanding of the country they visited and develop worldwide relations [11] which raise international solidarity and understanding during their intercultural interaction [15].

## 2.2 Self confidence

Scholars define self-confidence in various ways. According to the psychology dictionary, self-confidence is having trust in their skills, judgements, and abilities, or conviction that one can successfully handle problems and demands that arise daily. This view is supported by Sharour (2019) who defines self-confidence as an attitude of being able to accept reality, develop self-awareness, think positively, have independence, and have the ability to have everything you want [16]. On the other hand, Çiftçi and Yıldız (2019) simplify the definition of self-confidence as an individual's belief in him/herself. This study acknowledged Lauster's theory which suggests the characteristics of self-confidence [17], one of which is believing in one's abilities. It is self-trust in facing all problems and evaluating and overcoming any issue.

Self-confidence is important for a sports career as a coach, journalist, sports commentator, sports analyst, physical education teacher, etc. In sports competitions, having confidence may affect our performance during a competition which will influence the result [7]. Self-confidence positions people not to feel inferior in front of anyone and not feel awkward when dealing with many people. Self-confidence also triggers people to act responsibly because they believe they have sufficient knowledge to take the best action and decision [12]. Self-confidence is also the most valuable attribute in a social life that can direct people to actualize their potential. Thus, the researcher concludes that self-confidence is a belief in our ability to utilize all of our potentials to reach certain goals and standard that are confidential for students' success.

Vealey's paper discusses three sources of self-confidence in Athletes; he argues that the environment or social climate is important in shaping self-confidence [18]. Social support (from friends, coaches, and team leaders) is a reliable source to gain confidence, which further believes will influence a perceived goal [18]. Above all, Lauster characterized four aspects of self-confidence, namely: believing in yourself, having a positive attitude, being independent, and having an optimistic attitude [16]. Upon four of the mentioned aspects, this study will focus only on believing in yourself.

### 3 Methods

This is a descriptive qualitative research design with a structured interview as the main instrument for data collection. It aims to explain the FSS students' self-confidence which leads them to conduct an International program in UiTM Malaysia. The participants are eleven FSS students who conducted two weeks community service project at the FPEH, UiTM, Malaysia during their final year of study. The students have successfully planned and run sports programs: sports massage, *Pencak silat*, *futsal*, and aerobics dance. Besides, the students also introduced and taught traditional Indonesian sports such as *congklak* and *egrang bathok* and sports created by UNNES lecturers, namely *Tennis*.

### 4 Data collection

The procedure in conducting the interview are first designing the interview instrument and submit the instrument to be assessed and validated by the expert in the field of sports psychology. The final rubric was used for interviewing the respondent through WhatsApp video call. The interview with each respondent last for about an hour. During the interview, participants answer several questions related to sense of believing in yourself, based on the following indicator:

**Table 1.** Indicators

		Indicators
Believing yourself	in	In a new community, I could easily socialise. I am unable to lead a discussion in a new community. I am hesitating to ask a question to a stranger or a foreigner. I am bold enough to initiate a conversation in a new setting, and I am willing to lead a discussion in a new community. I feel that I gave uninteresting topics whenever I joined a discussion

The questions being asked are:

What are the activities in the overseas community service project that help you develop your social skill?

After conducting the overseas community service project, have you ever socialized/gather/immerse in a new community?

What are some activities in the overseas community service project that help you think help you develop your leadership skill?

Are you active in any organization in campus or off campus?

(If the answer is yes) How do you deliver your argument during discussion? Are there any activities in the overseas community service project that could add your strength in argumentation?

What activities in KKN do you think that help you develop your courage to be proactive in any forum discussion?

The result of the interview was transcribed and send to the interviewee to be checked and confirmed. The approved transcribed were analysed to answer the research question namely how is Indonesian students' sense of believing in themselves after participating in the exchange program at FPEH, UiTM, Malaysia.

## 5 Results and discussion

This research aimed to explain the sports students' sense of believing in themselves after completing a two weeks of overseas community service project. The students were asked whether the experience influence their view and perception toward their self-ability.

The International community service project initiated by the students of FSS, UNNES brought five missions: sports project, health project, cultural project, conservation project, and literacy project. As part of the sport project, the students performed and promoted Indonesian sports such as *Pencak silat* in UiTM and hosted matches between countries. The health project is introduction and practice of sports massage. The students also have prepared some cultural and conservation projects, namely introducing traditional songs, teaching a mix of aerobic and traditional dance of Maumere. For the culture and literacy project, an interlanguage discussion about multiculturalism in Indonesian and Malaysia were hosted. Last but not least, in the conservation project, a batik painting workshop was remarkable to experience for the FPEH students.

The students who initiated the projects were never been abroad before. However, they dare to jump into a new community overseas and introduce themselves to International peers. Each student was responsible for a project. The given responsibility directs them to prepare their best. When they were asked about what they experienced from the project which influenced their trustworthiness toward themselves, most of them related their answer to certain responsibilities they were into; for example, Fin, who is the Person in charge (PIC) for Interlanguage discussion, Kni the PIC of sports massage, Ar the PIC of *Pencak Silat* Promotion, and some other students. The students experience specific self-confidence, which is a changing mental and emotional state associated with the specific task or situation at-hand [19], in this case, they become more responsible for having a project to be presented.

Fin said that all activities he experienced encouraged him to socialize with the UiTM students. However, one of the exchange activities that mostly increase his social skill was hosting a cultural and linguistic diversity discussion between Indonesia and Malaysia. According to Fin, because he is the PIC of the project, he developed his sense of leadership, especially when he has to speak in front of Malaysian students and lecturers. The experience of leading a discussion in multicultural setting has improved his sense of self-confidence. This experience that student gets from the educational setting as Sharour (2019) mentioned could improve students' self-confidence and self-efficacy [20].

In line with Fin, Kni also describe that all activities he experienced during his overseas community service project, help him to better socialize in new culture and environment. Kni recalled a conversation he had with students and teachers in UiTM, which forced him to be a more social person to catch up with discussions with foreign people. He also experiences an increase in his leadership skill when he has appointed as the PIC the sports massage program where he led a workshop for UiTM students and lecturers. Kni emphasized that the enthusiasm

of Malaysian students and teachers when they joined his workshop increased his self-confidence, as [19] argued that people make judgments about themselves based on their experiences and others' feedback.

*“Lalu kegiatan yang menurut saya dapat meningkatkan jiwa kepemimpinan saya yaitu ketika saya ditunjuk sebagai PJ atau penanggung jawab program kerja sport massage disana kita dituntut untuk berani memimpin didepan banyak mahasiswa UiTM beserta dosennya untuk menjelaskan apa itu sport massage, cara caranya dan bagaimana praktiknya, hal tersebut sangat amat melekat di jiwa saya karena antusias dosen beserta mahasiswa sana itu menjadikan saya sangat lebih percaya kepada kemampuan diri saya sendiri”*

*“Then the activity that I think improve my leadership skill is when I was appointed as the person in charge of the sports massage workshop where I am required to lead a workshop in front of many UiTM students and their lecturers to explain about sports massage, the procedure and followed with a practice. The experience attached to my soul because the enthusiasm of the (UiTM) lecturers and students made me feel more confident in my abilities”*

In line with Kni, Ar also experiences improvement in his leadership skill. Their experience reflects the important of the environment to support students' trust on themselves.

*“Menurut saya bukan hanya kegiatannya saja yang mampu menambah tingkat bersosialisasi saya, ketika saya berbicara atau mengobrol dengan dosen maupun mahasiswa UiTM itu sudah mampu meningkatkan rasa bersosialisasi saya lalu rasa kepemimpinan saya juga meningkat ketika saya ditunjuk menjadi PJ program kerja pencak silat, disana saya menyampaikan dan mengajarkan gerakan gerakan dasar dari silat dan kondisi dilapangan saya yang mengendalikan. Hal tersebut membuat saya mampu menambah kepercayaan diri saya” (Ar, 2021)*

*“In my opinion, not only are the exchange activities able to increase my socialization level, but when I talk or chat with UiTM lecturers and students, I feel my ability in socialization increase.... and then, my sense of leadership also increased when I was appointed as person in charge of the Pencak silat program. I conveyed and taught the basic movements of silat.... This made me able to increase my self-confidence” (Ar, 2021)*

Usni, the Indonesian students' group leader, agreed with his member on the benefit of the exchange program toward their confidence. He explained that his self-confidence increased especially as he has experienced became the group leader for an International project. Some activities that influenced his view were the regular casual discussion he had with Malaysian students every afternoon where the students were exchanging their ideas about sports, classes, cultures, and other random topics. In addition, Pangkas, another exchange student, emphasized on the importance of sparing football between UNNES and UiTM in bonding the partnership between Indonesian and Malaysian students. Ani, a female student from Indonesia also experience an increase of confidence to speak in front of the public when she was assigned as a PIC for Meumere dance.

It is interesting to witness that the experience the students gained abroad remains and effect their personality when they come back to Indonesia to be more confident. Their sense of believing in

themselves has influenced the students' social life. Fin, who were previously a part of the student faculty board, get promoted to be University student board. He mentioned that after returning from the exchange program, he become more active in social life such as becoming a volunteer of Covid-19 recovery team, together with Pangkas, another exchange student in the program. Further, Kni, another exchange student, continued his role in sports massage by giving sports massage education in his environment. Usni, the former group leader, was more active in his *pesantren* (Islamic religious boarding school) and help more in some social program in the *pesantren*. Ani, one female member of the group, upon returning from the program, became a No-drugs ambassador to give socialisation about the danger of drugs. Ar, another member of the exchange program, was chosen to be a group leader for his city community [22].

Bringing home the experience as a group leader, the person in charge, presenter, and ambassador for Indonesia has directed the Indonesian students to be more active and involved in social life upon returning from the exchange program. Even though most students feel an increase in their self-confidence and ability to socialize in public after returning from the exchange program, one student mentioned that due to the bad case of Covid-19 in his city, he could not socialize and implement his skill in society. However, all students acknowledge that taking responsibility and feeling responsible for a project has built their self-confidence [23].

The students agreed that the positive experience they got from the exchange such as the hospitality of Malaysian students and teachers, the respect that Indonesian students get, the participation of Malaysian students in some of the programs that the Indonesian students initiated, and the involvement of Indonesian students in UiTM students' daily routine (sports and discussion) are some of the trigger factor that influence their self-confidence. The positive environment and ambience students get in Malaysia have influence their self-confidence [24]. Overall, the students see a positive influence of the exchange program on their self-confidence and their ability to socialize in their environment. The interview showed that the students successfully completed the five mandatory projects and gained several benefits from the program for their professional development .

## 6 Conclusion

This study sought to explain sports students' sense of self-belief after following a two-week overseas community service project. The students, who have completed the five mandatory projects assigned by the Indonesian institution, the students gained several advantages, particularly in terms of professional development. The experience of introducing their sports and culture to foreign students and being respected and valued in Malaysian institution make them reflect on their ability and capacity which further increase their value about themselves. Believing in yourself as indicated is one characteristic self-confidence.

The students who run the programs have forced themselves to be more confident than before because they represent their country's name. They work together to complete their mission. As a result, they perform to their full potential. Similarly, when students become aerobics instructors, teach basic Pencak silat techniques to the UiTM community, sports massage, and Tonnis technique. This is in line with what was conveyed that self-confidence is an attitude in someone who can develop self-awareness, think positively, have independence, and can gain everything you want. Given that self-confidence can lead to higher achievement, this study



suggests that students boost their self-confidence by immersing themselves in a positive environment and challenging themselves in a variety of activities to gain more life-skill experiences.

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# Correlation between Anxiety and Mental Health on Poomsae Skills on Dojang Indranaga Fighter of Semarang Team

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**Abstract.** The level of anxiety and mental health can affect the poomsae skills on athletes in competition. The study was to determine the level of anxiety and mental health of Dojang Indranaga fighter team Semarang athletes. This research uses descriptive quantitative research. The approach in this study uses a questionnaire method with google form and practice demonstration of poomsae. The questionnaire used to measure the level of anxiety. The sample in this study amounted to 23 athletes consisting of 14 male athletes and 9 female athletes. The sampling technique is purposive sampling. Data analysis using descriptive analysis techniques. The results showed that the tcount of the anxiety variable was 2,985 and the significance value was  $0.033 < 0.05$ , thus H1 which reads: "there is a correlation of anxiety with the poomsae skills of taekwondo dojang Indranaga fighter team Semarang" is accepted. The results showed that the tcount value of the mental health variable was 2,764 and the significance value was  $0.047 < 0.05$ , thus H2 which reads: "there is a correlation between anxiety and poomsae skills in taekwondo dojang Indranaga fighter team Semarang" is accepted. The conclusion in this study is that there is a correlation between the level of anxiety and mental health on the poomsae skills of the taekwondo athlete Dojang Indranaga Fighter Team Semarang.

**Keywords:** Anxiety, mental health, poomsae skills.

## 1 Introduction

Achievement sports according to the Law of the Republic of Indonesia Number 3 of 2005 are sports that foster and develop athletes in a planned, tiered, and sustainable way through competitions to achieve achievements with the support of sports science and technology. Therefore, the government must be responsible for advancing national sports achievements at a higher level, namely the international level. Article 11 Paragraph 1 of the Law of the Republic of Indonesia Number 3 of 2005 concerning the National Sports System which reads that the government and regional governments have the right to direct, guide, assist and supervise the implementation of sports in accordance with statutory regulations.

Some of the national sports that are often competed are athletics, football, volleyball, basketball, karate, pencak silat, judo, taekwondo, and others. Taekwondo as a self-defense sport that is competed at the international level, has been very quickly responded to by Indonesian sports people since independence. Taekwondo, which is written as Tae Kwon Do by default, is a martial arts branch originating from South Korea.

Poomsae are an important unit in the technical system of taekwondo. Poomsae are combination moves designed to be practiced without an instructor, using a fixed performance basis of attack and defense. Poomsae has the advantage of practicing the specific techniques applied, which cannot be trained through basic movements. Poomsae is trained in conjunction with the poomsae line, and this poomsae line shows the position of the two legs and the direction of movement (Yoyok Suryadi, 2009:1).

Purpose of this study was to find out how the correlation between anxiety conditions and mental health conditions of athletes who will compete because researchers observe when athletes will compete the main factors for mastery of the field are mental calm and the lack of anxiety of an athlete. Although an athlete has a good physique and masters tactics and strategy, if an athlete does not have calm and concentration and is even disturbed by negative thoughts such as excessive negative emotions, then this will greatly affect the results during the match. Some of the symptoms experienced by an athlete in a match such as anxiety, worry, confusion, tension, and loss of confidence, especially in poomsae athletes can lead to less than optimal performance to get high scores in matches.

This will be a problem for an athlete because of the lack of mental coaching in athletes. Often when doing exercise the athlete's ability is very good, but during the match the athlete's ability decreases because he often makes mistakes because of pressure, this is one of the mental factors experienced by an athlete, during exercise athletes do not get emotional pressure too often not the case in match situations. Athletes who experience anxiety will cause several obstacles to gain achievement, therefore the problem of anxiety must be overcome, especially in the mental development of athletes, therefore interventions to reduce anxiety and improve athlete's mental health need to be done. The taekwondo athletes of the Indranaga Fighter Team Semarang are from 14 to 17 years old. At this age the athlete's tendency to control emotions is still said to be lacking or still unstable. When competing, especially for athletes in the kumite category, the mental aspect that affects is anxiety, because in reality not all athletes can overcome the anxiety they face.

Referring to the description above that mental factors are an important element to achieve athlete achievement, then the mental pressure experienced by an athlete during a match must be handled by the athlete or the party concerned such as the role of a coach or sports psychologist, therefore it is necessary to do research on aspects In this case, the research is more directed to the analysis of the anxiety level of the taekwondo athlete Indranaga Fighter Team Semarang when doing poomsae in a match.

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## 2 Methods

The method used in this research is the observation and survey method. The most effective way is to complete the observation form or blank as an instrument. In this study, the authors used sports anxiety instruments, mental health instruments and poomsae assessment instruments.

This research is a quantitative descriptive analysis research. This research is a descriptive study, namely the researcher only explains the state of the object, the data obtained in this study is data from the results of the survey method with the google form questionnaire technique given to the respondents, then our data is described in the description of the anxiety and mental health statistical data then described as well as with the athlete's anxiety and mental health scale.

## 3 Results and Discussion

The result of the average value of the poomsae skill variable (POMSAE VALUE) is 7.13, the minimum poomsae skill (POMSAE VALUE) is 4, and the maximum poomsae skill value (POMSAE VALUE) is 8. The standard deviation value is 1,100 which is lower than the average value. which is 7.13 so it can be concluded that the deviation of the data that occurs is low so that the distribution of the poomsae skill variable data is evenly distributed.

The average value of the mental health variable is 77.04, the minimum value of mental health is 52, and the maximum value of mental health is 90. The standard deviation value is 10,581 which is lower than the average value of 77.04 so it can be concluded that the deviation of the data that occurs is low so that the data spread mental health variables evenly. The average value of the mental health variable is 77.04, the minimum value of mental health is 52, and the maximum value of mental health is 90. The standard deviation value is 10,581 which is lower than the average value of 77.04 so it can be concluded that the deviation of the data that occurs is low so that the data spread mental health variables evenly.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.495 <sup>a</sup>	.002	-.046	1.125	.400	.033	1	21	.858

a. Predictors: (Constant), KECEMASAN

Based on the summary table, it is known that the magnitude of the relationship between anxiety and the poomsae value is 0.495. After looking at the interpretation table, the correlation coefficient  $r$  is at a value of 0.41 – 0.60, this is included in the category of moderate correlation. And the simultaneous contribution of the anxiety variable with a poomsae value of 40% while 60% is determined by other variables. It can be explained that when there is an increase in the level of anxiety, it will cause biological and physiological symptoms of anxiety in the form of shaking, cold sweats, shortness of breath, frequent urination, tense muscles, and chest

palpitations which result in the athlete being unable to display poomsae material optimally and tends to not smooth so that there is an excessive sense of anxiety during the match.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.679 <sup>a</sup>	.469	-.035	1.119	.469	252	1	21	.621

a. Predictors: (Constant), KESEHATAN MENTAL

Based on the summary table, it is known that the large relationship between mental health and the poomsae value is 0.679. After looking at the interpretation table r the correlation coefficient is in the value of 0.61 - 0.80 this is included in the category of high or strong correlation. And the simultaneous contribution of the mental health variable with a poomsae value of 46.9% while 53.1% is determined by other variables. It can be explained logically that when anxiety levels rise, it will result in stress that affects physical activity in the form of fatigue, headaches, digestive disorders so that it interferes with the athlete's focus in facing the match and cannot demonstrate poomsae smoothly.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.615 <sup>a</sup>	.622	-.087	1.146	.622	124	2	20	.884

a. Predictors: (Constant), KECEMASAN, KESEHATAN MENTAL

Based on the summary table, it is known that the large relationship between Anxiety and Mental Health with a poomsae value of 0.605. After looking at the interpretation table r the correlation coefficient is in the value of 0.61 - 0.80 this is included in the category of high or strong correlation. And the simultaneous contribution of the mental health variable with a poomsae value of 62.2% while 37.8% is determined by other variables. It can be explained logically that when the level of anxiety rises it will cause a sense of tension and excessive anxiety resulting in a decrease in the level of concentration, and when the level of mental health decreases it will result in stress and restlessness in the face of the match and unable to display poomsae material optimally, when the level of Anxiety decreases and mental health levels increase, so athletes will become more concentrated and focused so that athletes can perform movements in the Poomsae material in the championship calmly and maximally.

#### 4 Conclusion

Based on the results of the research that has been carried out, it can be concluded that there is a correlation between anxiety and mental health on the skills of the taekwondo dojang indranaga fighter team in Semarang. From the results of research that has been carried out by researchers, the following conclusions can be drawn: There is a correlation between anxiety and poomsae

skills, there is a correlation between mental health and poomsae skills. There is a correlation between anxiety and mental health with poomsae skills.

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## Society's Perspective on Implementation of Vaccination at the Semarang Vaccination Centers

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**Abstract.** The government is trying to reduce the spread and death from COVID-19 by vaccinating all regions. Implementation of vaccination at the vaccination center is one of the government's innovations to make it easier for people to get vaccines. This study aims to determine the society's perspective regarding the services received when administering the COVID-19 vaccine at the Semarang vaccination center. This research is a qualitative study with a phenomenology approach. A total of 121 people became respondents. Data collection was carried out by conducting interviews with respondents after administering the vaccine at the vaccination center. The results showed that the vaccination services received at the vaccination center is appropriate with the expectations of the respondents. Much information about the implementation of vaccinations can be obtained through social media. In addition, serving officers need to apply a friendly, nimble and in adequate amount. We recommend that the government continue to carry out the vaccination program at vaccination centers with improvements like the need for staff training so that they can provide excellent service when providing vaccination services.

**Keywords:** Covid-19, vaccination, experirnce, qualitative, Indonesia

### 1 Introduction

Coronavirus Disease (COVID-19) was declared by the World Health Organization (WHO) as a pandemic on March 11<sup>st</sup>, 2020. The statement was a pandemic from WHO after 114 countries confirmed that some people in their countries had contracted COVID-19.[1] The various efforts have been made to suppress the spread of the virus, reduce morbidity and mortality according to the characteristics of the virus variant. At the beginning of the pandemic, efforts were made to use a mask that covered the nose and mouth followed by



tracing the patient's activity which confirmed positive. Furthermore, due to the unavailable vaccine, efforts have been made to carry out an independent isolation protocol and provide isolation facilities at the hospital. [2] When the vaccine became available and the spread of the Omicron variant virus increased, the efforts were made to vaccinate in every district/city. [3] The implementation of COVID-19 vaccination in all regions has become the main program of the Indonesian government. Vaccination is the government's effort to reduce the spread, morbidity and mortality as well as achieve the herd immunity. In addition, it is hoped that it can provide protection to the society from COVID-19 so that they remain active socially and economically. [4], [5] At the beginning of the implementation of the policy, people's attitudes varied, some were supportive and some were unsupportive. Some factors inhibiting the implementation of vaccinations include public anxiety about vaccine side effects, vaccine *halal* status, including an attitude of disbelief in the benefits of the COVID-19 vaccine for themselves.[6], [7]

Time goes by, people began to show an attitude of acceptance of vaccines, of course with various promotional efforts, education from health workers and related agencies and by utilizing information technology.[8] An example of such an effort is tracking community activities in public facilities using the care-protected application. The use of this application is expected to reduce the spread of COVID-19 in public places because only people who have received the vaccine are allowed to use these public facilities.[9] This has caused public attention to increase vaccines so that the demand for vaccines also increases. In addition, the government also needs to meet the target of vaccination coverage in order to build herd immunity. It was recorded that at the time this research was conducted, April 2022, the coverage for Indonesia's vaccination at 1<sup>st</sup> dose was 198,288,035 doses (95.21%) of the target of 208,265,720 doses, 2<sup>nd</sup> dose achieved 78.24% while dose 3 reached 15.15%. [10] Due to these reasons, the government is trying to fulfil the demand for vaccinations by establishing vaccination centers in various cities.[4]

The vaccination centers are special temporary places for COVID-19 vaccinations established by the government. The aim of the establishment is to achieve whole-of-population vaccination coverage in large numbers. [11] The vaccination centers are not a substitute for health service facilities providing vaccines, but are supporting and complementary to health facilities serving the people who will be vaccinated. The location of the establishment is also close to the community, such as schools, meeting halls, sports halls and malls.[12] The location chosen to be a vaccination center must have some requirements to be in a strategic location, can be used for a certain period of time (3 months), be on the ground floor, close to a hospital, have access to an ambulance and have a toilet available. [12] The choice of the location was aimed at making it easier for the public to access vaccination services. Drive thru vaccination services are also available as a form of excellent service to the community. The form of service is in the form of vaccination without the need to get off the vehicle, registration is done online, health check screening checks temperature, blood pressure and other questions are carried out in the vehicle. So that crowds do not occur during the vaccination.[13][15]

The vaccination service strategy is said to have been successful, data shows that one city in Central Java, Semarang, received the President's appreciation for its high vaccination rate. The percentage of achievement of the first dose of vaccination was 124.36% and the second dose was 112.30% of the provincial target.[16] The implementation of COVID-19 vaccination

activities in Semarang apart from health centers, hospitals and clinics, there is also the implementation of COVID-19 vaccination at the Vaccine Center. The Semarang Government opened a vaccination center facility with the aim of accelerating vaccination coverage in Semarang and achieving the target of the Indonesian central government, which is 1 million vaccines a day.[17] The another consideration is reducing crowds because registration has been systemized online and aims to increase the convenience of the public when carrying out vaccinations.[18]

The vaccination service locations available in Semarang consists of 37 public health center (*puskesmas*), 27 hospitals and an additional 14 vaccination centers. [15], [19], [20] The drive thru service all the vaccination centers are available at *Pandanaran* Public Health Center *Semarang* and Semarang Public Hall Parking Yard Drive Thru. [15] From some the vaccination center, there is the interesting thing that the establishment of the only vaccination center in a shopping center or mall, which was established in *Tentrem* Mall, Semarang City. This innovation needs to be researched, how enthusiastic and public perceptions are of vaccination services at mall vaccination centers. In addition, so far, no studies have examined the implementation of vaccination in vaccination centers. Even though the vaccination center is a good and successful policy innovation. Thus, this study aims to examine the perceptions of people who have vaccinated at vaccination centers, especially the Tentrem mall vaccination centers. It is hoped that this innovation can be implemented in other places and improvements can be made so that services are better and vaccination coverage is achieved.

## 2 Methods

A qualitative study using a phenomenological approach and indepth semi-structured interviews. This research was conducted at the Vaccination Center of *Tentrem* Mall, Semarang. This location is the only vaccination center held in a shopping center recreation area.[21] Respondents in this study were all people who had completed the COVID-19 vaccination at the vaccine center with the condition that they were 17 years old and over and were willing to become research respondents. The recruitment of respondents was carried out during April 2022 by also taking into account the number of each group in the age range, gender, occupation and level of education so that more real and unbiased results were obtained.

Data collection was carried out by going directly to the field, interviewing people who had finished the vaccine. Before going to the field, the researchers and team conducted checks, training and simulated direct interviews with the respondents. Each research team brought a questionnaire sheet which became a reference for questions to the respondents. The questionnaire was prepared based on the regulations for carrying out vaccinations and was developed according to the conditions in the field. The questionnaire tests have been carried out so that the final questionnaire sheet that was brought during data collection was correct and appropriate. All respondents who took part in this study agreed by filling out informed consent. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Health Research Ethics Committee of Universitas Negeri Semarang (HERC number:199/KEPK/EC/2022).

### 3 Results

The amount of respondents obtained in this study were 121 people. 63% of female respondents, half of the respondents belong to the young adults age group (20-29 years old) are 50%. Not yet employed or still having student status and students being the largest group, namely 44 people (36%). The are 56% of respondents are highly educated and 84% of respondents are citizen of Semarang. Details about the characteristics of the respondents can be seen in table 1.

**Table 1.** Characteristics respondents

	Characteristics Respondents	Number (%)
Gender	Male	45 (37%)
	Female	76 (63%)
Age Group	Adolescents	18 (15%)
	Young adults	61 (50%)
	Adults	42 (35%)
Occupation	Unemployed (student)	44 (36%)
	Employee	41 (34%)
	Housewife	14 (12%)
	Entrepreneur	10 (8%)
	Others	12 (10%)
Education Level	Basic Education	5 (4%)
	Secondary Education	47 (39%)
	Higher Education	68 (56%)
Domicile	Semarang	102 (84%)
	Outside Semarang	19 (16%)

This study examines several matters related to the pre-implementation of COVID-19 vaccination, there are sources of information on vaccination implementation, registration mechanisms and methods or methods for registering vaccinations. Then, the data obtained was analysed and produced the information shown in table 2. Most of the respondents (49%) knew that information on the implementation of vaccinations came from social media. Almost all respondents (98%) register for the COVID-19 vaccination collectively, can be with relatives, office mates, society or local village officials. While the method/the way of vaccination registration was carried out by the majority of respondents through the VICTORI website is 68%

**Table 2.** Pre-implementation of COVID-19 vaccination

		Number (%)
Vaccine Information	Cadre/Health worker	15 (12%)
	Village worker	1 (1%)
	School/Office/ Society/Organization	7 (6%)
	Friends/relatives/family	39 (32%)

	Social Media	59	(49%)
The rule of registration	Independent	3	(2%)
	Collective	118	(98%)
How to register	Sign up directly	39	(32%)
	Through the website Victori.semarangkota.go.id	82	(68%)

Information regarding the implementation of vaccinations in the middle era like this, is already better than at the beginning of the COVID-19 pandemic. Many sources share information with both online and offline media. This study found that most of the respondents received information on vaccination through social media. Some of the respondents stated that,

*“My info is from government-owned social media (R33)”, “It just appears on the social media homepage (R110)”, “various social media accounts share this info (R76), “group chat broadcast (R67)”.*

Next, we asked the respondent how the vaccination services received were compared to what was expected. If the expectations and reality received equal or even exceed these expectations, it will lead to satisfaction with the services received. Most of the respondents (33%) stated that the service was good, as stated by the following respondents

*“Overall is like expectations (R81)”*

Broadly, we asked respondents to detail the parts of the vaccination service that they felt were satisfactory and also those that were not as expected. We present the results of interviews with respondents into several themes. The first theme is the respondent's perspective on the re-registration process at the location of the vaccination center. Then, it continues with themes related to queues, serving human resources and finally the observation stage of side effects.

### 3.1 The registration process at the Vaccination Center Location

The first process that everyone who will be vaccinated will go through is re-registration. The staff will check whether the respondent has registered for vaccination on the VICTORI website. If already registered respondents will be invited to go to the next stage. This registration process determines the respondent's first impression of the overall service received. As the respondent (R6) stated *“overall is good, from the registration procedure stage it is already good”*. A different opinion was put forward by the respondent (R35) *“need clarity of the flow, the registration section is not clear, the other parts are the same”*

### 3.2 Queue

The implementation of vaccination at vaccination centers is limited in time, in a week it is usually carried out once or twice on weekends, there are Saturday or Sunday. This time limitation is one of the factors causing people to queue up for vaccines. What's more, in shopping centers, usually on weekends there is a surge in visitors which also increases interest in getting vaccinated as well. We asked respondents about this queuing process, and found several problems,

*“The queue is long and the seats are few (R1)”, “The queue is irregular and makes groups (not keeping their distance) (R4)”, “The queue is not regular, there is a random queue (R2)”.*

### 3.3 The Human Resources Serviced

We found that officers who provide services are the key to make comfort and satisfaction of respondents who receive these services. The several respondents, such as respondent (R43) stated *"the friendliness of the staff is needed, it is clear who will be vaccinating. "The staffs' vicious attitude made him uncomfortable"* (R119). Apart from friendliness, dexterity is also another indicator of the respondent (R42) *"Dexterity of staff determines the length of waiting in line, the more dexterous is better"*. Achieving a friendly and dexterous attitude requires training of staff before providing services. This was also mentioned by the respondent *"It is needed to be training for staffs, and see how it is implemented"* (R52). The number of staffs who provide services is adjusted to the goals and process of the service. Several respondents stated,

*"The amount of staff is small, causing crowd problems (R40)", "there are no staffs managing the queue lines (R120)*

### 3.4 The Observation of Side Effect

The last service before the respondent leaves the vaccination center is observation of side effects. This observation was carried out to assess whether the body of the person who had received the vaccine had a response or side effects. To assess this, the respondent was asked to wait 10-15 minutes before leaving the vaccination area. The fact that we got, the observation process is often missed, there are staffs who do not remind about this process, so people who have been vaccinated just leave the vaccination center area.

*"The staffs should have asked us to wait after being vaccinated (R26)", "There were no staffs guarding the exit after the vaccine, so people did not carry out the observation stage (R3)*

### 3.5 The Other Findings

Semarang Health Office has innovations related to information technology handling COVID-19 including vaccination services by creating the VICTORI website. The website contains information on vaccination services related to implementation locations, registration to get vaccine quotas, vaccine stock, implementation time and etc. Everyone who is going to be vaccinated, first registers himself at VICTORI to get a quota. This innovation makes it easier for people to choose a time and place that is near and according to them. *"It's easy to register, you can choose the time (R46)", "even though registering is a chance to get a quota, I think it's good (R55)"*. In practice, when accessing the website, the public, especially respondents, complained that it was difficult to access VICTORI

*"Links on VICTORI are sometimes down (R14)", "links on VICTORI are sometimes difficult to open (R13)"*.

Another thing we found that respondents hoped that vaccination services would continue to be carried out and followed by improvements such as

*"Vaccine education is expanded, so that everyone wants to be vaccinated (R97)", "socialization is increased, especially about the benefits of vaccines (R115)", "more availability of booster vaccines (R105)", "reach of vaccine centers is even wider to sub-districts which are far from the city center (R82)", "Conformity of available vaccine stock info with what is listed in VICTORI" (R51)"*.

## 4 Discussion

In this increasingly sophisticated information technology era, information is quickly circulated widely. In a matter of seconds, news from one place is easily broadcast in another. What is more, with the presence of various social media that are easily accessible and most people have them. Likewise, information related to vaccination services is spread quickly and widely. We found that the public knows information about COVID-19 including vaccination services through social media. This finding is in line with the research on the elaboration likelihood model (ELM) framework, in which social media significantly influences one's informative and persuasive perceptions about attitudes and intentions to do vaccines. [22] In addition, social media has an important role in sharing information about COVID-19, however, the accuracy and credibility of the information published needs to be questioned. [23]

The society who received COVID-19 vaccination services at the Semarang vaccination center, both men and women, were satisfied because the services received were appropriate with what was expected. Similar studies regarding satisfaction with vaccination services in Indonesia show different things, there is no relationship between society's characteristics (age, gender, education and employment) and vaccine service satisfaction. They concluded that this might happen because the vaccination program is a mandatory government program that must be implemented by the society.[24] In theory, the expectations of a person, in this case the patient, are a reference point for comparing and assessing the services and products received. Someone's satisfaction is a feeling subjectivity, which describes the extent to which a person hopes to be satisfied with the purchase of certain commodities (services or products purchased). [25] Thus, understanding society's expectations regarding the vaccination services they will receive is very important to improve services and increase the coverage of COVID-19 vaccinations.

This study found that waiting time or long queue time was a factor that was highly considered by respondents. Long or short queues, regular or irregular queues are sensitive things that affect respondents' satisfaction with vaccination services. Research in Fiji also found that age, gender, educational level and waiting time significantly affect patient satisfaction.[26] Likewise, a study in Nigeria found that patient satisfaction was significantly influenced by waiting time. Factors that affect the length of waiting time include the large number of patients and staff who are inadequate in terms of quantity and quality.[27] In contrast to this study, in China found that waiting time was not related to patient satisfaction. They estimate that a negative relationship occurs because respondents feel the long waiting time is commensurate with the service received.[28] Other studies support these findings which show that waiting time is inversely related to patient satisfaction while examination time is directly related to satisfaction.[29] Hence, if the respondent receives quality and satisfactory service, the amount of time wasted is not a significant problem.

Staff who provide services are also the key to the comfort and satisfaction of respondents. Likewise, research in China found that there were three important factors influencing patient satisfaction, there are the attitude of staff when providing services, followed by the technology used and the convenience of the service area.[25] In line with this, the level of satisfaction of respondents in Spain related to the vaccination program also shows satisfaction with the vaccination service because it received the attention of officers at all service points during

vaccination [29]. The attention that respondents got was related to stimulation, control, memory, and awareness during the service. In connection with these findings, providers should provide excellent service or maximum service from the initial stage of service to the final stage of service received by customers. The form of excellent service that is expected by respondents in this study is the friendly attitude of officers at every stage of service and dexterity in providing services. In theory, excellent service by service providers needs to apply good attitudes, attention and actions at every stage of service.[30] Thus, this research adds to the evidence that customers expect to get excellent service in the service sector which is shown by the friendly attitude and deft actions of staffs at all stages of service.

The procedure for observing (monitoring) side effects shows the attitude of the vaccinator's responsibility towards the respondent so that the respondent feels safe in getting the vaccine he is receiving. This study found that there were respondents who were not asked by officers to carry out observation procedures. Hence, the respondent was not satisfied with the service received. Research in India also found the same thing that the satisfaction of respondents who underwent the procedure for observing vaccine side effects was higher than those who did not receive the procedure.[31]

The another innovation made by the Semarang government regarding the handling of COVID-19 is the website *Victori.semarangkota.go.id*. One of the uses of this website is for online registration of people who will get vaccines. [21], [32] We found that respondents were helped by having VICTORI but there were problems accessing it when it was crowded. The use of information technology for handling COVID-19, especially after the vaccine was not only carried out by Semarang, the Centers for Disease Control and Prevention (CDC) utilized information technology to monitor people's health and feelings after receiving the COVID-19 vaccine [33][34].

## 5 Conclusion

The presence of vaccination centers makes it easier for people to get vaccines, besides that the vaccination coverage rate can be increased and fulfilled. Our findings add to the evidence that the staff's friendliness and efficient service makes respondents feel comfortable and satisfied with the service. The services that comply with procedures make people feel safe receiving vaccinations. We recommend that the government continue to carry out the vaccination program at vaccination centers with the improvements such as the need for staff training so that they can provide excellent service when providing vaccination services.

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Proceedings of the 6<sup>th</sup> International Seminar on Public Health and Education 2022 (ISPHE 2022)

29 June 2022, Semarang, Central Java, Indonesia

*ISPHE 2022*

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ISBN: 978-1-63190-380-9

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