

**Analysis of Sports Participation Characteristics in West Java Society**

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**Abstract**

The participation rate in sports and the types of sports people are interested in are important as a basis for determining sports policies in West Java, because knowing the participation rates and the types of sports people are interested in provides concrete data references to follow up on sports development policies for policymakers. This research was conducted using a cross-sectional study method involving 18,450 participants and 110 SP3OR volunteers in 27 districts and cities in West Java. The instrument used was a modified IPAQ questionnaire for measuring West Java people's participation in sports, by the Department of Youth and Sports of West Java Province. The results showed that 49.7% of respondents were active in exercising their favorable sports, including Walking 18.9%, Aerobic Gymnastics 13.4%, Football 12.3%, Cycling 11.6%, Badminton 10.4%, Volleyball 10.1%, Run 8%, Futsal 6.7%, Basketball 1.6%, Swimming 1.6%, Self Defense 1.5%, and other sports 3.5%. This study shows that residents of West Java actively participate in recreational and easy-to-do sports activities with low intensity.

## INTRODUCTION

Public participation rate in exercising is fundamental in sport research because it describes how far someone is exercising. Besides, the data also describe the physical activity and types of sports frequently carried out by society. It also often becomes main data reference in development of sport (R. M. Eime et al., 2016). Physical activity and sport have an important role in preventing various non-communicable diseases, such as heart disease, diabetes, hypertension, etc (WHO, 2018a). Besides, it also has an impact on risk enhancement of non-communicable diseases. One of the causes of the increase in non-communicable diseases is sedentary behavior. According to Riskesdas (2018), the proportion of physical activity classified as less active in general is 33.5%. The proportion of Indonesian residents with sedentary behavior  $\geq 6$  hours per day is 24.1%. The figure is still far compared to other countries which are at least at 50%; even at the beginning 2000s, the number was below 50% that caused many countries start focusing on sport and healthy life style socialization (R. M. Eime et al., 2016; Luiggi et al., 2018; Vandermeersch et al., 2016).

By the times, people's understanding of the importance of a healthy lifestyle must be intensified. Through the changing times, especially in the era of industry 4.0, technological advances make it easier for us as users to carry out various activities at one time. Every technological advancement, since the last 50 years, has been coinciding with the decline in public health (Weinman JA, 2013). Several studies link the relationship between technological development and health. One of the reasons for the relationship between technological development and health is the decrease in physical activity and participation in sports distracted by mobile devices, whether used for playing games or watching (Hasan, 2020). Therefore, it is necessary to intensify the promotion of various sport activities in society. In addition to promotion, there is a need for education and outreach that active lifestyle and exercise are effective ways to improve people's quality of life and health.

The promotion and socialization of sports to the community can stimulate people's interest in exercising. It is easier for society to exercise if they have convenient supports, such as facilities and infrastructure of their favourite sports (R. Eime et al., 2020). By know-

ing the type of sport preferred by society, it will be easy to formulate policy that can have impacts on public directly because it has customized with their preferences and needs. Likewise, the development of facilities and infrastructure will have more effective impacts on the improvement of participation number in sport as it is in accordance with what people like (R. Eime et al., 2020).

The importance of public participation in exercising is proven by many related research. France mentions that school student active exercise is only around 66%, which is lower compared to data in 2001 which reached 79% (Luiggi et al., 2018). Some countries, like Belgium, New Zealand, and Australia, had conducted research and data collection regarding favourable sports in society. It is proven powerful as initial data for designing development of sport, sport policy, and facilities and infrastructure of sports (R. Eime et al., 2020; Group, 2015).

The Ministry of Youth and Sports of the Republic of Indonesia in 2007 issued a book entitled Sport Development Index (SDI) (Mutohir & Maksum, 2007a). This book contains ways to measure sport development which consist of the level of community fitness, the level of participation in sports, the availability of open space, and the ratio of sport human resources. However, in practice, research on these aspects is difficult to achieve continuously or periodically, whether conducted by the government, private sectors, or academia. Therefore, the impact on scientific publications related to SDI is still minimal and there is much discussion about part of the SDI variable, namely physical activity.

Analysis of sport characteristics is an important foundation to be the basis for making policies so that they are right on the target. As an example, a sport policy research conducted in the Netherlands collected data on the characteristics of people's interest in sports as a reference for the government in carrying out a long-term planning related to the development of sport facilities and infrastructure and the sport curriculum to be implemented in schools (Houlihan et al., 2009; Waardenburg & van Bottenburg, 2013; Zheng et al., 2018).

Unfortunately, in Indonesia, the research related to the participation rate of society and the type of sports preferred by society is limited. The research is still dominated by the physical activity level research

(Apriantono., 2020; Hasan et al., 2019; Mutohir & Maksum, 2007b; Natalia, 2016; Soraya et al., 2017). SDI is not yet optimal in measuring the level of sport participation in West Java, so this research was carried out by making adjustments to measurements based on the characteristics of West Java residents in the form of Sports Community Participation Rates (APMO), which included the types of sports and the intensity category of sports often carried out by public. This research is expected to become the basis for determining sport policies. Moreover, West Java is the province with the largest population in Indonesia, thus it is hoped that the data of this study can also be a reference for other provinces.

## METHODS

This study was carried out using cross sectional study, involving 18,450 people from West Java, coming from 27 Regencies/Cities, and 110 Districts as respondents. The research also involved 110 volunteers named Bachelor Companion of Sport Development Movement (SP3OR). The method used referred to previous research (Badrukamal et al., 2021). The instrument of the study included modification of International Physical Activity Questionnaire (IPAQ) as poured in the guideline book of public participation measurement in sports in West Java (APMO) compiled by Department of Youth and Sports of West Java Province.

### Participants

The determination of the sample was by dividing the samples into six strata based on occupational and education backgrounds, including students, civil servants/military/police/state employees, private employees, self-employed/entrepreneurs, farmers/fishermen, and others. Furthermore, to determine individual samples from each stratum, purposive sampling was conducted based on the affordability and effectiveness of data collection conducted by SP3OR. From the total population of West Java (49.935.858), each stratum required 10% of population of strata, but the number should be at least 5 (except when the population was less than 5 people) and no more than 30 people (although 10% of the population involved more than 30 people). For example: 1) when the strata population amounted to 30 people and 10% of it equalled to 3 people, then the sample taken should be at least 5 people; 2) when the strata

population amounted to 500 and 10% of it equalled to 50 people, then the samples should be no more than 30 people. The determination of samples of the strata was listed based on domicile, not the working place. The method used was based on the previous research (Badrukamal et al., 2021).

### Instrument and Procedure

The instrument used in this study was APMO to measure public participation in sport in West Java. The questionnaire was the modification of the International Physical Activity Questionnaire (IPAQ) and the Sport Development Index (SDI, which consists of over 14 question items) questionnaire. The questionnaire was also used to reveal physical activity, including high, moderate, and low category, and sedentary behavior performed in the last seven day. Besides, there were also questions about types of sports. The instrument was stored in Google Form. The SP3OR gave the Google Form link to the samples as well as giving guidance to fill in the questionnaire. This process was aimed to make it easier to researcher to input and analyse the data. To ensure that participants answered the questionnaire correctly, SP3OR staff conducted interview according to the questionnaire questions to ensure that the subject answers were filled in correctly.

Participation rate in sport in West Java was obtained from the answer of the question “*do you do sport last week?*” The first step taken was counting the APMO on the Subdistrict level using the following formula:

$$APMO = \frac{\sum x_1}{n} \times 100 \%$$

$$\sum x_1 = \text{Number of samples that exercised/answered Yes}$$

$$N = \text{Number of sample}$$

Furthermore, to find out the value on the Regency/City level, the average of each District in each Regency/City was calculated. To examine the West Java APMO value, the average of 27 cities in West Java was calculated. The measurement was conducted at the end of year 2021. Whereas, to find out the type of sport frequently carried out by society in West Java, the answer of the question “What kind of sport do you often do in exercise?” was used. Then, the percentage was calculated based on the choice of sport.

## RESULT

From 18,450 respondents of study this, the APMO level of West Java was 49.7%. The 49.7% was divided into the most frequent sports, including walking 18.9%, aerobics 13.4%, football 12.3%, cycling 11.6%, badminton 10.4%, volleyball 10.1%, running 8%, futsal 6.7%, basketball 1.6%, swimming 1.6%, self-defense 1.5%, others 3.5%, and not answering 0.5% (Figure 1).

The group of individual sports consisted of walking, self-defense, swimming, cycling, and running. While the group of team sports included aerobic, soccer, volleyball, badminton, futsal, and basketball. The West Java society tended to like team sports (54.5%) than individual sports (41.6%). The rest chose the sport outside the provided choices or not answering the question.

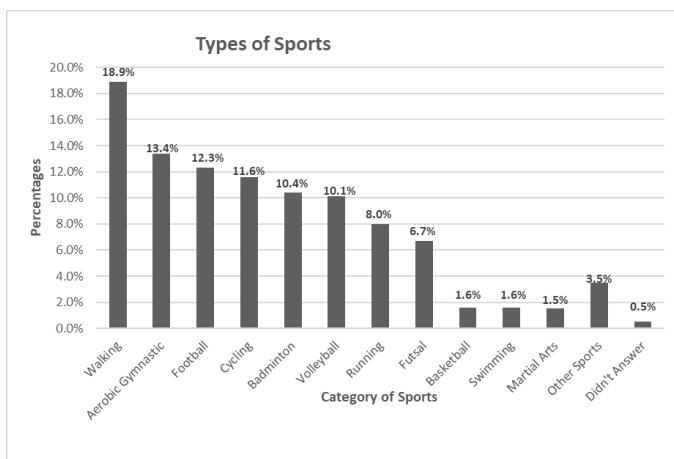


Figure 1. Bar Types of Sports

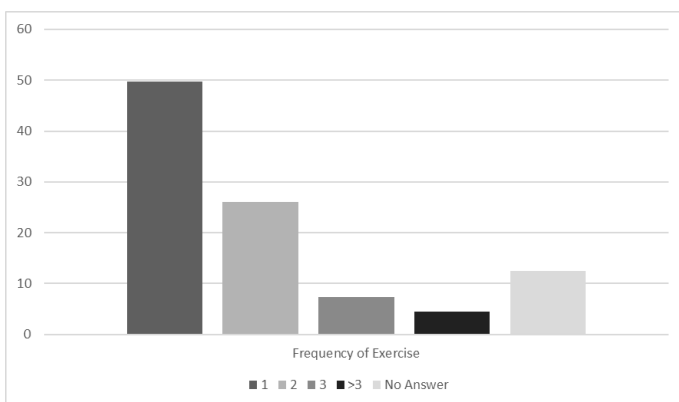


Figure 2. Frequency of High Intensity Exercise

Furthermore, other results showed the frequency of exercise with high intensity, including once in a week by 49.7%, twice in a week by 26%, three times a

week by 7.3%, and more than three times a week by 4.5%. The remaining 12.4% gave no answer. The average frequency of sport with high intensity in a week was 1.7 days (Figure 2).

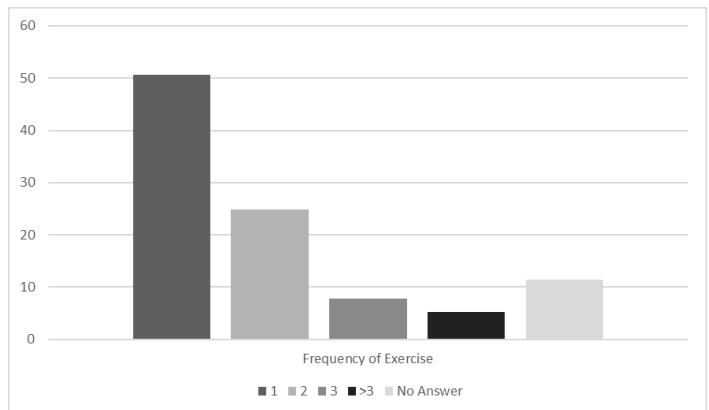


Figure 3. Duration of High Intensity Exercise

Another result related to high intensity sports is duration of exercise. The duration of exercise was divided into five groups, namely 0-30 minutes, 31-60 minutes, 61-90 minutes, 91-120 minutes, and more than 120 minutes. Group 1 was 13.8%, group 2 was 26.3%, group 3 was 10.1%, group 4 was 8%, and group 5 was 2.5%. Another 39.4% did not answer (Figure 3).

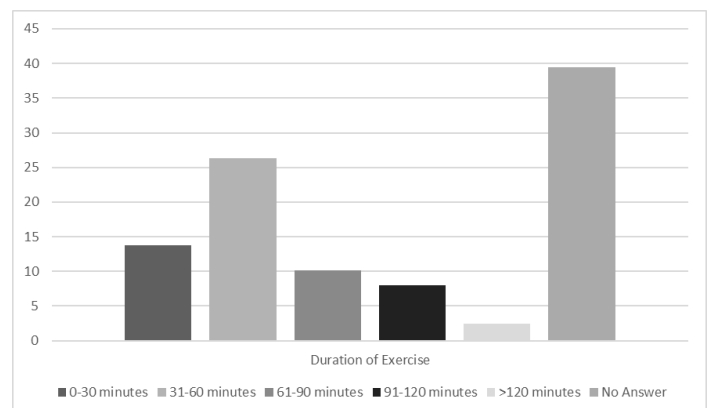


Figure 4. Frequency of Moderate Intensity Exercise

Frequency of exercise with moderate intensity was divided into four groups, including once a week, twice a week, three times a week, and more than three times a week. Results show that 50.6% exercised with moderate intensity once a week, 24.9% twice a week, 7.8% three times a week, 5.2% more than three times a week, and 11.4% did not answer.

Duration of exercise with moderate intensity was

divided into five groups, namely 0-30 minutes, 31-60 minutes, 61-90 minutes, 91-120 minutes, and more than 120 minutes. The result showed that 19.6% in group 1, 25.9% in group 2, 6.7 % in group 3, 5.8% in group 4, and 1.7% in group 5. Around 40.4% did not answer (Figure 5).

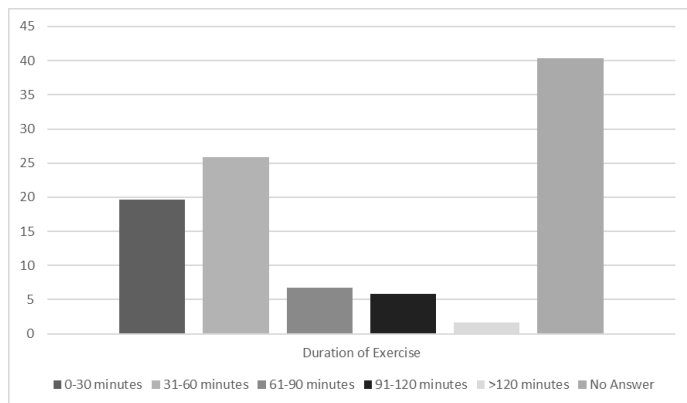


Figure 5. Duration of Moderate Intensity Exercise

Frequency of exercise with low intensity consisted of four groups, including once a week, twice a week, three times a week, and more than three times a week. The result showed that 29% exercised with low intensity once a week, 17.2 % twice a week , 9.9% three times a week, 34.5% more than three times a week, and 9.4% did not answer (Figure 6).

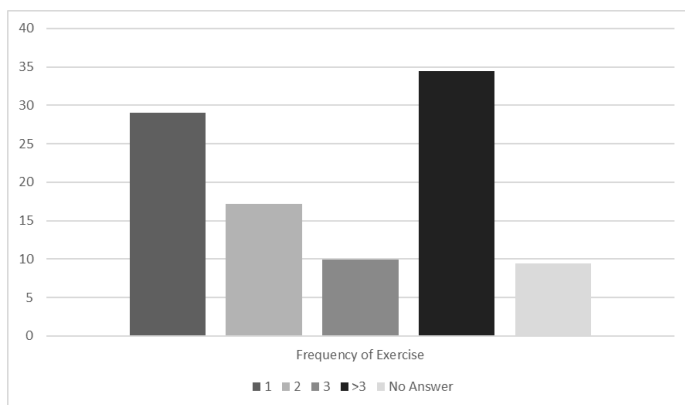


Figure 6. Frequency of Low Intensity Exercise

Duration of exercise with low intensity was divided into five groups, namely 0-30 minutes, 31-60 minutes, 61-90 minutes, 91-120 minutes, and more than 120 minutes. The result showed that 27.3 % in 0-30 minutes, 14.8% in 31-60 minutes, 3% in 61-90 minutes, 1.7% in 91-120 minutes, and 1.3% in more than120 minutes. Around 52% did not answer (Figure 7).

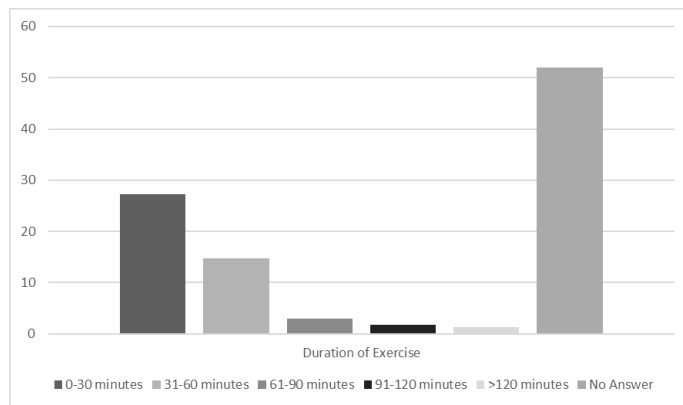


Figure 7. Duration of Low Intensity Exercise

## DISCUSSION

The The purpose of this study was to examine the level of participation of West Java society in sports and preferred sports. The objective of the study has been already answered (see Figure 1). Based on Figure 1, the most frequent sport carried out by society in West Java was walking (18.9%). It is reasonable as walking is a simple physical activity and does not need a huge expense.

The high public interest in walking with low intensity is in line with the phenomenon occurring in Copenhagen. The average of walks by Copenhagen residents is 42% and cycling is above 52% (Johansson et al., 2019). The lowest duration of walking and cycling is found in the elderly group and people with obesity. In Indonesia, cycling is still lower than other sports, such as soccer and aerobics. The difference might be caused by the fact that bicycle has already become a tool of transportation for the citizens in Copenhagen. The bicycle has become a lifestyle and a habit for going to school and the workplace. It is what makes a significant difference between Copenhagen and West Java. At the beginning of 2020, cycling started to spread. At the end of the covid-19 pandemic, bicycles became one of the methods to reduce boredom.

The most interesting thing is that the percentage of cycling and running only reached 19.6% of the total sports carried out by West Java society. It is different from various research conducted in European countries, which are always dominated by walking, cycling, and running (Andersen et al., 2018; Bo Andersen et al., 2000; Schnohr et al., 2007, 2015; WHO, 2018). Another difference was found in the high percentage of aerobic exercise (13.4%) which became the second highest

in West Java. Self-defense was the lowest after swimming, although parents and schools commonly teach self-defense early, the activity is not sustainable as a hobby (Gubbels et al., 2016).

Soccer for sure is a beloved sport among team sports in every country, either as viewers or participants, followed by badminton, volleyball, futsal, and basketball. The sport requiring simple space will keep increasing. Futsal, basketball, volleyball, and badminton are easy sports to be played anywhere, where badminton becomes the easiest sport and requires the smallest field compared to other sports.

Low intensity sports were more frequently performed by the subjects compared to sports with moderate and high intensity. It is in line with the objective of exercising of the subjects, namely for maintaining health, and aligned with the result that many subjects did sport 3 times a week, which is relevant with WHO recommendations to do sport regularly three times a week. The low enthusiasm in high intensity sport is because high intensity sport is intended for sport achievement. In line with the pyramid of sport coaching, the peak of sport performance is gained from construction and cultivation of sport, thereby it is reasonable if sport intensity done by the subjects is very much low (Alexander, 2006).

Besides that, other factors that influence popularity and interest of public to certain sports include infrastructure, culture, and sport flagship in the country. Infrastructure becomes a reason why swimming is not in a high demand in Indonesia although it is a basic and familiar sport since early education in school (Commisison AS, 2016). Furthermore, the difference in culture also has impact, such as the use of bicycle as a friendly transportation and has a low impact on environment which cultivates the level of public participation in cycling in Indonesia. Another factor that has impacts is sport flagships. Badminton becomes the favourite sport in Indonesia and West Java gets medals in each sporting event, which make badminton as a culture and gain many interest of West Java society.

In the realization, sports in society are divided into many kinds, including the sport you can do individually and in team (Borgers et al., 2018; R. M. Eime et al., 2016; Kumar et al., 2018). Likewise, some are recreational and some focus on development and achievement. From this research data, it can be concluded that

the population of West Java actively participates in recreational sport activities, such as walking and aerobic exercises with low exercise intensity. The large number of subjects in this research is expected to be representative to the real condition of the people in West Java. Public participation rate in exercising is a solution to lower the mortality rate caused by non-communicable diseases. Improving the strategy to increase the participation of public should be customized with capabilities and characteristics of each region. One of the most important thing is to know the trend of preferred sports (R. Eime et al., 2020). Findings of this study would be beneficial for developing Indonesia sport policies to focus on all scope of sports, including elite sports, recreational sports, and educational sports. The limitation of this study is that the response from the community has not been maximal in participating in this research.

## CONCLUSION

In conclusion, this study shows that West Java society is active in recreational sports, especially in walking and aerobics. After that, the sports are dominated by soccer, cycling, badminton, volleyball, and running. Types of sports tend to be determined by the existing facilities and infrastructure in the area. It becomes the main constraint for public, thus they choose to do recreational sports which do not require special facilities and infrastructure. This study is expected to be a reference in determining sport policy development based on data in West Java. Further research will focus on increasing the quality and quantity of respondents.

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## CONFLICT OF INTEREST

The authors declared no conflict of interest.

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