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HUBUNGAN AKTIFITAS FISIK DAN TINGKAT KARDIOVASKULAR PELAJAR DI BANTARAN SUNGAI BANJARMASIN

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND CARDIOVASCULAR LEVELS OF STUDENTS ON THE BANJARMASIN RIVERBANKS

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Abstrak

Kondisi lingkungan mempengaruhi aktivitas fisik. Lingkungan tempat tinggal siswa secara signifikan mempengaruhi kemampuan fisik mereka. Faktor lain yang mempengaruhi kebugaran fisik meliputi tingkat aktivitas fisik, gizi, kondisi ekonomi, kondisi lingkungan, pola pikir masyarakat, serta fasilitas dan infrastruktur yang tersedia, termasuk fasilitas olahraga. Tujuan penelitian ini adalah untuk menentukan karakteristik aktivitas fisik dan tingkat kebugaran fisik siswa SMP di kawasan tepi Sungai Banjarmasin. Metode yang digunakan dalam penelitian ini adalah deskriptif kuantitatif. Sampel dalam penelitian ini adalah siswa SMP di kawasan tepi Sungai Banjarmasin. Alat penelitian yang digunakan meliputi kuesioner aktivitas fisik dan tes kebugaran fisik, yang meliputi lari 1000 meter untuk siswa laki-laki dan lari 800 meter untuk siswa perempuan. Analisis data dalam penelitian ini dilakukan menggunakan aplikasi SPSS 22.0. Penelitian ini menyimpulkan bahwa terdapat hubungan positif dan signifikan antara aktivitas fisik dan tingkat daya tahan kardiovaskular siswa di kawasan tepi Sungai Banjarmasin. Hubungan positif ini menunjukkan bahwa jika siswa lebih aktif dalam aktivitas fisik, daya tahan kardiovaskular mereka juga akan meningkat.

Kata kunci: Aktivitas Fisik; Kebugaran Fisik; Siswa; Sungai.

Abstract

Environmental conditions influence physical activity. The environment in which students live significantly influences their physical abilities. Other factors that influence physical fitness include the level of physical activity, nutrition, economic conditions, environmental conditions, community mindsets, and available facilities and infrastructure, including sports facilities. The purpose of this study was to determine the characteristics of physical activity and the level of physical fitness of junior high school students in the Banjarmasin Riverbank area. The method used in this study was descriptive quantitative. The sample in this study was junior high school students in the Banjarmasin Riverbank area. This research instrument used a physical activity questionnaire and a physical fitness test, which included a 1000-meter run for boys and an 800-meter run for girls. The data analysis used in this study was conducted with the SPSS 22.0 application. The study concludes that there is a positive and significant relationship between physical activity and the cardiovascular endurance levels of students in the Banjarmasin Riverbank area. This positive relationship indicates that if students are more active in physical activities, their cardiovascular endurance will also improve.

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Keywords: Physical Activity; Physical Fitness; Students; River.

INTRODUCTION

Schools are places for education and learning to equip students to become better. In implementing learning, schools implement a curriculum. In each curriculum, Physical Education, Sports, and Health (PJOK) is a mandatory subject that students must take. The implementation of PJOK is crucial for developing the soul, body, and mind in achieving physical fitness. Physical fitness is essential for every individual because it supports the smoothness of daily activities without significant fatigue and provides reserve energy for other activities. Thus, students with good physical fitness will be able to attend lessons in a pleasant, healthy environment and appear fitter while achieving satisfying results in their learning activities. The physical fitness of students is influenced by the pattern of activities they carry out.

Physical activity (Pribis et al., 2010; Steve Stork & Stephen W. Sanders, 2008) is significant for the overall growth and development of children. Through physical activity, it can optimise the mastery of skills and attitudes that lead to healthier behaviours in life and also facilitate cognitive, social, unique physiological, and neurological development. Physical activity is a body movement produced by skeletal muscles that requires energy expenditure. Regular physical activity can improve fitness (Hsieh et al., 2014) (Pohan, Supriadi, and Abady 2025)and health for the body (physical). Doing physical activity regularly has benefits for body health (Dumith et al., 2011; Hamrik et al., 2014).

In order to maintain physical fitness through physical activity, schools require PJOK subjects, which are compulsory subjects at all levels of education units. Students attend PJOK learning for 2 hours per week. This makes it less effective in developing physical fitness. Based on the results of research (Andiyanto et al., 2020) the effectiveness of students' movement learning time in following physical education, sports, and health subjects, the proportion of effective time utilization carried out by students for movement is 63.33% with a total effective time allocation of 57 minutes, 46.67% with a total effective time allocation of 42 minutes, 44.44% with a total effective time allocation of 40 minutes, and 46.67% with a total effective time allocation of 42 minutes.

People who have less physical activity tend to be overweight and obese (Christianto, 2018). Good physical activity is significant for maintaining physical health (Myers et al., 2015), mental health and maintaining quality of life to stay healthy and fit (Atikah Proverawati & Eni Rahmawati, 2012). According to data from the World Health Organization (WHO) in 2018, as many as 23% of adults and 81% of adolescents in the world do not do enough physical activity and data from the 2018 Riskesdas shows that the prevalence of low physical activity levels in the Indonesian population aged ≥ 10 years increased from 26.1% to 33.5% (Ministry of Health of the Republic of Indonesia, 2018).

Naturally, physical activity is influenced by environmental conditions. The environment in which a student lives significantly influences their physical abilities (Aphamis et al., 2015; Biddle et al., 2012; Muis, 2016). The environment is a factor that can influence a person's physical growth rate. The most important factors here are economic conditions related to nutritional status, social

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environment, daily activities, sports facilities and infrastructure, and community mindsets. The environment influences all aspects of human life and activity. The environment influences a person's physical growth and abilities, regardless of whether they live in coastal or mountainous areas. Therefore, it is clear that the environment influences a person's physical growth rate. This is due to different environmental conditions and other factors such as nutritional status, economic conditions, community mindsets, and available facilities, including sports infrastructure.

Differences in residential areas will influence the activities of their communities. Each environment influences a person's circumstances, including differences in residence, lifestyle, and physical activity (Zainuddin et al., 2024). These environmental differences cause each person to adapt to their surroundings. Individuals also carry out this adaptation during physical activities. These differences become unique characteristics of the activities carried out by communities. In communities living along riverbanks, people are often found using rivers for socio-economic activities. This condition encourages parents to encourage children to engage in various physical activities around riverbanks.

Throughout Indonesia, the government has implemented a domicile system policy for secondary school students. This policy is based on the Regulation of the Minister of Primary and Secondary Education (Permendikdasmen) No. 3 of 2025 concerning the New Student Admissions System. This policy requires students to choose and provides opportunities for students to attend schools based on their proximity to their homes. This policy allows students to attend schools close to their homes. This relatively close distance impacts students' physical activity (Irfandi, 2018; Muhammad Abdul Aziz Santoso, 2023) ranging from walking to school, cycling, and other physical activities.

The novelty in this study is that the researcher focuses on obtaining a picture of the physical activity carried out by students related to the cardiovascular levels on the banks of the Banjarmasin River. By conducting this study, we can gain insight into what students do for physical activities and their cardiovascular levels on the banks of the Banjarmasin River. The novelty in this study is that the researcher focuses on the relationship between the physical activity of students who live on riverbanks and cardiovascular levels where students who live on riverbanks have different activities than students in other areas. The urgency of this study is to be able to determine the physical activity carried out by students on the banks of the Banjarmasin River with various kinds of physical activities that are different from students who live in other places.

Based on this background, the researcher is interested in examining the physical activity and cardiovascular levels of students. The purpose of this study is to determine whether there is a relationship between physical activity carried out by students and the cardiovascular levels of junior high school students on the banks of the Banjarmasin River.

METHOD

This study is a descriptive quantitative study. Quantitative research methods are a means used to answer research questions related to numerical data and statistical programs (Wahidmurni, 2017). The population used in this study

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were junior high school students residing in the Banjarmasin Riverbank area. According to (Arikunto, 2016), the population is all the data that is the focus of a researcher within a specified scope and time. The sampling technique used is purposive sampling. Purposive sampling (Sugiyono, 2016) is a method of selecting samples based on their characteristics for specific purposes. The sample characteristics were determined as follows: 1) the school is located near the river, 2) the students live near the river, and 3) the students are active and not currently ill. The sample in this study consisted of junior high school students in the Banjarmasin River Basin. The research sample consisted of public junior high school students in the North Banjarmasin District.

This research instrument uses a questionnaire to obtain data on physical activity. A questionnaire is a technique for collecting data by providing written questions or statements for the sample to answer (Sugiyono, 2016). The questionnaire uses a 1-5 scale, where the sample provides a score for each aspect stated in each attached question. The fitness test to determine the cardiovascular level uses a 1000-meter run test for male students and an 800-meter run test for female students (Kementrian Kesehatan, 2019). The data analysis in this study utilised the SPSS 22.0 application to determine the relationship between variable X and variable Y. The analysis involved interpreting and converting the research data into information to conclude. The hypothesis proposed in this study was that there was a relationship between variable X, which refers to the physical activity carried out by students, and variable Y, which refers to having a good level of cardiovascular endurance.

RESULT

The purpose of this study was to determine the relationship between physical activity and cardiovascular fitness levels among students living along the banks of the Banjarmasin River. Based on the analysis of the research results, descriptive statistical data on physical activity at Banjarmasin State Junior High School were obtained, as follows:

1. Descriptive Statistics Test of Physical Activity Statistics

Table 1 Descriptive Statistics of Physical Activity

Descriptive Statistics	
Mean	8.58
Median	8.50
Mode	8.75
Standar Deviation	1.48
Max Value	12.13
Min Value	5.75

From the descriptive statistics table, we obtained a mean of 8.58, a median of 8.50, a mode of 8.75, a standard deviation (SD) of 1.48, a maximum value of 12.13, and a minimum value of 5.75.

2. Descriptive Statistical Test of Cardiovascular Endurance Level

Descriptive statistics of research data on the cardiovascular endurance levels of junior high school students living along the banks of the Banjarmasin River in Banjarmasin, namely.

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Table 2 Descriptive Statistics of Cardiovascular Endurance Level

Descriptive Statistics	
Mean	5.29
Median	5.20
Mode	6.99
Standar Deviation	1.92
Max Value	10.23
Min Value	3.52

From the descriptive statistics table, we obtained a mean of 5.29, a median of 5.20, a mode of 6.99, a standard deviation (SD) of 1.92, a maximum value of 10.23, and a minimum value of 3.52.

3. Percentage Distribution of Physical Activity

Based on the data distribution of physical activity percentages, the results of this study are presented in the following table.

Table 3 Percentage Distribution of Physical Activity

Category	Amount	Percentage
Low	28	21.4
Currently	103	78.6

From the results of the physical activity percentage distribution table, 21.4% fell into the low physical activity category, and 78.6% fell into the moderate activity category.

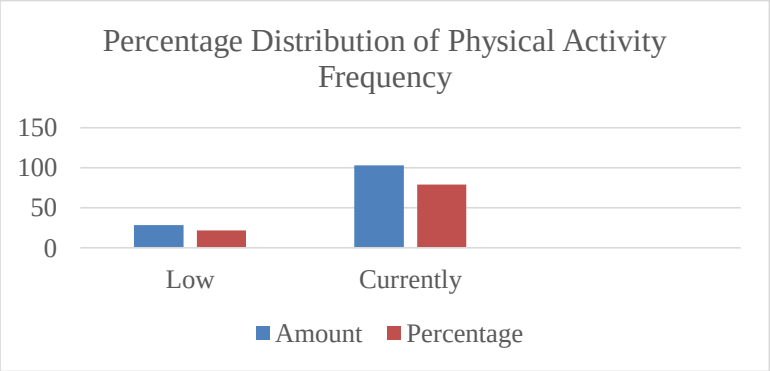

Figure 1 Percentage Distribution of Physical Activity Frequency

4. Percentage Distribution of Cardiovascular Endurance Levels

Based on the frequency distribution data of cardiovascular endurance levels, the results of this study are presented in the following table.

Table 4 Percentage Distribution of Cardiovascular Endurance Levels

Category	Amount	Percentage
Excellent	12	9.2
Good	20	15.3
Fair	24	18.3
Poor	27	20.6
Inferior	46	35.1

Based on the frequency distribution data of cardiovascular endurance levels, the results of this study are presented in the following table. From the results of the frequency distribution table, 9.2% of cardiovascular endurance levels were in the excellent category, 15.3% were in the good category, 18.3%

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were in the fair category, 20.6% were in the poor category, and 35.1% were in the inferior category.

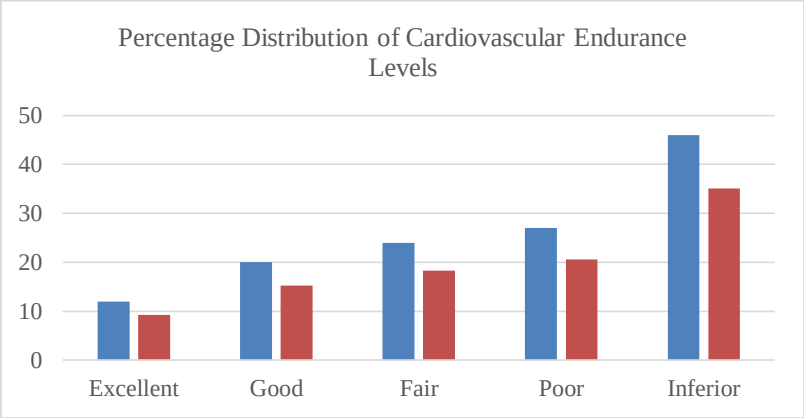

Figure 2 Percentage Distribution of Cardiovascular Endurance Levels

5. Hypothesis Testing

The hypothesis in this study is "There is a significant relationship between physical activity performed by students and variable Y, namely good cardiovascular endurance among students in Bantaran Sungai Banjarmasin." The results of the hypothesis test using correlation analysis are presented in the following table.

Table 5 Correlation Coefficient Between Physical Activity and Cardiovascular Endurance Level

Correlations

		Cardiovascular	Activities
Cardiovascular	Pearson Correlation	1	.313**
	Sig. (2-tailed)		.000
	N	131	131
Activities	Pearson Correlation	.313**	1
	Sig. (2-tailed)	.000	
	N	131	131

Based on the results of the above analysis, a correlation coefficient between physical activity and physical fitness of 0.313 (positive direction) was obtained, meaning that the better the physical activity, the better the physical fitness of students in terms of cardiovascular aspects. The significance test of the correlation coefficient was conducted by comparing the calculated r value with the table r value at α = 5% and N = 131-1 = 130, resulting in a table r value of 0.313. The correlation coefficient between rx.y = 0.313 > r(0.05)(131) = 0.313 and the significance value p 0.000 < 0.05, meaning that the correlation is significant. Ha states that "There is a significant relationship between physical activity and cardiovascular fitness in students.

DISCUSSION

Based on the results of data analysis, a correlation coefficient of 0.313 was obtained between physical activity and physical fitness. The significance test of the

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correlation coefficient was conducted by comparing the calculated r value with the table r value at α = 5% and N = 131-1 = 130, resulting in a table r value of 0.313. The correlation coefficient between rx.y = 0.313 > r(0.05)(131) = 0.313 and the significance value p 0.000 < 0.05, meaning that the correlation is significant. The abbreviation " Ha" means that there is a significant relationship between physical activity and cardiovascular fitness among students. The data analysis results show a positive value of 0.313. This means that the more physical activity students perform, the better their cardiovascular fitness.

The results of this study align with those of (Nadya Khaerunisa et al., 2025), indicating that regular physical activity improves cardiovascular health. Therefore, when training cardiovascular capacity or endurance, several influencing factors must be considered, namely BMI, age, physical activity, and exercise habits (Budi et al., 2023; Puji Tri Astuti & Indra Bayu, 2022). Students can engage in physical activity both at school and outside of school. Physical activities carried out at school include reducing sitting time, especially when there are no classes, encouraging students to move around during breaks and free time, participating actively in physical education classes, and joining extracurricular activities. Physical activities that can be done outside of school include participating in sports activities, either independently or by joining a club. Additionally, reducing the use of gadgets, especially during less beneficial activities, and for those who live close to school, walking or cycling to school is recommended.

Regular physical activity will help maintain good cardiovascular fitness. The results of this study align with previous research (Made Billy Dwiki Saputra et al., 2022; Rsa, 2018) (Rapika et al. 2025)indicating that students with moderate physical activity have poor cardiovascular endurance. This occurs because individuals who engage in high physical activity also have high cardiovascular endurance. Physical activity performed in a measured and regular manner affects the function of other organs, including cardiovascular performance. The function of these organs will increase, which will then affect a person's health and fitness. Physical activity affects fitness levels related to heart function. The heart muscles of individuals who engage in good physical activity or exercise undergo hypertrophy, making them stronger(Togatorop et al. 2024)(Raghuveer et al., 2020).

This increase in heart muscle strength will affect the quality of the heart's pumping action. This will cause the heart to work less hard to pump blood, supplying energy to the muscles because the heart muscles are stronger. The number of capillaries in the muscles will also increase, making oxygen diffusion easier and enabling muscles to transport more oxygen than those of someone who does not engage in physical activity.

The impact of this research is that teachers can understand the impact of physical activity undertaken by students outside of school. Students in carrying out physical activities have different patterns and durations. The results of this study can be used by teachers to map the physical activities undertaken by students and teachers can innovate in learning by approaching physical activity undertaken by students outside of school. This learning approach can provide stimulation to students to do physical activity better and be aware of the

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importance of physical activity for health. The limitation of this research is that this research was conducted on a smaller sample. Further research is needed with a larger sample size. Further research can also be conducted in other areas with the characteristics of student domiciles located on riverbanks.

CONCLUSION

Based on the results of data analysis, there is a positive and significant relationship between physical activity and cardiovascular fitness among students in Bantaran Sungai Banjarmasin. This positive relationship shows that the more students engage in physical activity, the better their cardiovascular fitness will be.

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