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Correlation between Physical Activity and Nutritional Status with Physical Fitness Level of Karate Extracurricular Students

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ABSTRACT

Optimal physical fitness will support achievement, including extracurricular karate at SMP Kartika IV-11 Surabaya. Physical activity and good nutritional status are some of the determining factors that support physical fitness. This study aimed to determine the correlation between physical activity and nutritional status with the level of physical fitness in karate extracurricular students at SMP Kartika IV-11 Surabaya. Quantitative research correlational design. The research subjects were taken from a total population of 29 students. Physical Activity Questionnaire-Adolescents (PAQ-A) questionnaire instrument to assess Adolescent Physical Activity; measurement of Body Mass Index by Age (IMT/U) to measure nutritional status; and Student Fitness Test Nusantara (TKPN) to measure physical fitness level. Statistical tests used the Pearson correlation test. The analysis results showed no significant correlation between physical activity and physical fitness level with a value of p = 0.34 (p>0.05) because other factors may influence, such as age, gender, genetics, nutrition, and smoking behavior. The results of the analysis of nutritional status with physical fitness level had no significant correlation with a p-value = 0.33 (p>0.05). A person's nutritional condition is influenced by various factors, namely direct and indirect factors, such as various eating habits, disease, environmental hygiene, economic factors, and others.

Kata kunci
Aktivitas Fisik
Status Gizi
Kebugara Jasmani

Abstrak

Kebugaran jasmani yang optimal akan mendukung pencapaian prestasi, termasuk pada ekstrakurikuler karate di SMP Kartika IV-11 Surabaya. Aktivitas fisik dan status gizi yang baik menjadi salah satu penentu faktor yang mendukung kebugaran jasmani. Tujuan penelitian ini adalah untuk mengetahui hubungan aktivitas fisik dan status gizi dengan tingkat kebugaran jasmani pada siswa ekstrakurikuler karate di SMP Kartika IV-11 Surabaya. Penelitian kuantitatif desain korelasional. Subjek penelitian diambil dari total populasi sebanyak 29 siswa. Instrumen angket *Physical Activity Questionnaire-Adolescents* (PAQ-A) untuk menilai Aktivitas Fisik Remaja; pengukuran Indeks Massa Tubuh Berdasarkan Usia (IMT/U) untuk mengukur status gizi; dan Tes Kebugaran Pelajar Nusantara (TKPN) untuk mengukur tingkat kebugaran jasmani. Uji statistik menggunakan uji korelasi *Pearson*. Hasil analisis ternyata aktivitas fisik dengan tingkat kebugaran jasmani tidak ada hubungan signifikan dengan nilai p = 0,34 (p>0,05) karena terdapat faktor lain mungkin mempengaruhi, seperti usia, jenis kelamin, genetika, nutrisi, dan perilaku merokok. Hasil analisis status gizi dengan tingkat kebugaran jasmani tidak ada hubungan yang sifnifikan dengan nilai p = 0,33 (p>0,05). Kondisi gizi seseorang dipengaruhi oleh berbagai faktor, yaitu faktor langsung dan tidak langsung, seperti berbagai kebiasaan makan, adanya penyakit, kebersihan lingkungan, faktor ekonomi dan lainnya.

INTRODUCTION

Physical fitness has several aspects, namely cardiovascular ability, muscle strength, endurance, flexibility, body proportion, speed, speed of movement, agility, ability to maintain balance, coordination of movement, and reaction time (Lubis, 2018). Someone who is more physically fit can complete daily tasks longer than someone who is not fit (Irsanty et al., 2019). Several aspects determine the level of physical fitness, including doing regular sports or physical activity, consuming nutritious foods, and maintaining a diet (Rudolf Kesatria Gulo et al., 2023).

Physical activity is the movement of the muscles and skeleton of the body together with the expenditure of energy (I. N. Kasyifa et al., 2018). When carried out regularly, the benefits of physical activity will improve muscle performance properly and prevent obesity, including diabetes that occurs in children and adolescents (Kolb et al., 2021; Rohmah & Muhammad, 2021). This problem can be solved through practical measures, such as increasing physical activity, leading to more people becoming healthier (WHO, 2017). In addition, monitoring and measuring physical activity and fitness in children and adolescents is essential. One of the main targets of the program to improve physical fitness is adolescents aged 13-15 years. Rapid physical, psychological, and cognitive changes occur during this period. Physical activity and nutritional intake can dominate the physical aspect (Putro, B., & Winarno, 2022).

Nutritional status is a condition of the body that is influenced by several factors, such as energy consumption and use. People must consume nutrient-rich and balanced foods to achieve optimal fitness because it can affect their nutritional status (Anggraeni, 2016). Food consumption and the adequacy of nutritional needs affect a person's nutritional status. Normal nutritional status refers to the balance between the body's needs and the nutrients obtained from food. Age, gender, exercise level, and height affect a person's nutritional needs (Thamaria, 2017). A person's physical fitness will increase if one's nutrition improves and will decrease if one's nutrition is poor (Wardhani et al., 2015). Adequate nutritional fulfillment is believed to increase physical fitness and improve students' learning outcomes, especially in sports they like, by participating effectively in learning activities at school. Learners will be healthier, more productive, and more creative if they receive adequate nutrition (Meliana, 2023).

Schools have ways to improve students' physical fitness, including organizing extracurricular sports activities. This is similar to the needs of kids, where meeting their routines depends on their level of physical condition (Bahari et al., 2020). Through this activity, it is hoped that it will become a place to develop student's abilities and interests and achieve further achievements. The benefits of extracurricular activities are significant for students because they can provide opportunities to participate directly through learning experiences that involve physical activity, sports, and games (Setyaningrum, D., Egar, N., & Soedjono, 2023).

SMP Kartika IV-11 Surabaya has several extracurricular programs, one of which is karate martial arts extracurricular. As an assistant coach in the extracurricular program, the author conducted observations and interviews. The results of the author's interview with the PJOK teacher at school

showed that karate extracurricular has many achievements and often participates in competition events compared to other extracurricular activities, such as basketball, dance, futsal, and others. However, some students have less than ideal-training times, complaining of fatigue. Therefore, additional physical fitness measurements are needed to determine how fit students are so that they can support or optimize their achievements.

Most learners prefer attractive foods to be shared on digital platforms rather than foods with nutritional value. Junk food, a high-calorie food often eaten by teenagers, can cause obesity (Sabli, 2024). High-calorie fast food, including fried foods, noodles, pizza, burgers, kebabs, and various types of ice, is sold in the SMP Kartika IV-11 Surabaya school canteen. The routine of students participating in karate extracurricular activities at SMP Kartika IV-11 Surabaya who consume high-calorie foods can impact their nutritional status. Poor nutrition can lead to weight accumulation, triggering various health problems and interfering with the smooth running of physical activities. As a result, it can cause a decrease in their physical fitness. The author interviewed five students who participated in karate extracurricular activities. They rarely do physical activity and are facilitated in transportation to school by being picked up by their parents.

The phenomenon that occurs at SMP Kartika IV-11 Surabaya is that students easily experience fatigue during training because they are ignorant regarding the benefits of physical activity and consuming foods that are rich in nutrients and balanced. Because the description above describes the importance of these two aspects, the authors are interested in examining the correlation between physical activity and nutritional status with physical fitness in karate extracurricular students at SMP Kartika IV-11 Surabaya.

METHOD

This research is a type of quantitative research with a correlation approach because it aims to determine the correlation between the variables to be studied (Agustianti et al., 2022). The sample in this study is the population of students who participate in karate extracurricular activities at SMP Kartika IV-11 Surabaya, totaling 29 students. In this study, the instrument used for data collection was a test instrument. The measuring instruments used for this study are: 1) Measurement of physical activity using The Physical Activity Questionnaire-Adolescents (PAQ-A) questionnaire (Kowalski Ph.D. et al., 2004); 2) Measurement of nutritional status using the Body Mass Index according to age (BMI-for-age); 3) Measurement of physical fitness level using the Nusantara Student Fitness Test (Agus Rusdiana et al., 2022). The data in this study used the correlation test, which showed standard data, so the researchers used the Pearson parametric test.

RESULTS AND DISCUSSION

Tabel 1. Result Of Analysis of Physical Activity, Nutritional Status, and Physical Fitness of The Subject

Variables	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Physical activity	1.51	3.75	2.50	0.48
Nutritional status	-2.42	1.96	-0.28	1.26
Physical fitness	1.90	3.90	2.63	0.52

According to the table above, of the 29 subjects, the average physical activity score was 2.50 ± 0.48, the nutritional status score was -0.28 ± 1.26, and the physical fitness score was 2.64 ± 0.52.

Physical activity

Tabel 2. Physical Activity Distribution

Classification	*Number of Values*	*Frequency*	*Presentation*
Very High	4.1 – 5.0	0	0
Height	3.1 – 4.0	6	20.7
Medium	2.1 – 3.0	19	65.5
Low	1.1 – 2.0	4	13.8
Very Low	0.0 – 1.0	0	0
Amount		29	100

Measurements of a person's physical activity are recorded to measure their level of physical activity. The Indonesian modified PAQ-A questionnaire, available as a Google Form link, was to be completed by learners. The questionnaire asks respondents to provide statements outlining how much physical activity they have done over the past seven days. A predefined list of numbers is then used to calculate the respondent's physical activity level. After that, the activity can be categorized as very low, low, medium, high, and very high. The research findings show that Kartika IV-11 Surabaya Junior High School students who take karate as an extracurricular activity have moderate activity with a percentage of 65.5%. Students may have moderate activity because most students in the last week lack physical activity, and they are facilitated in transportation to school by being picked up by their parents. In the school environment, children and adolescents can do activities in this age range by walking to school (Rosiana et al., 2023).

This needs to be the main focus for teachers, coaches, and parents of students because there are many benefits of physical activity, such as improved blood circulation, increased happiness hormones, and stimulation of optimal growth of children (Elzas, 2021). In addition to this, there are many benefits of physical activity, such as reducing the risk of several diseases, including hypertension, type 2 diabetes, cancer, dimensions, depression, and cardiovascular disease, and improving quality of life, mind, anxiety, and sleep quality (Physical Activity Guidelines for American, 2018). Children who lack physical activity are at high risk of experiencing various health problems that can trigger other diseases in the future (Wicaksono, 2021). Physical inactivity in children can also increase the risk of disruption

of bone growth, bone fragility, osteoporosis, and muscle weakening. In addition, this condition can also trigger unstable mood swings and increase the appearance of anxiety disorders (Rosiana et al., 2023).

Nutritional status

Tabel 3. Nutritional Status Distribution

Nutrition Status Category	*Threshold (Z-Score)*	*Frequency*	*Presentation*
Malnutrition (thinness)	-3 SD s/d <-2 SD	4	13.8
Good nutrition (normal)	-2 SD s/d + 1 SD	19	65.5
More nutrition (overweight)	+1 SD s/d + 2 SD	3	10.3
Obesity (obese)	>+ 2 SD	3	10.3
Amount		29	100

Students' height and body weight are directly measured to assess nutritional conditions and calculate BMI-of-age. A scale can be used to measure body weight, while a stadiometer can be used to measure body height. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2020 concerning Child Anthropometry Standards, the measurement results are processed using five BMI-of-age categories, which include thresholds and categories of child nutritional status. With a percentage of 65.5%, students who participate in karate extracurricular activities at SMP Kartika IV-11 Surabaya have good nutritional status. Good nutritional status generally allows a person to perform high-intensity activities (Sepriadi, 2017).

Physical fitness

Tabel 4. Physical Fitness Distribution

Category	*Achievement Results*	*Frequency*	*Presentation*
Very well	>4	0	0
Good	3 – 3.9	7	24.1
Enough	2 – 2.9	20	69.0
Not enough	1 – 1.9	2	6.9
Not at all	<1	0	0
Amount		29	100

The Nusantara Student Fitness Test (TKPN) evaluated students' physical fitness levels. The TKPN test stages include several tests, namely V Sit and Reach to assess flexibility and Sit Up for 60 seconds to measure abdominal muscle endurance, Squat Thrust for 30 seconds to measure endurance strength, mobility, balance, coordination, and agility, and Pacer Test to measure the maximum work capacity of the heart and lungs. Based on the study results, children who participate in extracurricular karate at SMP Kartika IV-11 Surabaya have sufficient physical fitness with a percentage of 69.0%. With this research, it can be a concern for teachers, parents, and trainers. Especially karate extracurricular coaches at SMP Kartika IV-11 Surabaya who can support and optimize their achievements. In addition to its ability to improve performance, physical fitness also helps improve

overall health, increase endurance during exercise, increase blood flow and oxygen absorption, lower blood pressure, slow heart rate, improve heart muscle function, prevent obesity, build muscle, and stop deaths from heart disease (S. Adi et al., 2020; Darmawan, 2017).

The correlation between physical activity and physical fitness

Tabel 5. Correlation Test Result

Variable	*p-value*	*Information*
The correlation between physical activity and physical fitness	0.34	There is no significant correlation

The correlation test results between the two variables obtained a value of p = 0.34 (p>0.05), which indicates no significant correlation between the level of physical activity and the level of physical fitness of students. In addition, one study found no significant correlation between physical exercise and fitness (Putro & Winarno, 2022; Suryadinata et al., 2020). Other factors may influence this. Besides physical activity, other factors that influence physical fitness include age, gender, genetics, nutrition, and smoking behavior. Genetic variables can affect hemoglobin levels, muscle fibers, posture, obesity, heart, and lungs (Wiarto, 2015).

Increasing physical activity or regular exercise can help people become more physically fit. The correlation between physical activity and physical fitness was also quite strong in a previous study of 372 junior high school students in Yogyakarta, specifically with a significance value of 0.000>0.05 (M. Adi et al., 2019). The findings of this study differ from theory and previous research due to the more significant number of respondents and data taken by observing and measuring at the time of the study. As mentioned earlier, a person's fitness level cannot only be measured through physical activity, but many other factors can also affect a person's fitness level.

Correlation between nutritional status and physical fitness

Tabel 6. Correlation Test Result

Variable	*p-value*	*Information*
The correlation between nutritional status and physical fitness	0.33	There is no significant correlation

The results of this study indicate no significant correlation between students' physical fitness level and their nutritional status, with a correlation value of the two variables of 0.33>0.05. Research I. N. R. Kasyifa (2018), shows no correlation between adolescent physical fitness and BMI-for-age at SMK Negeri 1 Semarang, with a p-value of 0.252>0.05. Research findings (Cukei et al., 2024;

Ramadhana, 2016) showing no correlation between nutritional status and physical fitness level support this. Thus, someone who consumes healthy food does not necessarily have a high level of physical fitness. Nutritional status and physical fitness are not significantly correlated. It is not certain that low fitness levels will always be associated with inadequate or excessive nutritional status. Research findings Ramadhana (2016), support the idea that there is no direct correlation between physical fitness and nutritional status. A healthy diet does not necessarily result in the best possible level of physical fitness. Physical fitness levels and dietary conditions are not closely linked, and having too much or too little nutrition does not necessarily mean having low fitness. Regular exercise can help undernourished or overnourished students to maintain and improve their physical fitness.

Researchers recognize that various factors influence a person's nutritional condition, and a person's body mass index (BMI) cannot be used to determine their nutritional status. Several variables can influence nutritional status. Direct and indirect factors are two groups of factors. Direct factors include 1) Various eating habits and 2) diseases or other health problems. Indirect influences include things like 1) family financial situation, 2) food availability, 3) culture, 4) environmental hygiene, and 5) availability of health facilities (Adriani, 2012). The previously mentioned variables, directly and indirectly, influence the nutritional health of karate extracurricular students at SMP Kartika IV-11 Surabaya. Based on the researcher's observations, students' food choices directly impact their nutritional condition. Meanwhile, indirect factors, especially around the school, showed that hygiene in the SMP Kartika IV-11 Surabaya canteen was still poorly maintained.

CONCLUSION

Based on data analysis and discussion, it can be concluded that there is no significant correlation between the level of physical activity and fitness in karate extracurricular students of SMP Kartika IV-11 Surabaya ($p = 0.34$). There is no significant correlation between nutritional status and physical fitness of karate extracurricular students of SMP Kartika IV-11 Surabaya ($p = 0.33$). Teachers and extracurricular coaches can motivate students to implement a healthy lifestyle through sports activities, so that they can improve physical fitness. and the need to add variables that can affect physical fitness to complete the findings. suggestions based on research findings, 1) it is hoped that additional variables that can influence students' physical fitness levels need to be taken into account, 2) similar research needs to be carried out with different samples, more variables, and other elements that can influence physical fitness levels so that the scope of research findings can be expanded, 3) based on research findings it needs to be the main focus for teachers, trainers and parents of students to pay attention to fulfilling physical activity to support better physical fitness.

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