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The Relationship Between Physical Fitness And Cognitive Ability Of Students Of Primary Secondary School 8 Cirebon City

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Abstract

Study purpose. Fitness is an ability and ability This research aims to determine the relationship between physical fitness and cognitive ability of students in grade VIII A SMP Negeri 8 Cirebon City. The background of the research is based on the low level of student fitness and the absence of similar research in the school.

Materials and methods. The research method used is quantitative descriptive with a survey approach and instruments in the form of the Indonesian Physical Fitness Test (TKJI) and PJOK subject report card scores as indicators of cognitive ability. The research sample amounted to 27 students who were selected through purposive sampling techniques.

Results. The results showed that most students were in the "moderate" physical fitness category and the PJOK report card scores were all in the "good" category. The normality test showed normally distributed data, but the product moment correlation test yielded a significance value of 0.830 (> 0.05), meaning there was no significant relationship between physical fitness and students' cognitive abilities.

Conclusion. Thus, it can be concluded that physical fitness is not a factor that is directly related to students' cognitive abilities in the context of this study.

Keywords: Physical Fitness, Cognitive Ability, Junior High School Students

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Introduction

Education is a tool to develop oneself, mentally, mindset and also the quality of one's self, because education provides self-motivation for every human being to be better in all aspects of life (Muawanah, 2018). As a formal educational institution, schools are obliged to develop the potential of learners optimally which includes the development of cognitive, affective, and psychomotor aspects in a balanced manner.

One of the efforts to achieve the function of education is through learning physical education, physical education is part of the overall subjects taught in schools and cannot be separated from other education, even a very important part of education in supporting other educational processes. Physical education is one of the subjects that plays an effort to create an environment that is able to influence the potential of students to develop in a positive direction through physical fitness activities.

Physical education aims at physical freshness can also aim to shape the character and

personality of students, and can foster a spirit of cooperation and sportsmanship, and can also shape students' motor skills (Foster, 2019). In addition, physical education also has a role in realizing national education goals, one of which is in the cognitive aspect, boys or girls who are categorized as having low motor skills are most likely to get low achievement results as well (Lopes et al., 2013)

(Basri, 2018) Explains that cognitive development focuses on children's thinking skills including learning, problem solving, rational and remembering. Therefore the development of cognitive skills is directly related to other developments including communication, motor, emotional, social and adaptive skills. So that physical fitness can be used as one of the indicators for optimizing cognitive abilities.

(Bastian & Nurbait, 2021) Explaining that children's cognitive abilities will be closely related to motor skills, because at the time of motor learning, it will train and optimize motor perception, which is an ability in children or psychological aspects related to planning, motivation, perception, and decision-making. So, whether you realize it or not, in physical learning or PJOK indirectly, in addition to training motor skills, also training children's cognition.

The relationship between PJOK and children's cognitive abilities has not been understood by most students, especially at SMPN 8 Cirebon City. This is based on the results of observations of several students who were randomly selected, even some of these students have never done sports activities outside of class hours. So from the results of these observations, the author concludes that students' understanding and awareness of students in maintaining physical health and fitness is still low.

In fact, according to (Bastian & Nurbait, 2021) Physical education indirectly has a role in the acquisition of academic achievements, if we pay attention in the school environment, children or students who regularly exercise or regularly engage in physical activities have a greater percentage of achievement or better academic scores than other students who have never exercised or have low levels of physical activity.

Based on the above explanation about physical education, cognitive ability, and the relationship between physical education and children's cognitive abilities. So, the purpose of this study is to find out the relationship between physical fitness and cognitive abilities of SMPN 8 Cirebon City students.

Materials and Methods

The type of research used in this study is quantitative descriptive. This is explained by Sugiyono (2007: 147) that descriptive research is interpreted as a way to explain the data that has been collected by the researcher without any treatment from the researcher, meaning that the data is obtained as it is. The focus of this study is the level of physical fitness of grade VIII students at SMP Negeri 8 Cirebon City. The method used by the researcher in this study is a survey. The data collection technique used by the researcher in this study is a practical test with the Indonesian Physical Fitness Test instrument.

Population and Sample

Population Population of this study is all grade VIII students of SMP Negeri 8 Cirebon City which totals 196 people. Meanwhile, the number of samples in this study was determined by the author using *the purposive sampling technique* , which is a sample determination technique with certain considerations. The author's considerations in determining the number of samples in this study are: (1) not sick at the time of data collection, (2) aged 13-15 years, (3) active in PJOK learning, (4) recommendations from PJOK teachers of SMPN 8 Cirebon City, and (5) the average value of PJOK is the best among the existing classes, which is as many as 7 classes.

Based on these criteria, the appropriate sample criteria among class VIII there is only one class, namely class VIII A with a total of 27 students.

Data Analysis Techniques

Furthermore, the author determines the data analysis techniques that will be used in this study. Based on the purpose of the research, the data analysis techniques used are as follows:
1) Grouping the standard score into five (5) categories according to the TKJI criteria according to the TKJI criteria (Febrianti et al., 2022)

Table 1. TKJI Norms

No	Total Values	Klasifikasi
1	22-25	Very Good (VG)
2	18-21	Good (G)
3	14-71	Medium (M)
4	10-13	Less (L)
5	5-9	Very Less (VL)

2) To group the learning value of PJOK into three (3) categories referring to (Azwar, 2017)

Table 2. PJOK Value Category

Rumus X < M – 1 SD	Category Enough
$M - 1\,SD \leq X < M + 1\,SD$	Good
$M + 1\,SD \leq X$	Very Good

3) Convert values to percentages to find out the percentage of each category with the formula

$$P = \frac{f}{N}\ x\ 100\%$$

P = Percentage of student scores
f = Total scores as a result of data collection
N = Maximum score

4) Conducting a correlation analysis using *product moment* to find out whether there is a relationship between PJOK and cognitive ability using SPSS refers to (Bastian & Nurbait, 2021) The decision-making criteria in this *product moment* correlation test are:
Accept Ho if r counts less than r tables, it means that there is no relationship.
Subtract Ho if r counts as greater than r table, it means that it is concluded that there is a relationship.

Result

The results of data collection and data analysis will be described in order as follows:

1. TKJI Results

   The results of the students' physical freshness test are then categorized according to the references used by the author. The results of the TKJI classification can be seen in table 3 below

Table 3. Frequency distribution of TKJI results

No	Value Interval	Category	F	%
1	22-25	Very Good	0	0

2	18-21	Good	1	3,74
3	14-17	Medium	10	37,13
4	13-10	Less	10	37,13
5	5-9	Very Less	6	22
	Total		27	100

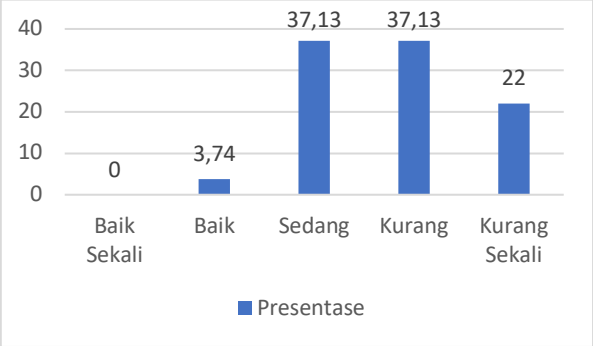

Figure 1. Percentage of TKJI result categories

Based on the data in table 3 and figure 1 above, it shows that the physical fitness practice test for students in grade VIII A SMP Negeri 8 Cirebon City is in the "very less" category of 22% (6 students), the "less" category of 37.13% (10 students), the "medium" category of 37.13% (10 students), the "good" category of 3.74% (1 student), and "very good" of 0% (0 students). From this data, the physical fitness level of students in grade VIII A SMP Negeri 8 Cirebon City is in the "moderate" category.

2. PJOK Report Card Score

The student's PJOK report card scores are then made a frequency distribution and then calculated according to the value categorization formula that the author uses as a reference. The results of the categorization of report card scores can be seen in table 4 below.

Table 4. Report card score categories

Interval	Category	Frequency	%
X < 80	Enough	0	0
80 ≤ x < 92	Good	27	100
X > 92	Very Good	0	0

Based on the data in table 4, it shows that the PJOK report card scores of grade VIII A SMPN 8 Cirebon City are 100% in the "good" category, meaning that all 27 students have "good" report card scores.

3. Normality Test

Furthermore, to be able to complete the correlation test, it is necessary to know in advance and ensure that the distribution of data is in the normal category. Therefore, to find out whether the distribution of data is distributed normally or not, a normality test is carried out with the help of SPSS. The test criteria are: If the calculated t value is greater than α 0.05, the data is declared normal, while if the t-count is less than α 0.05, the data is declared abnormal. The data from the normality test can be seen in table 5.

Table 5. Normality test results

Tests of Normality			
	Kolmogorv-Smirnov[a]		
	Statistic	**df**	**Sig.**
Report Card Score	.141	27	.178
TKJI Results	.079	27	.200*

*. This is a bound of the true significance
a. Liliefors Significance Correction

Based on the results of the normality test, the t-count data for the report card value was 0.178 and the t-count data for TKJI was 0.200. Referring to the hypothesis testing criteria, when the t-count data is greater than α 0.05 then the data is declared normal. Therefore, the report card and TKJI score data is greater than α 0.05, so it is stated that the report card and TKJI score data are normally distributed.

4. Product moment correlation hypothesis test

The last step to find out whether there is a relationship between Physical Fitness and Report Card Scores is by correlation testing which in this researcher uses the product moment correlation test. The criteria in this test are that there is a significant correlation if r is greater than α 0.05, and there is a significant correlation if r is less than α 0.05. The results of the porduct moment correlation test can be seen in table 6 below.

Table 6. Product moment correlation test results

Correlation			
		T-TKJI	Tnilai
T-TKJI	**Pearson Correlation**	1	.043
	Sig. (2-tailed)		.830
	N	27	27
Tscore	**Pearson Correlation**	.043	1
	Sig. (2-tailed)	.830	
	N	27	27

Based on the test criteria and statistical calculation results, it can be seen that the r of TKJI calculation is 0.830 and r of the report card score of 0.830 is greater than α 0.05, so it can be concluded that there is no significant relationship between physical fitness and students' cognitive ability.

Discussion

Based on the results of the study (Bastian & Nurbait, 2021) It is stated that motor ability has a significant relationship with cognitive ability. This background makes the researcher interested in conducting follow-up research to find out the relationship between physical fitness and cognitive ability. Referring to the results of statistical tests, it turned out that physical fitness did not have a correlation with children's cognitive abilities.

These results were obtained from the processing of data on physical fitness results and student report card scores which were used as cognitive abilities. These cognitive abilities can be in the form of creativity, concentration and attention to lessons. This is reinforced by the opinion (Navarrete et al., 2021) that physical fitness does not have a significant relationship between physical fitness and cognitive abilities in aspects of creativity, concentration, and attention of children in lessons.

Similar things were also put forward by (Barbosa et al., 2020) which states that physical fitness does not have a positive correlation with cognitive ability which in this case can be in the form of academic achievement in the subject.

CONCLUSION

Based on the results of data processing and data analysis accompanied by references to discussions from several research results of experts, it can be concluded that physical fitness does not have a significant relationship with children's cognitive abilities.

Therefore, the researcher hopes that in the future this research will be followed up with a wider and more in-depth scope so that it will be able to provide useful information for education, especially in physical education, sports and health at the level of educational units.

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