The Relationship between Physical Literacy and Physical Fitness in Physical Education in Senior Schools in the City of Bandung

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Abstract

This study aims to analyze the relationship between physical literacy and physical fitness in physical education learning in grade XI high school students throughout the city of Bandung. The research uses a quantitative method with a correlational approach. The research subjects amounted to 324 students who were selected through cluster random sampling techniques from three State High Schools in the city of Bandung. Physical literacy was measured using the Physical Literacy Assessment of Youth (PLAY) instrument, while physical fitness was measured using the Nusantara Student Fitness Test (TKPN). Data analysis includes instrument validity and reliability tests, descriptive analysis, Pearson correlation tests, and simple linear regression analysis. The results showed that the level of physical literacy of students was in the medium category and there was a positive and significant relationship between physical literacy and physical fitness ($p < 0.05$), although the strength of the relationship was relatively low. Regression analysis shows that physical literacy contributes significantly to students' physical fitness. The conclusion of this study shows that physical literacy has an important role in supporting students' physical fitness, so strengthening physical literacy needs to be systematically integrated in physical education learning in schools.

How to Cite

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INTRODUCTION

Physical literacy is the main topic among high school teachers, because basically physical literacy is very important for the physical fitness of students, of course in physical education learning. Physical literacy can be said to be very important for physical fitness, because physical literacy is the beliefs, motivation, and skills that every individual needs to live a physically active life throughout life (Kusuma & Riyadi, 2024) . Physical literacy plays an important role and contributes to improving physical and cognitive quality through participation in physical activity (Fig. et al ., 2024) . The purpose of physical literacy includes supporting affective, psychomotor, and cognitive development in physical education learning (Minister of Health, 2024) . This concept emphasizes lifelong learning through physical movement and activity, which plays an important role in maintaining health, physical, psychological, social, and cognitive well-being (Ellis, 2020) . Physical literacy is not just about motor skills, but it also involves motivation, confidence, and knowledge that encourage individuals to stay active and maintain their physical fitness (Isep Rifki Fadillah , 2025) . Thus, physical literacy is the main foundation in physical education learning that is able to improve overall physical fitness from physical, cognitive, to affective aspects (DA Kusuma & Riyadi, 2024; Isep Rifki Fadillah, 2025).

Physical fitness itself is defined as a person's ability to carry out daily tasks without experiencing significant fatigue, and still have energy reserves to enjoy leisure time and face urgent needs (Sari, 2020) . Wardani and Nurudin (2020) explain physical fitness as an active level of health where a person is able to perform activities efficiently (Dani Wardani, 2020) . Practically, physical fitness is a physical activity that aims to keep the body fit and not easily tired (Anugrah dkk ., 2022) . The goal of physical fitness is to ensure that the physical education program includes physical, intellectual, emotional, social, and moral aspects so that students grow into confident, disciplined, healthy, fit, and happy individuals (Darmawan, 2017) . In practice, the benefits of physical fitness make daily activities run smoothly without hindrances (Marsanda dkk ., 2023) . However, the reality is that students' physical fitness conditions in school are often still at moderate to low levels, and many have not reached optimal levels to support their achievement (Profit, 2024) , (Source: Suhada dkk ., 2023) , (Cahyadi, 2009) . Factors that

cause it include lack of motivation to exercise, low understanding of physical literacy, and low confidence in complex movements (Edwards dkk ., 2017) .

The relationship between physical literacy and physical fitness is very close and interdependent. Good physical literacy provides a solid foundation for a person to improve physical fitness through motivation, skills, and an understanding of the importance of physical activity for health. On the other hand, optimal physical fitness supports the individual's ability to continue to move actively, thus strengthening the physical literacy aspect itself (Isep Rifki Fadillah , 2025) . However, problems in physical literacy such as low teacher understanding, lack of facilities, and suboptimal curriculum integration can hinder the effectiveness of physical education learning, especially at the high school level (Vasan, 2023) . If left unchecked, physical education may be considered less important and only as a complement, potentially reducing students' interest in actively participating in physical activity and inhibiting the development of physical fitness and the formation of social character through sport. Therefore, the development of physical literacy in physical education learning is essential to form a healthy, active, and productive generation (Kusuma & Riyadi, 2024) .

Physical education is basically an educational program that aims to improve one's physical, mental, and emotional qualities through exercise and physical activity (Moon dkk ., 2023) . According to Malik & Rubiana (2019), physical education is essential for building motor skills, physical and mental health, as well as social and ethical values (Candra dkk ., 2023) . The goals of physical education not only include the physical aspect, but also support students in building a positive identity through increased confidence, individual success, and leadership abilities (Mustafa, 2022) . Physical education plays an important role in maintaining fitness and health and provides opportunities to learn a healthy lifestyle (Mustafa, 2022) . With a good understanding of physical literacy, the application of physical education will be more effective in improving students' physical fitness and optimizing learning outcomes. Therefore, this research is important to understand students' understanding of physical literacy and its relationship to physical fitness, so that physical education learning can have a more positive impact on students' health and sports achievement in school.

Based on this description, the formulation of the problem in this study is how students' understanding of physical literacy and whether physical literacy is related to physical fitness in physical education. This study aims to find out students' understanding of physical literacy and find out and analyze whether physical literacy is related to physical fitness, especially in physical education learning in schools. This research is expected to make a significant contribution to the relationship between physical literacy and physical fitness in physical education learning in schools and provide students with a better understanding of the importance of physical literacy in maintaining physical fitness. This research is different from previous research, which has a novelty in the use of an empirical approach to examine the relationship between physical literacy and physical fitness in high school students in the context of physical education learning, by combining the Physical Literacy Assessment of Youth (PLAY) instrument and the Nusantara Student Fitness Test (TKPN). The results of this study provide quantitative evidence regarding the relationship between physical literacy and physical fitness in high school students throughout the city of Bandung, which was previously limited to conceptual studies and studies at different educational levels.

METHOD

This research uses a quantitative approach, which is based on the philosophy of positivism and aims to collect, analyze, and present data in the form of numbers or numerical variables (Wajdi et al ., 2024) . The quantitative approach was chosen because it allows for the collection of objective, measurable, and statistically analyzeable data, so that the results of the research can be scientifically generalized (Asiva Noor Rachmayani, 2015) . This research was conducted in high schools throughout the city of Bandung, with the subject of the study being grade XI students who participated in physical education learning. The research population included all grade XI students in high schools throughout the city of Bandung. Meanwhile, samples were taken using cluster random sampling techniques, with a sample of 324 students from three schools, consisting of State High Schools High School 14 Bandung, State High School 7 Bandung, State High School 2 Bandung, each in three classes, assuming 36 students per class (Hermina & Huda, 2024) .

The instruments used in this study are Adolescent Physical Literacy Assessment (PLAY),

and the Nusantara Student Fitness Test (TKPN). Physical tests are conducted to measure students' physical fitness through several key components such as endurance, muscle strength, agility, speed, and coordination, which are relevant to physical needs (Rizky & Herdyanto, 2021) .

The research procedure is carried out through several stages. The first stage is preparation, which includes research licensing, sample determination, and preparation of research instruments. The second stage is the implementation of data collection, namely physical literacy measurement using predetermined instruments and physical fitness measurement using TKPN. The third stage is data processing, where all the data that has been collected is recorded and prepared for analysis. Data analysis was performed statistically using Pearson correlation tests and simple linear regression analysis to determine the relationships and influences between variables, which had previously been tested for the validity and reliability of the instruments used. This approach facilitates data processing and the drawing of valid conclusions about the relationship between physical literacy and physical fitness in the context of physical education learning in schools. This study does not contain an excessive statistical formula, but rather explains the analysis techniques used narratively and systematically in accordance with the guidelines for writing quantitative research methods (III & Research, 2017).

RESULTS AND DISCUSSION

The results of the data that have been collected at State High School 7 Bandung, State High School 14 Bandung, and State High School 2 Bandung, for class XI which totals 324 students out of a total population of 1,080 students, are declared and processed using Microsoft Excel 2016. The IBM statistical software SPSS, which aims to make the data that has been collected have relationships and can be used as benchmarks to answer the formulation of problems and draw research conclusions. Before that, the PLAY instrument will be tested for validity and reliability first. Based on the results of the validity and reliability test of the PLAY instrument, the following results were obtained **Table 1.**

Based on the results **Table 1** of the validity test of the playing instruments analyzed using the SPSS program, an r value was obtained for each question item which was then compared with the r of the table of 0.312. The decision-making criterion in this validity test is that if the r value

calculated > the table, then the instrument item is declared valid and suitable for use in the research. The results of the data processing showed that all question items, starting from Question 1 to Question 23, had an r value greater than the r of the table (0.312). This shows that each item of the instrument is able to measure the aspects being studied precisely and consistently. Thus, no question fails this validity test.

Table 1. PLAY Instrument Validity Test

Question	R Count	R Table	Remarks
Question 1	0,684	0,312	Valid
Question 2	0,336	0,312	Valid
Question 3	0,535	0,312	Valid
Question 4	0,676	0,312	Valid
Question 5	0,505	0,312	Valid
Question 6	0,326	0,312	Valid
Question 7	0,676	0,312	Valid
Question 8	0,684	0,312	Valid
Question 9	0,676	0,312	Valid
Question 10	0,575	0,312	Valid
Question 11	0,684	0,312	Valid
Question 12	0,668	0,312	Valid
Question 13	0,676	0,312	Valid
Question 14	0,453	0,312	Valid
Question 15	0,535	0,312	Valid
Question 16	0,684	0,312	Valid
Question 17	0,054	0,312	Valid
Question 18	0,415	0,312	Valid
Question 19	0,575	0,312	Valid
Question 20	0,676	0,312	Valid
Question 21	0,505	0,312	Valid
Question 22	0,535	0,312	Valid
Question 23	0,676	0,312	Valid

Furthermore, a reliability test was carried out to determine the consistency of the instrument in measuring physical literacy, with the following results **Table 2.**

Table 2. PLAY Instrument Reliability Test

Cronbach's Alpha	N of Items
.886	25

The results **Table 2** of the reliability test of the playing instruments analyzed using the IBM SPSS Statistics program, obtained a total of 40 respondents with all data declared valid and no data excluded. This indicates that the data used in the reliability analysis has qualified for further

analysis. The results of the reliability test showed a Cronbach's Alpha value of 0.886 with a total of 25 items. Cronbach's Alpha value is above the commonly used minimum limit, which is 0.70. Thus, it can be concluded that the playing instrument has a high level of reliability and excellent internal consistency. This means that the instrument is capable of providing stable and reliable measurement results.

The first analysis in this study was to use correlation analysis, to find out if there is a relationship between TKPN variables and PLAY variables using IBM SPSS Statistics **Table 3.**

Table 3. Correlation Analysis

		TKPN	PLAY
TKPN	Pearson Correlation	1	.199***
	Sig. (2-tailed)		<,001
	N	324	324
PLAY	Pearson Correlation	.199***	1
	Sig. (2-tailed)	<,001	
	N	324	324

***. Correlation at 0.001(2-tailed)

Based on the results **Table 3** of the correlation test of research data analyzed using the IBM SPSS Statistics program, it is known that the relationship between the TKPN variable and the PLAY variable is analyzed using Pearson correlation. The number of samples (N) used in this analysis was 324 respondents, so the correlation results obtained can be said to be statistically strong enough to represent the condition of the study population. The results of the analysis showed that the value of the Pearson correlation coefficient (r) was 0.199 between the TKPN and PLAY variables. The value is positive, which means that there is a direct relationship between the two variables. This means that the higher the TKPN score, the higher the PLAY score, the more likely it is to be followed by an increase in the PLAY score, and vice versa. However, based on the correlation strength criteria, a value of 0.199 falls into the category of low correlation.

Furthermore, the significance value (Sig. 2-tailed) obtained is < 0.001, which means it is smaller than the established significance level (α = 0.05). Thus, it can be concluded that the relationship between the TKPN and PLAY variables is statistically significant. This means that the correlation that occurs is not due to chance, but actually reflects the relationship between the two variables being studied. Based on the results of the correlation test, it can be concluded that there is a positive and significant relationship between

the TKPN and PLAY variables, although the level of relationship formed is relatively low. These results show that the TKPN variable has a role in influencing the PLAY variable, but not as the only determining factor, so it is possible that there are still other variables that also affect the PLAY variable in this study.

After correlation analysis, this study used a simple linear regression analysis, using IBM SPSS, with the following results **Table 4.**

Table 4. Simple Linear Regression Analysis ANOVA

Model	Sum of Squares	df	Mean Square	F	Say.
Regression	595.365	1	595.365	13.291	<.001b
Residual	14424.191	322	44.796		
Total	15019.556	323			

A. Dependent Variable: Play
B. Predictors: (Constant), Tkpn

Based on the results of a simple linear regression analysis test conducted using the IBM SPSS Statistics program, it is known that the TKPN variable acts as an independent variable (X) and the PLAY variable as a dependent variable (Y). This analysis aims to find out how much the TKPN variable affects the PLAY variable. Based on the results of the ANOVA test, an F value of 13.291 was obtained with a significance level of < 0.001. The significance value is smaller than the significance level of 0.05, so it can be concluded that the regression model used in this study is feasible and significant. This means that TKPN variables together affect the PLAY variable and regression models can be used to make predictions.

The results of simple linear regression analysis can be concluded that the TKPN variable has a positive and significant influence on the PLAY variable, although the magnitude of the influence exerted is relatively small. This suggests that TKPN is not the only factor affecting PLAY, so other variables are needed to obtain a stronger model in explaining the overall PLAY variable.

After descriptive analysis, it can be seen that the level of physical literacy of students is in the diverse category, with the majority of students in the middle category. This shows that in general, students already have a basic understanding of physical literacy, but it still needs to be strengthened, especially in terms of motivation and confidence in doing physical activities. Meanwhile, the results of physical fitness measurements using the National Student Fitness Test (TKPN) show that students' physical fitness levels tend to be in the medium to low category. Some components of physical fitness, such as endurance and muscle strength, have not reached the optimal category for most students.

The findings of the study show that there is a positive and significant relationship between physical literacy and student physical fitness in physical education learning, albeit with low relationship strength. These results indicate that physical literacy plays a role as a supporting factor for physical fitness, but is not the only determining factor. These findings are in line with the concept of physical literacy put forward by Whitehead, who states that physical literacy is the foundation of lifelong physical activity involvement that is influenced by the interaction between physical, affective, cognitive, and environmental aspects.

The low but significant relationship in this study is in line with the results of Edwards et al.'s (2017) research which stated that physical literacy has a positive relationship with physical fitness and physical activity participation, but the strength of this relationship is highly dependent on the learning context and characteristics of students (Edwards et al., 2017). In the context of high school, the limited duration of physical education learning and the low intensity of physical activity outside of school hours can limit the influence of physical literacy on optimal physical fitness improvement.

The descriptive results showed that most of the students were in the category of moderate physical literacy. This condition shows that students already have a basic understanding of the importance of physical activity, but are not fully supported by strong motivation and confidence to participate actively in a sustainable manner. These findings are consistent with the research of Kusuma and Riyadi (2024) which states that the development of physical literacy in schools is still not systematically integrated in physical education learning, resulting in an impact on the low internalization of the value of physical activity as a lifestyle (Kusuma & Riyadi, 2024).

In addition, the level of physical fitness of students who tend to be in the moderate to low category reinforces the findings of previous research that stated that the physical fitness of high school students is still not optimal to support learning activities and daily physical activities (Courtesy of Suhada et al., 2023). This low physical fitness can be influenced by a sedentary lifestyle, low physical activity outside of school, and a lack of habituation of sustainable physical activity (Profit, 2024).

Thus, the results of this study support the hypothesis that there is a relationship between

physical literacy and physical fitness in physical education learning. Although the contribution is relatively low, physical literacy still has a strategic role in building student engagement with physical activity. Therefore, physical education learning needs to be directed not only at the mastery of motor skills, but also at strengthening physical literacy holistically through a learning approach that emphasizes students' motivation, confidence, and understanding of physical activity as part of a healthy lifestyle.

Based on the results of the study, it can be seen that students have an understanding of physical literacy in physical education learning, although the level of understanding is still in the medium category. This understanding is reflected in the aspects of motivation, confidence, physical competence, as well as students' knowledge and understanding of the importance of physical activity. These results show that students already have a basic awareness of the benefits of physical activity for physical health and fitness, but it still needs to be strengthened through structured physical education learning oriented towards the development of physical literacy. These findings are in line with the Physical Literacy theory put forward by Whitehead, which states that physical literacy is the main foundation in building a lifetime of physical activity engagement. Thus, the results of this study support the first hypothesis, namely the existence of students' understanding of physical literacy in physical education. However, the level of understanding that is not optimal shows the need for the role of physical education teachers in integrating the concept of physical literacy more consistently in the learning process.

The results of this study also show a positive relationship between physical literacy and student physical fitness in physical education learning. Students who have a higher level of physical literacy tend to show better levels of physical fitness than students who have low physical literacy. This shows that physical literacy plays an important role in encouraging students' active participation in physical activity, which ultimately impacts improved physical fitness. These findings support the second research hypothesis, namely the relationship between physical literacy and physical fitness in physical education. The results of this study also reinforce the findings of previous research that stated that physical literacy contributes significantly to physical activity engagement and improved physical fitness. Therefore, the development of physical literacy through physical education learning is an important strategy to improve students' physical fitness in an ongoing manner..

CONCLUSION

Based on the results of research and data analysis that has been carried out, it can be concluded that the level of physical literacy of grade XI high school students in the city of Bandung is in the category of sufficient to good. This shows that students have understanding, motivation, confidence, and basic competencies in doing physical activities through Physical Education learning. Structured and diverse learning in schools plays a role in shaping students' understanding of physical literacy as a foundation for living an active and healthy lifestyle. In addition, the results of the correlation test showed that there was a statistically relevant positive relationship between physical literacy and physical fitness in Physical Education learning, although the level of the relationship was relatively low. These findings suggest that physical literacy contributes to students' physical fitness, but it is not the only factor that influences it. Thus, physical literacy has an important role as a support in improving physical fitness, especially if it is optimally integrated in the learning process of Physical Education in schools.

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