International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Comparison Of Physical Literacy Analysis Students In Pjok Subjects On Physical Fitness At The Elementary, Junior High, And High School Levels In Madiun Regency Year 2026

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Abstract

This study aims to determine the level of physical literacy and physical fitness of students, as well as analyze the relationship between the two variables at the elementary, junior high, and high school levels in Madiun Regency. This study uses a quantitative descriptive method of a correlational approach. The research sample amounted to 90 students consisting of class VI MI Salafiyah Barek (25 students), class IX D MTsN 3 Madiun (30 students), and class X TKRB SMKN 1 Kebonsari (35 students), determined through stratified-cluster random sampling technique. Physical literacy data using the Adolescent Physical Literacy Questionnaire (APLQ) from the International Physical Literacy Association (IPLA), physical fitness data using the Indonesian Student Fitness Test (TKSI). Data analysis was conducted using the Kolmogorov-Smirnov normality test, linearity test, and Pearson Product Moment correlation test with the assistance of the IBM SPSS Version 26 program.

The results of the study showed that the physical literacy of elementary school students was generally in the sufficient category (average 92.12), the junior high school level was evenly distributed in the good and adequate category (average 88.73), and the high school level was in the sufficient category (average 86.69); Meanwhile, the physical fitness of the three levels is consecutively dominant in the categories of very good (average 20.88), good (average 18.70), and good (average 21.20). The results of the correlation test showed that there was no significant

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relationship between physical literacy and physical fitness at the elementary school level (r = 0.022; p = 0.915 > 0.05), but there was a significant positive relationship at the junior high school level with the strong category (r = 0.697; p = 0.000 < 0.05) and at the high school level with the medium category (r = 0.464; p = 0.005 < 0.05).

Descriptively, the close relationship between physical literacy and physical fitness between levels shows that the pattern of junior high school is higher than high school, and both are higher than elementary school. These findings indicate that the role of physical literacy in physical fitness is increasingly evident as the level of education increases, especially starting from the junior high school level, so that strengthening physical literacybased PJOK learning needs to be carried out in stages and continuously.

Keywords: ***physical literacy, physical fitness, PJOK, APLQ, TKSI, elementary school, junior high school, high school*****.**

INTRODUCTION

Education is the main foundation in nation building and has an important role in improving the quality of human resources. Through education, it is hoped that the next generation will be born who are faithful, intelligent, characterful, and able to face global challenges, as mandated in Law Number 20 of 2003 concerning the National Education System. Education is seen as a conscious and planned effort to shape people and society as a whole, including attitude, knowledge, and skill competencies (Sakdiah & Syahrani, 2022). Learning activities will be carried out properly if supported by a good curriculum and clear learning objectives, so that schools are required to have programs that are able to improve student achievement, both academic and sports involving physical factors and movement skills.

One of the subjects that specifically emphasizes physical aspects and movement skills is Physical Education, Sports, and Health (PJOK). PJOK aims to develop physical, mental, emotional, social, and healthy lifestyle through physical activity (Battista et al., 2019; Griban et al., 2020), and have been proven to play a role in shaping students' personal and social skills (Opstoel et al., 2020; Wright et al., 2019; Cairney et al., 2019). Well-directed PJOK learning allows students to fill their free time in a healthy way, develop socially, and contribute to physical and mental health (Razouki, 2021), as well as develop the affective and cognitive domains, not only psychomotor (Lynott et al., 2022; Stepanchenko & Briskin, 2019).

Physical activity according to WHO (2017) includes all body movements produced by

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skeletal muscles and requires energy, ranging from work, play, to recreational activities. WHO (2020) recommends that children and adolescents aged 5–17 years do an average of at least 60 minutes of moderate to strenuous physical activity every day because it has been proven to benefit cardiorespiratory, metabolic, and mental health (Bull et al., 2020). However, the coverage of adolescent physical activity in the world and in Indonesia is still far from adequate; Basic Health Research data (Riskesdas, 2018) recorded around 66.8%

Indonesian adolescents are classified as less physically active, a condition that contributes to low immunity and an increased risk of non-communicable diseases from a young age. Low physical activity is closely related to a person's level of physical literacy. The International Physical Literacy Association (2014) defines physical literacy as motivation, confidence, physical competence, knowledge, and understanding to appreciate and take responsibility for lifelong involvement in physical activity. A person who does not understand the reasons and benefits of physical activity is less likely to have the motivation to do so (Higgs et al., 2019); On the other hand, a person who understands the concept of physical literacy tends to be more motivated, confident, competent, and optimal in carrying out daily physical activities. Thus, physical literacy can be seen as an important foundation for the formation of good physical fitness.

Based on this conceptual framework, the researcher who works as a PJOK teacher in Kebonsari District, Madiun Regency, conducted initial observations of students at the elementary, junior high school, and high school levels in the Madiun Regency area. The results of the observations showed a variation in the level of physical activity of the students: some seemed to be active in moving such as playing volleyball, playing soccer, running, and carrying out class pickets, while others preferred to sit and chat with friends during breaks and did not participate in extracurricular sports due to limited time, interests, and a variety of activities available at school.

The tendency to decrease in physical activity seems to be more prominent in Kebonsari District. Some of the indicators observed in schools and recorded in the counseling guidance book and student report cards include students arriving late because they wake up in the afternoon, being sleepy or falling asleep during lessons because they sleep late at night, getting tired quickly when doing activities, and tend to be lazy to move and get tired easily when taking PJOK lessons. A search of students' daily lives outside of school revealed that excessive use of gadgets is one of the main causes: male students tend to spend time playing online games, while female students access social media more. These field findings are in line with a number of recent studies that report a negative relationship between the intensity of gadget use and the level of physical fitness

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of students (Firdaus et al., 2025; Sampurno & Ridwan, 2026).

In addition to the use of gadgets, the habit of hanging out at angkringan until late at night is also found in teenagers, ranging from junior high school, high school, to teenagers who are no longer in school. This kind of staying up late contributes to the disruption of sleep quality, which in turn contributes to reducing physical fitness (Gunarsa & Wibowo, 2021). If this lifestyle is allowed to continue, adolescents are at risk of experiencing a continuous decline in physical fitness so that they are susceptible to various diseases with a high risk of death even though they are still of productive age.

Therefore, it is important for adolescents to be aware of the negative impact of this unhealthy lifestyle and start making changes towards a more balanced lifestyle. The phenomenon of declining adolescent physical fitness in Kebonsari District strengthens the urgency to further examine how students' physical literacy levels are related to their physical fitness, as well as the extent to which the difference in physical literacy levels occurs between levels of education in Madiun Regency. As a PJOK teacher who is directly in contact with this problem in the field, researchers are encouraged to make a real contribution to improving adolescent health through strengthening the understanding and motivation of physical literacy, which is expected to have an impact on improving the physical fitness of students through structured PJOK learning. Based on this presentation, the researcher is interested in conducting a study entitled "Comparison of Physical Literacy Analysis of Students in PJOK Subjects on Physical Fitness at the Elementary, Junior High, and Senior High School Levels in Madiun Regency", with the phenomenon in Kebonsari District as the empirical starting point for this research.

RESEARCH METHODS

The research method used by the researcher is a quantitative descriptive research on the overview of the physical literacy profile of students. According to Sugiyono, (2019) quantitative research can be interpreted as a research method based on the philosophy of positivism, used to research on populations or samples in general, carried out randomly, data collection using research instruments. Descriptive research is research that tries to describe a symptom, event, and event that is happening in the present. Descriptive research focuses on actual problems as they are at the time of the study. With descriptive research, researchers try to describe events and events that are the center of attention without giving special treatment to those events. Data collection techniques using questionnaires or questionnaires. Questionnaire or questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to

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respondents for answers (Sugiyono, 2019).

This research uses an instrument from the International Physical Literacy Association (IPLA) which is translated into Indonesian with the title "Charting Physical Literacy Questionnaire". data collection techniques through a questionnaire with the Google Form Charting Physical Literacy Questionnaire. This research was carried out by applying data analysis using descriptive analysis through the IPLA website, the percentage was obtained from the IPLA (International Physical Literacy Association) website by entering data, then the data that had been grouped through Google Sheets summarized from Google Form.

This research was carried out at MI Salafiyah Barek, Barek Hamlet, Rt. 44 Rw. 05, Pucanganom Village, Kebonsari District, Madiun Regency, MTsN 3 Madiun on Jalan Raya Kebonsari, Balerejo village, Kebonsari District, Madiun Regency, and SMKN 1 Kebonsari in Kedondong Village, Kebonsari District, Madiun Regency, East Java Province, postal code: 63173. The research time was carried out from March 1-31, 2026. With a sample of research which can be described as follows.

Yes	School Name	Levels Represented	Classes	Number of Samples
1	MI Salafiyah Barek	Elementary School (SD/MI)	VI	25 students
2	MTsN 3 Madiun	Junior High School (SMP/MTs)	IX D	30 students
3	SMKN 1 Kebonsari	Vocational High School (SMK), TKRB Expertise Competencies	X TKRB	35 students
Yes	School Name	Levels Represented	Classes	Number of Samples
	Total Sample			90 students

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RESULTS

The results of statistical descriptive research on the physical literacy of grade 6 students at MI Salafiyah Barek can be seen in table 4.1 as follows: Table 4.1 Population and Sample Details

Statis :ics	
N	25
Red	92,12
Median	89,00
Mode	81a
Std. Deviation	10,329
Minimum	75
Maximum	120
Sum	2303

When delivered in the form of frequency distribution, the physical literacy of 6th grade students of MI Salafiyah Barek is presented in table 4.2 as follows:

Table 4.2 Distribution of physical literacy frequency of 6th grade students of MI Salafiyah Barek

Yes	Interval	Categories	Frequency	Percentage
1	X > 107.61	Excellent	1	4%
2	97.28 < X ≤ 107.61	Good	6	24%
3	86.96 < X ≤ 97.28	Enough	10	40%
4	76.63 < X ≤ 86.96	Less	7	28%
5	X ≤ 76.63	Very Less	1	4%
Quantity			25	100%

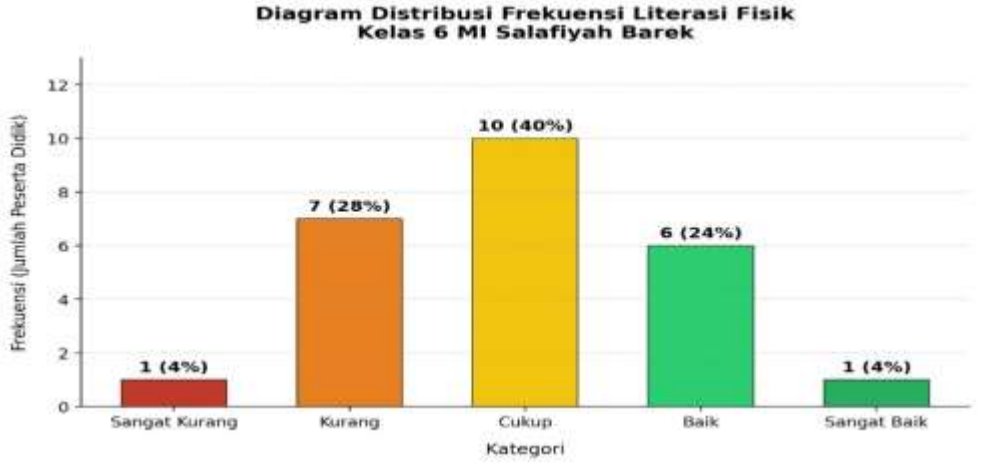
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The categorization in the table above is arranged based on the mean value (Mean = 92.12) and standard deviation (SD = 10.329) of the data, with five levels of categories: Excellent (X > M+1.5SD), Good (M+0.5SD < X ≤ M+1.5SD), Adequate (M−0.5SD < X ≤ M+0.5SD), Less (M−1.5SD < X ≤ M−0.5SD), and Very Less (X ≤ M−1, 5SD).

Based on table 4.2 above, it can be seen that of the 25 students in grade 6 of Mi salafiyah Barek, as many as 1 student (4%) is in the Very Good category, 6 students (24%) are in the Good category, 10 students (40%) are in the Adequate category, 7 students (28%) are in the Less category, and 1 student (4%) is in the Very Poor category.

Diagram 4.1 Distribution of Physical Literacy Frequency for Grade 6 MI Salafiyah Barek



b. Physical Literacy Grade 9 MTSN 3 Madiun

The data from the results of statistical descriptive research regarding the physical literacy of grade 9 students at MTsN 3 Madiun can be seen in table 4.3 as follows: Table 4.3 Descriptive Physical Literacy Statistics MTsN 3 Madiun

Statis :ics	
N	30
Red	88,73
Median	87,00
Mode	84
Std. Deviation	9,674

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Minimum	73
Maximum	105
Sum	2662

When presented in the form of frequency distribution, the physical literacy of grade 9 MTsN 3 Madiun students is presented in table 4.4 as follows:

Table 4.4 Distribution of Physical Literacy Frequency MTsN 3 Madiun

Yes	Interval	Categories	Frequency	Percentage
1	X > 103.24	Excellent	1	3,3%
2	93.57 < X ≤ 103.24	Good	10	33,3%
3	83.90 < X ≤ 93.57	Enough	10	33,3%
4	74.22 < X ≤ 83.90	Less	8	26,7%
5	X ≤ 74.22	Very Less	1	3,3%
Quantity			30	100%

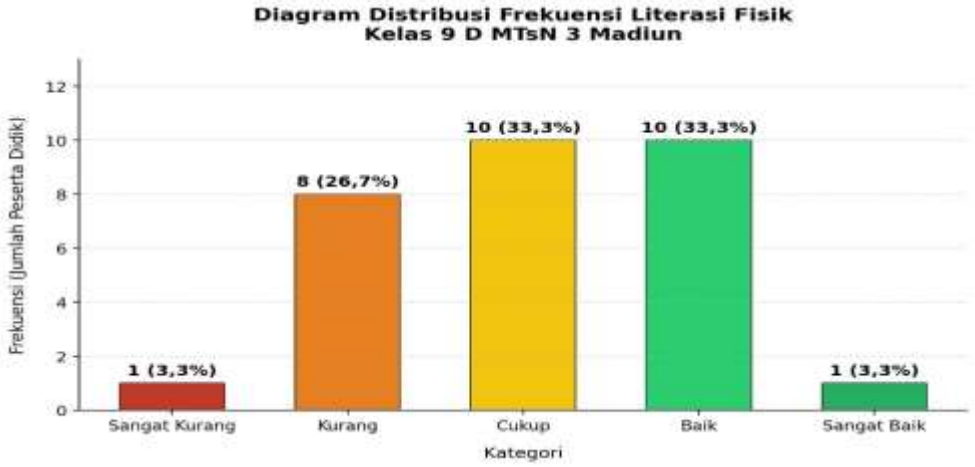
The categorization in the table above is arranged based on the mean value (Mean = 88.73) and standard deviation (SD = 9.674) of the data, with five category levels: Very Good (X > M+1.5SD), Good (M+0.5SD < X ≤ M+1.5SD), Adequate (M−0.5SD < X ≤ M+0.5SD), Less (M−1.5SD < X ≤ M−0.5SD), and Very Less (X ≤ M−1, 5SD).

Based on table 4.4 above, it can be seen that of the 30 students in grade 9 D MTSN 3 Madiun, as many as 1 student (3.3%) is in the Very Good category, 10 students (33.3%) are in the Good category, 10 students (33.3%) are in the Adequate category, 8 students (26.7%) are in the Less category, and 1 student (3.3%) is in the Very Poor category.

Diagram 4.2 Frequency Distribution of Physical Literacy Grade 9 MTsN 3 Madiun

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c. Physical Literacy Class X TKRB SMKN 1 Kebonsari

The data from the results of statistical descriptive research regarding the physical literacy of students in class X TKR B at SMKN 1 Kebonsari can be seen in table 4.5 as follows:

Table 4.5 Descriptive Physical Literacy Statistics of SMKN 1 Kebonsari

Statis :ics	
N	35
Red	86,69
Median	86,00
Mode	90
Std. Deviation	14,726
Minimum	62
Maximum	123
Sum	3034

When presented in the form of frequency distribution, the physical literacy of students in class X TKR B SMKN 1 Kebonsari is presented in table 4.6 as follows:

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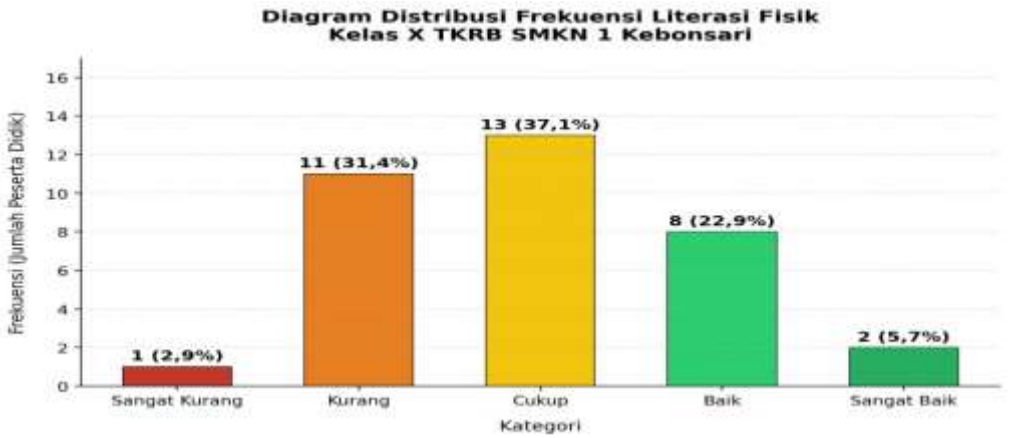
Table 4.6 Distribution of Physical Literacy Frequency of SMKN 1 Kebonsari

Yes	Interval	Categories	Frequency	Percentage
1	X > 108.78	Excellent	2	5,7%
2	94.05 < X ≤ 108.78	Good	8	22,9%
3	79.32 < X ≤ 94.05	Enough	13	37,1%
4	64.60 < X ≤ 79.32	Less	11	31,4%
5	X ≤ 64.60	Very Less	1	2,9%
Quantity			35	100%

The categorization in the table above is arranged based on the mean value (Mean = 86.69) and standard deviation (SD = 14.726) of the data, with five levels of categories: Very Good (X > M+1.5SD), Good (M+0.5SD < X ≤ M+1.5SD), Adequate (M−0.5SD < X ≤ M+0.5SD), Less (M−1.5SD < X ≤ M−0.5SD), and Very Less (X ≤ M−1, 5SD).

Based on table 4.6 above, it can be seen that of the 35 students of class X TKRB SMKN 1 Kebonsari, as many as 2 students (5.7%) were in the Very Good category, 8 students (22.9%) were in the Good category, 13 students (37.1%) were in the Adequate category, 11 students (31.4%) were in the Less category, and 1 student (2.9%) was in the Very Poor category.

Diagram 4.3 Distribution of Physical Literacy Frequency Class X TKR B SMKN 1 Kebonsari



d. Physical Fitness Grade 6 MI Salafiyah Barek

The data from the results of statistical descriptive research on the physical fitness of

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grade 6 students at MI Salafiyah Barek can be seen in Table 5 as follows:

Table 4.7 Descriptive Physical Fitness Statistics for Grade 6 MI Salafiyah Barek

Statistics	
N	25
Red	20,88
Median	22,00
Mode	22
Std. Deviation	3,059
Minimum	15
Maximum	25
Sum	522

Source: Primary data of research results, 2026

Based on the table above, it can be seen that the physical fitness data of 6th grade students of MI Salafiyah Barek was obtained from 25 students. The mean value is 20.88, the median value is 22.00, the most frequently occurring value (mode) is 22, the standard deviation is 3.059, the minimum value is 15, and the maximum value is 25.

When presented in the form of a distribution of the frequency of physical fitness of 6th grade students of MI Salafiyah Barek, it is presented in Table 6 as follows:

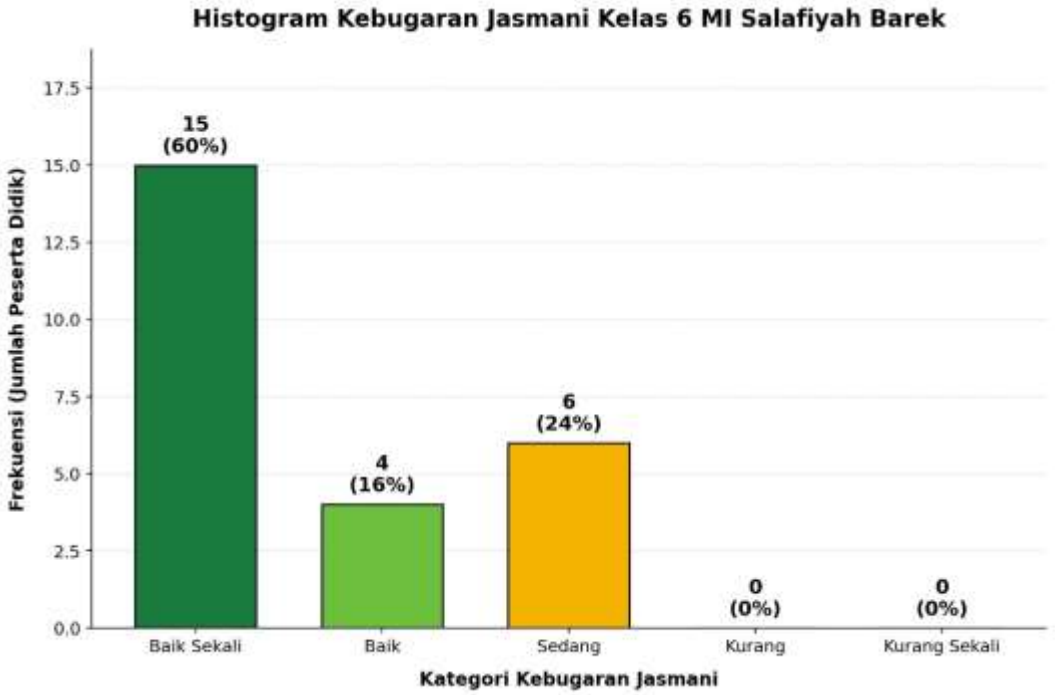
Table 4.8 Distribution of Physical Fitness Frequency for Grade 6 MI Salafiyah Barek

Yes	Interval	Categories	Frequency	Percentage
1	22 – 25	Very good	15	60%
2	18 – 21	Good	4	16%

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3	14 – 17	Medium	6	24%
4	10 – 13	Less	0	0%
5	5 – 9	Less Than Once	0	0%
Quantity			25	100%

Source: Primary data of research results, 2026 Diagram 4.4 Distribution of Physical Fitness Frequency for Grade 6 MI Salafiyah Barek



Based on the frequency distribution table above, it can be seen that the physical fitness level of 6th grade students of MI Salafiyah Barek is mostly in the Good category as many as 15 students (60%), the Medium category as many as 6 students (24%), the Good category as many as 4 students (16%), and no students are in the Less or Less Once (0%) category. Thus, the level of physical fitness of 6th grade students of MI Salafiyah Barek as a whole is dominant in the Very Good category.

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e. Physical Fitness Grade 9 MTsN 3 Madiun

The data from the results of statistical descriptive research on the physical fitness of grade 9 students at MTsN 3 Madiun can be seen in Table 1 as follows:

Table 4.9 Descriptive Physical Fitness Statistics for Grade 9 MTsN 3 Madiun

Statistics	
N	30
Red	18,70
Median	19,00
Mode	18
Std. Deviation	3,807
Minimum	12
Maximum	25
Sum	561

Source: Primary data of research results, 2026

Based on table 4.9, it can be seen that the physical fitness data of grade 9 MTsN 3 Madiun students was obtained from 30 students. The mean value is 18.70, the median value is 19.00, the most frequently occurring value (mode) is 18, the standard deviation is 3.807, the minimum value is 12, and the maximum value is 25.

When presented in the form of a distribution of the frequency of physical fitness for grade 9 students of MTsN 3 Madiun is presented in table 4.10 as follows

Table 4.10 Frequency Distribution of Physical Fitness Grade 9 MTsN 3 Madiun

Yes	Interval	Categories	Frequency	Percentage
1	22 – 25	Very good	6	20%
2	18 – 21	Good	15	50%

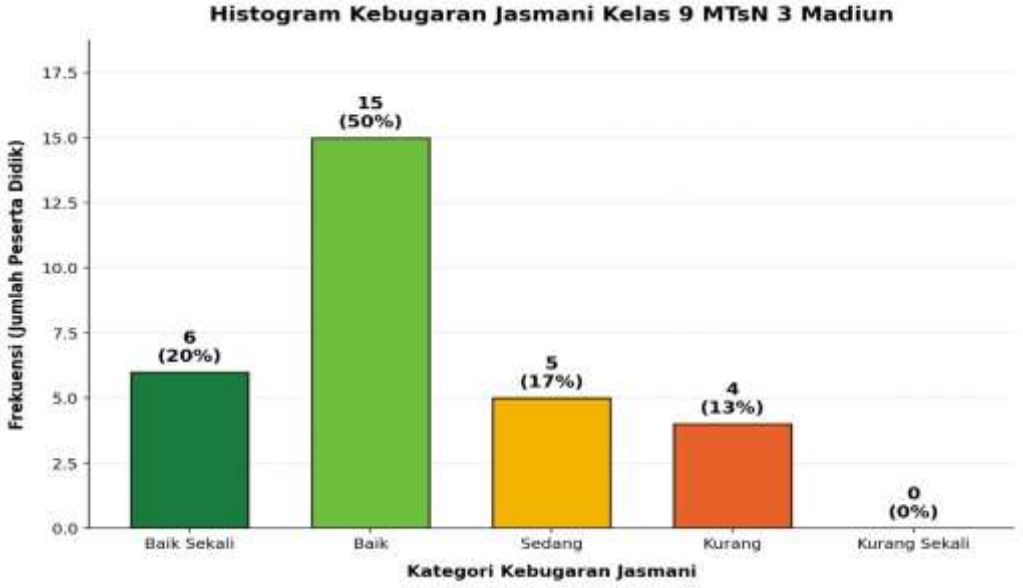
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3	14 – 17	Medium	5	17%
4	10 – 13	Less	4	13%
5	5 – 9	Less Than Once	0	0%
Quantity			30	100%

Source: Primary data of research results, 2026

Diagram 4.5 Frequency Distribution of Physical Fitness Grade 9 MTsN 3 Madiun



Based on the frequency distribution table and physical fitness histogram above, it can be seen that the physical fitness level of grade 9 students of MTsN 3 Madiun is mostly in the Good category as many as 15 students (50%), the Very Good category as many as 6 students (20%), the Medium category as many as 5 students (17%), the Less category as many as 4 students (13%), and no students are in the category of Less Than Once (0%). Thus, the level of physical fitness of grade 9 students of MTsN 3 Madiun as a whole is dominant in the Good category.

Based on the frequency distribution table above, it can be seen that the physical fitness level of grade 9 students of MTsN 3 Madiun is mostly in the Good category as many as 15 students (50%), the Very Good category as many as 6 students (20%), the Medium category as many as 5

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students (17%), the Less category as many as 4 students (13%), and no students are in the Less One category (0%). Thus, the level of physical fitness of grade 9 students of MTsN 3 Madiun as a whole is dominant in the Good category. **f. Physical Fitness Class X SMKN 1 Kebonsari**

The data from the results of statistical descriptive research on the physical fitness of class X TKRB students at SMKN 1 Kebonsari can be seen in Table 3 as follows:

Table 4.11 Descriptive Physical Fitness Statistics Class X SMKN 1 Kebonsari

Statistics	
N	35
Red	21,20
Median	22,00
Mode	22
Std. Deviation	3,771
Minimum	13
Maximum	29
Sum	742

Source: Primary data of research results, 2026

Based on table 4.11, it can be seen that the physical fitness data of class X students of SMKN 1 Kebonsari was obtained from 35 students. The mean value was 21.20, the median value was 22.00, the most frequently occurring value (mode) was 22, the standard deviation was 3.771, the minimum value was 13, and the maximum value was 29.

When presented in the form of a distribution of the frequency of physical fitness of class X students of SMKN 1 Kebonsari, it is presented in Table 4.12 as follows:

Table 4.12 Distribution of Physical Fitness Frequency Class X SMKN 1 Kebonsari

Yes	Interval	Categories	Frequency	Percentage
1	26 – 30	Very good	4	11%
2	21 – 25	Good	18	51%

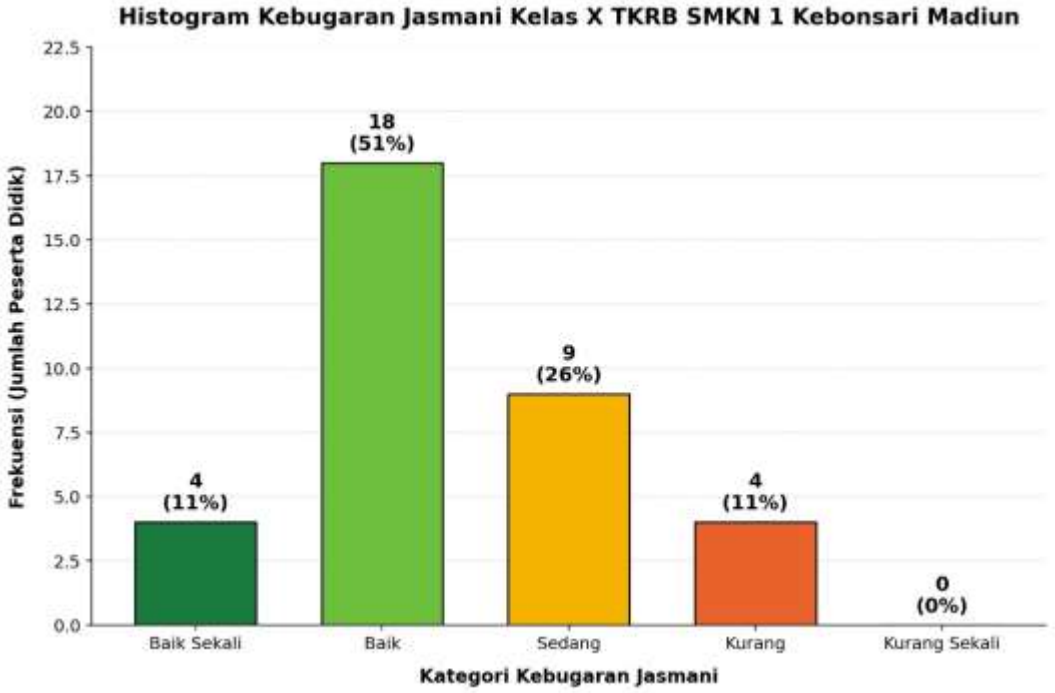
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3	16 – 20	Medium	9	26%
4	11 – 15	Less	4	11%
5	6 – 10	Less Than Once	0	0%
Quantity			35	100%

Source: Primary data of research results, 2026

Diagram 4.6 Distribution of Physical Fitness Frequency Class X TKRB SMKN 1 Kebonsari Madiun



Based on Diagram 4.6 of frequency distribution, it can be seen that the physical fitness level of class X students of SMKN 1 Kebonsari is mostly in the Good category as many as 18 students (51%), the Medium category as many as 9 students (26%), the Very Good category as many as 4 students (11%), the Less category as many as 4 students (11%), and no students are in the Less One category (0%). Thus, the level of physical fitness of class X students of SMKN 1 Kebonsari as a whole is dominant in the Good category

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2. Prerequisite Test Results

Several prerequisite tests must be met in order for the data analysis to test the hypothesis to be accountable. The analysis prerequisite test includes:

a. Normality Test

The normality test aims to find out whether the data from the research results are distributed normally or not. The normality test in this study used the KolmogorovSmirnov test with the help of the IBM SPSS Version 26 program. The decision-making criterion used is that if the significance value (p) > 0.05, then the data is declared to be normally distributed, on the other hand, if p < 0.05, then the data is not normally distributed.

Based on the results of tests that have been carried out on physical literacy and physical fitness data from the three sample groups, all data show a significance value of more than 0.05. This means that all the data used in this study are normally distributed, thus meeting the prerequisites for proceeding to correlational analysis using Pearson Product Moment. The full results of the normality test are presented in the following table.

Table 4.13 Summary of Normality Test Results

Variable	N	Statistic KS	Sig. (p-value)	Ket.
Physical Literacy – Elementary School (MI Salafiyah Barek)	25	0,148	0,594	Normal
Physical Fitness – Elementary School (MI Salafiyah Barek)	25	0,213	0,177	Normal
Physical Literacy – Junior High School (MTsN 3 Madiun)	30	0,126	0,683	Normal
Physical Fitness – Junior High School (MTsN 3 Madiun)	30	0,141	0,542	Normal
Physical Literacy – High School (SMKN 1 Kebonsari)	35	0,125	0,598	Normal

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Physical Fitness – High School (SMKN 1 Kebonsari)	35	0,119	0,659	Normal

Source: Data processing results with IBM SPSS Version 26, 2026

Based on table 4.13 above, it can be seen that all data on physical literacy and physical fitness variables at the three school levels have a significance value of (p) > 0.05. Physical literacy and physical fitness data for grade 6 MI Salafiyah Barek showed a p value of 0.594 and 0.177, respectively. Physical literacy and physical fitness data for grade 9 MTsN 3 Madiun showed p values of 0.683 and 0.542, respectively. Likewise, the physical literacy and physical fitness data of class X of SMKN 1 Kebonsari have a p value of 0.598 and 0.659, respectively.

Thus, it can be concluded that all research data are normally distributed and eligible for further testing.

b. Linearity Test

The linearity test is intended to find out whether the relationship between the free variable (physical literacy) and the bound variable (physical fitness) is linear or not. This test used the F test at a significance level of 5% with the help of IBM SPSS Version 26.

The decision criteria used are: if the significance value of Deviation from Linearity (p) > 0.05, then the relationship between variables X and Y is declared linear; Conversely, if p < 0.05, then the relationship is declared non-linear.

The results of the linearity test in the three groups of school levels showed that all pairs of variables had a calculated F value that was smaller than the F of the table and a significance value of more than 0.05. This shows that the relationship between physical literacy and physical fitness is linear at all three levels, so the linearity requirements for Pearson Product Moment correlation analysis are met. A summary of the results of the linearity test is presented in the following table.

Table 4.14 Summary of Linearity Test Results

Variable Relationships	F count	F table (5%)	Sig. (pvalue)	Ket.
Physical Literacy and Physical Fitness (SD)	1,182	3,49	0,434	Linear

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Physical Literacy and Physical Fitness (SMP)	1,794	2,69	0,163	Linear
Physical Literacy and Physical Fitness (SMA)	0,675	2,75	0,791	Linear

Source: Data processing results with IBM SPSS Version 26, 2026.

The results of the linearity test between physical literacy and physical fitness at the elementary level obtained F calculation = 1.182 < F table = 3.49 with a significance of 0.434 > 0.05, so that the relationship was declared linear. At the junior high school level, F calculation = 1.794 < F table = 2.69 with a significance of 0.163 > 0.05 (linear). At the high school level, F calculation = 0.675 < F table = 2.75 with a significance of 0.791 > 0.05 (linear). Thus all linearity assumptions are fulfilled and analysis can be continued.

3. Hypothesis Test Results

The hypothesis test in this study used Pearson Product Moment correlation analysis to determine whether there is a significant relationship between physical literacy and physical fitness of students at each school level. The hypotheses tested are:

a) Ha1, Ha2, Ha3: There is a significant relationship between physical literacy and physical fitness in elementary, junior high, and high school students in Madiun Regency (tested separately at each level through Pearson Product Moment correlation).
b) H01, H02, H03: There is no significant relationship between physical literacy and physical fitness in students at the elementary, junior high, and high school levels in Madiun Regency.

The decision-making criteria used are if the significance value (p) < 0.05, H0 is rejected and Ha is accepted (there is a significant relationship), on the other hand, if p ≥ 0.05, Ha is rejected and H0 is accepted (there is no significant relationship). In addition, the r value is calculated compared with the r of the table at a significance level of 5% to ensure the significance of the correlation coefficient obtained.

The results of hypothesis testing using Pearson Product Moment correlation in the three sample groups showed different results between levels. Overall, there was a significant positive relationship between physical literacy and physical fitness at all levels of the schools studied. The results of the correlation coefficient analysis are presented in the following table.

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Table 4.15 Correlation Coefficient of Physical Literacy with Physical Fitness

School Level	N	r count	r table (5%)	Sig. (pvalue)	Ket.
Copyright © 2019 Salafiyah Barek. All Rights Reserved.	25	0,022	0,396	0,915	Insignificant
Junior High School – MTsN 3 Madiun	30	0,697	0,361	0,000	Significant
SMA – SMKN 1 Kebonsari	35	0,464	0,334	0,005	Significant

Source: Data processing results with IBM SPSS Version 26, 2026

Based on table 4.15 above, the results of the Pearson Product Moment correlation analysis show that at the elementary level (MI Salafiyah Barek) the r count = 0.022 < r table = 0.396 with a significance value p = 0.915 > 0.05. This means that H01 is accepted and Ha1 is rejected, so that there is no significant relationship between physical literacy and physical fitness of 6th grade students of MI Salafiyah Barek. The correlation coefficient of 0.022 is classified as very weak and close to zero, indicating that at the elementary level, the high and low physical literacy scores of students are statistically not linearly related to their physical fitness level. \

At the junior high school level (MTsN 3 Madiun) r calculation = 0.697 > r table = 0.361 with a significance value p = 0.000 < 0.05. Thus, H02 was rejected and Ha2 was accepted, so that there was a significant positive relationship between physical literacy and physical fitness of grade 9 MTsN 3 Madiun students. The correlation coefficient of 0.697 is classified as strong and is the highest among the three levels.

At the high school level (SMKN 1 Kebonsari) r calculation = 0.464 > r table = 0.334 with a significance value p = 0.005 < 0.05. Thus, H03 was rejected and Ha3 was accepted, so that there was a significant positive relationship between physical literacy and physical fitness of class X students of SMKN 1 Kebonsari. The correlation coefficient of 0.464 is classified as medium.

Overall, the results of the hypothesis test show that the relationship between physical literacy and physical fitness of students is inconsistent at all three school levels. At the junior high school (r = 0.697) and high school (r = 0.464) levels, a significant positive relationship was found, with the highest relationship closeness at the junior high school level. On the other hand, at the elementary level (r = 0.022) no statistically significant relationship was found. Thus, Ha2 and Ha3

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are accepted, while Ha1 is rejected (H01 is accepted); This means that the research hypothesis is only proven at the junior high school and high school levels, but it is not proven at the elementary school level in Madiun Regency.

DISCUSSION

1. ` Physical Literacy and Physical Fitness of Elementary School Students (MI Salafiyah Barek)

Based on the results of the study, the level of physical literacy of 6th grade students of MI Salafiyah Barek was mostly in the adequate category, namely 10 students (40%), followed by the poor category as many as 7 students (28%), the good category as many as 6 students (24%), the very good category as many as 1 student (4%), and the very poor category as many as 1 student (4%). The average physical literacy score of 6th grade MI Salafiyah Barek is 92.12 with a standard deviation of 10.329.

The level of physical fitness of 6th grade students of MI Salafiyah Barek shows a more positive picture, where most of the students are in the very good category as many as 15 students (60%), the medium category as many as 6 students (24%), and the good category as many as 4 students (16%). There are no students who are categorized as less or less once. The average physical fitness score was 20.88 with a standard deviation of 3.059.

This phenomenon is quite interesting to observe, because the dominant physical literacy value is in the sufficient category, but it is not fully in line with physical fitness, which is actually dominant in the very good category. This condition can be explained by the fact that at elementary school age, children's physical activity is natural and spontaneous. Elementary school-age children are instinctively actively moving through traditional games, play activities, and daily activities without having to have a deep conceptual understanding of physical literacy. This is in line with the opinion of Higgs et al. (2019) that children at a young age have a natural urge to move even though they do not fully understand the concept of physical activity in a structured way.

In line with this pattern, the results of the Pearson Product Moment correlation test at the elementary school level actually showed that there was no significant relationship between physical literacy and physical fitness, with r calculation = 0.022 < r table = 0.396 and significance value p = 0.915 > 0.05. The value of the correlation coefficient that is close to zero indicates that at the elementary school level, the level of physical literacy measured through students' understanding and motivation is not necessarily in line with their actual physical fitness achievements. These findings reinforce the previous explanation that the

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physical fitness of elementary school-aged children is largely sustained by spontaneous and natural daily physical activity (Higgs et al., 2019), which are not always directly related to their level of conceptual understanding of physical literacy. In other words, at this age, physical fitness seems to be more influenced by daily movement habits than by the knowledge and awareness of physical literacy itself.

2. Physical Literacy and Physical Fitness for Junior High School Students (MTsN 3 Madiun)

The results of the study at the junior high school level showed that the level of physical literacy of grade 9 students of MTsN 3 Madiun was divided quite evenly between the good and adequate categories, each with 10 students (33.3%), followed by the poor category of 8 students (26.7%), as well as the very good and very poor categories each filled by 1 student (3.3%). The average physical literacy score was 88.73 with a standard deviation of 9.674.

For physical fitness, grade 9 students of MTsN 3 Madiun were mostly in the good category as many as 15 students (50%), the very good category as many as 6 students (20%), the medium category as many as 5 students (17%), and the poor category as many as 4 students (13%). The average physical fitness score was 18.70 with a standard deviation of 3.807, which shows a decrease when compared to the elementary school level.

In contrast to the pattern at the elementary school level, the average physical literacy at the junior high school level (88.73) is slightly lower than at the elementary school level (92.12). This pattern is understandable considering that in early adolescence, students begin to be faced with an increase in academic burden as well as the influence of gadgets and a sedentary lifestyle that is more pronounced than elementary school age (Battista et al., 2019), so that motivation and involvement in physical activity tend to decrease slightly. The average physical fitness at the junior high school level (18.70) was also lower than at the elementary school level (20.88), in line with the decline in physical literacy aspects.

The results of the correlation test showed that at the junior high school level there was a significant positive relationship between physical literacy and physical fitness, with r calculated = 0.697 > r table = 0.361 and significance value p = 0.000 < 0.05. The correlation value of 0.697 belongs to the strong category and is the highest among the three levels studied. This indicates that in early adolescence, students' understanding and motivation for physical activity (physical literacy) begins to be closely related to their physical fitness achievements, possibly because at this age physically active behavior is more based on awareness and personal choice than just spontaneous play impulses such as in elementary school age.

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3. Physical Literacy and Physical Fitness for Senior High School Students (SMKN 1 Kebonsari)

At the high school level, the results of the study showed that the physical literacy level of students in class X TKR B SMKN 1 Kebonsari was mostly in the sufficient category of 13 students (37.1%), followed by the poor category of 11 students (31.4%), the good category of 8 students (22.9%), the very good category of 2 students (5.7%), and the very poor category of 1 student (2.9%). The average physical literacy score was 86.69 with a standard deviation of 14.726 — the largest standard deviation among the three levels, indicating a wider variation in physical literacy abilities in high school students.

The level of physical fitness of class X students of SMKN 1 Kebonsari showed that most of them were in the good category as many as 18 students (51%), the medium category as many as 9 students (26%), the very good and poor category as many as 4 students each (11%), and none were in the category of less than once. The average physical fitness score was 21.20, which was the second highest score after primary school but with greater variability (standard deviation 3.771).

Although the numerical average of physical literacy at the high school level (86.69) appears to be slightly lower than that of elementary and junior high schools, the distribution of data is much wider (SD = 14.726), which means that there are students with very high and very low physical literacy in the same group. These variations can be attributed to individual differences that are more prominent in late adolescence, including interests, background in sports activities, and skill programs followed. In vocational schools with engineering skills programs, some students have quite intense practical physical activity, while others are less exposed to structured physical activity outside of class hours.

The results of the correlation test at the high school level showed that the value of r calculated = 0.464 > r table = 0.334 with a significance value of p = 0.005 < 0.05. The correlation coefficient of 0.464 is classified as moderate, indicating that physical literacy is still significantly related to the physical fitness of high school students, even though the tightness is not as strong as at the junior high school level. This is in line with Razouki's (2021) view that through targeted physical education, individuals can develop skills for sustainable healthy living, although at the age of high school other factors such as personal lifestyle choices begin to influence physical fitness in a more diverse way.

4. Comparison of Physical Literacy and Physical Fitness Levels Between Levels

Comparatively, the comparative pattern of physical literacy and physical fitness between school levels in this study shows a different picture from the general assumption that

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awareness of physical activity always increases with increasing levels of education. The average physical literacy in this study actually shows a downward trend from elementary school (92.12) to junior high school (88.73) and high school (86.69).

This pattern indicates that age factors alone do not necessarily increase students' awareness and motivation of physical activities; Other factors such as academic pressure, the use of gadgets, and a sedentary lifestyle that is increasingly felt in adolescence seem to contribute to suppressing the level of physical literacy of students at higher levels of education.

Meanwhile, physical fitness patterns show a tendency that is not entirely in line with physical literacy patterns. The average physical fitness at the elementary school level (20.88) was higher than that of junior high school (18.70), but increased again at the high school level (21.20). The decline at the junior high school level can be understood as a transition period when academic burden begins to increase and spontaneous physical activity decreases, while the return increase at the senior high school level may be related to more structured practical physical activity in some vocational high school students.

The comparison of correlation coefficients between levels showed a different pattern than previously estimated, namely: junior high school ($r = 0.697$, strong category) > high school ($r = 0.464$, medium category) > elementary school ($r = 0.022$, insignificant). This pattern indicates that the close relationship between physical literacy and physical fitness is most pronounced in early adolescence (junior high school) and remains meaningful in late adolescence (high school), but has not been seen at elementary school age. This can be understood considering that at the elementary school age, children's physical fitness is still largely supported by spontaneous physical activity that is not always related to the conceptual understanding of physical literacy, while at the age of junior high school and high school, physically active behavior begins to be based more on the awareness, motivation, and personal knowledge of students. Thus, the research hypothesis (Ha2 and Ha3) were accepted for the Junior High School and Senior High School levels, while the hypotheses for the Elementary School level (Ha1) were rejected. These findings generally support the view that physical literacy plays an important role in shaping a person's physically active behavior (WHO, 2017), but suggests that this role may not be really real until the learner enters adolescence, when awareness and personal choices begin to become more dominant than the natural impulse to play in childhood. These results also confirm the importance of tiered and contextual PJOK learning, with an emphasis on strengthening physical literacy, especially starting from the junior high school level, as a means of building students' physical fitness in

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a sustainable manner (Griban et al., 2020; Cairney et al., 2019).

CONCLUSION

Based on the results of the research and discussion that has been described in the previous chapter, the following conclusions can be drawn:

1. The level of physical literacy of elementary school students (MI Salafiyah Barek) is generally in the moderate category (40%, average 92.12), while the level of physical fitness is generally in the very good category (60%, average 20.88). The results of the Pearson Product Moment correlation test showed that there was no significant relationship between physical literacy and physical fitness at this level (r count = 0.022 < r table = 0.396; p = 0.915 > 0.05), so H01 was accepted and Ha1 was rejected.
2. The level of physical literacy of students at the Junior High School level (MTsN 3 Madiun) is evenly divided between the good and adequate categories (33.3% each, 88.73% average), while the general physical fitness level is in the good category (50%, 18.70% average). The results of the correlation test showed that there was a significant positive relationship with a strong category between physical literacy and physical fitness at this level (r count = 0.697 > r table = 0.361; p = 0.000 < 0.05), so that H02 was rejected and Ha2 was accepted.
3. The level of physical literacy of students at the high school level (SMKN 1 Kebonsari) is generally in the moderate category (37.1%, average 86.69, with the widest distribution of data among the three levels), while the level of physical fitness is generally in the good category (51%, average 21.20). The results of the correlation test showed that there was a significant positive relationship with the moderate category between physical literacy and physical fitness at this level (r calculated = 0.464 > r table = 0.334; p = 0.005 < 0.05), so that H03 was rejected and Ha3 was accepted.
4. Descriptively, comparisons between levels showed that the relationship between physical literacy and physical fitness in the pattern of junior high school (r = 0.697, strong category) was higher than high school (r = 0.464, medium category), and both are higher than elementary school (insignificant), while the average physical literacy actually shows a downward trend from elementary school (92.12) to junior high school (88.73) and high school (86.69). Thus, it can be concluded that the role of physical literacy in the physical fitness of students is increasingly evident as the level of education increases, especially from the junior high school level, while at the elementary school level, physical

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fitness seems to be more supported by spontaneous physical activities that are not yet related to the conceptual understanding of physical literacy. It should be emphasized that the comparison between these levels is descriptive based on the amount of correlation coefficients in each group, because this study does not conduct an inferential difference test (e.g. one-path variance analysis) directly on the three data groups, so the conclusion about the differences between levels needs to be interpreted as a tendency and not as a conclusive statistical conclusion.

IMPLICATIONS OF CONNECTIVITY FOR TEACHING AND LEARNING

The results of this study have implications both theoretically and practically for the development of Physical Education, Sports, and Health (PJOK) learning, as follows:

1. Theoretical Implications

   The findings of this study reinforce the view that the role of physical literacy in physical fitness is not uniform at all stages of development, but develops with age and level of education. At the age of elementary school, students' physical fitness is more supported by physical activities that are natural and spontaneous so that they are not significantly related to their physical literacy, while in adolescence (junior high school and high school) awareness and conceptual understanding of physical activity begin to play a real role in shaping physically active behavior. These findings complement a theoretical study on physical literacy that emphasizes the importance of motivation, confidence, physical competence, and knowledge as a unit that forms a person's involvement in physical activities throughout life, while emphasizing that its reinforcement needs to be adjusted to the characteristics of student development at each level of education.

2. Practical Implications

   Practically, the results of this study provide the following implications:

   a. For PJOK teachers, the results of this study indicate the need to strengthen physical literacy-based learning more intensively starting from the junior high school level, considering that at this level physical literacy is proven to be closely related to the physical fitness achievements of students.
   b. For elementary school students, PJOK learning still needs to be directed at strengthening fun and varied physical activities, as well as starting to introduce a basic understanding of physical literacy as a provision for the next level of education.

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c. For schools and education policy makers, the results of this research can be considered in developing a tiered and sustainable PJOK policy and curriculum, with an emphasis on physical literacy that is tailored to the characteristics of students at each stage of development.

For future researchers, the results of this study can be an initial reference to develop research with a wider sample scope and a more comprehensive analysis design in examining the relationship between physical literacy and physical fitness between levels of education

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