Evaluation of the Physical Fitness of 5th Grade Students at Public Elementary Schools in Pabelan Magelang using TKSI

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Abstract *: This study aims to determine the level of physical fitness among 5th grade students at public elementary schools in the Pabelan subdistrict, Magelang using the Indonesian Student Fitness Test (TKSI). This study employs a quantitative approach with a descriptive analysis design. The population in this study consists of all 5th grade students at public elementary schools in the Pabelan sub-district, specifically Pabelan 2 Public Elementary School and Pabelan 3 Public Elementary School, using total sampling. Data collection was conducted through field-based testing based on the TKSI Phase C instrument, which covers the components of coordination, accuracy, agility, muscle strength, and cardiorespiratory endurance. Data were analyzed using SPSS version 27 for Windows. The results of the study indicate that the overall level of physical fitness among students falls into the "Fair" category, with the following breakdown: 0% in the "Excellent" category, 16% in the "Good" category, 44% in the "Fair" category, 25% in the "Poor" category, and 15% in the "Very Poor" category. Based on gender, male students were in the "Fair" category with the highest percentage at 50%, while female students were in the "Poor" category with the highest percentage at 39%. These results indicate that students' physical fitness is not yet optimal, necessitating a focus on targeted and sustained increases in physical activity.*

Keywords : *Evaluation, Grade 5 Students, Physical Education, Physical Fitness, TKSI*

INTRODUCTION

Physical education in elementary school is a crucial phase in early intervention for shaping children's character, physical fitness, and motor skills (Liu et al., 2024; Drenowatz et al., 2022; Barla, 2025). Elementary schools serve as the primary environment for introducing healthy lifestyles before habits become ingrained in adulthood (Pulimeno et al., 2022; Motevalli et al., 2025). With the Sport and Health Physical Education (PJOK) curriculum, schools should ideally be able to conduct regular monitoring of students' physical profiles to provide appropriate and measurable interventions (Wae et al., 2023). To achieve this effectiveness, every school is required to conduct structured physical activities on a regular basis to improve students' physical fitness (Habibah et al., 2024). Efforts to develop these physical and motor components also require consistent, integrated exercise stimulation within the elementary school curriculum (Susilowati & Suwarjo, 2020; Zhou et al., 2025). Therefore, a deep understanding of students' physical condition through a standardized evaluation system is of paramount urgency to prevent the failure to establish a foundation for children's holistic health from an early age.

The challenges of maintaining children's physical fitness in the contemporary era is particularly in the wake of the COVID-19 pandemic and amid the escalation of the Fourth Industrial Revolution have become increasingly complex (Haidar et al., 2025; Templeton et al., 2025). The massive accessibility of digital devices has shifted children's activity preferences from

open spaces to virtual screens, thereby triggering an increase in the prevalence of a sedentary lifestyle (George et al., 2023). This global decline in physical activity directly contributes to a significant reduction in children's endurance and physical capacity within elementary school settings (Rahayu et al., 2024). This decline in fitness levels raises serious concerns, as low physical activity is negatively correlated with cardiometabolic health, emotional well-being, and academic performance in the classroom (Redondo-Flórez et al., 2022; Yusfi et al., 2023). In fact, prolonged physical inactivity at a young-age risks triggering a global public health crisis due to the degradation of the physical quality of the younger generation (Sluijs et al., 2021). As such, empirical identification of the impacts of a sedentary lifestyle through physical assessments is urgent to formulate preventive measures before a mass decline in the health quality of the younger generation occurs.

Physical fitness refers to the body's ability to perform intense physical activities without experiencing excessive fatigue (Olu, 2011). Optimal cardiorespiratory fitness and muscle strength serve as strong indicators of children's long-term health status and quality of life (Franklin et al., 2022). Additionally, regular physical activity stimulates the production of endorphins, which help reduce psychological stress while optimizing children's emotional development (Zeng et al., 2025). Children with adequate fitness levels also demonstrate better concentration, superior cognitive processing, and high levels of social participation at school (Che et al., 2026; Donnelly et al., 2016). Epidemiological data indicate a global trend of declining physical capacity among school-aged children due to limited opportunities for physical activity and changes in social behavior ((Vincze et al., 2026). Consequently, periodically assessing fitness components at the elementary school level is of high urgency to ensure that students' physical, cognitive, and psychological functions develop in a balanced manner.

In Indonesia, the physical assessment tool that has long been used is the Indonesian Physical Fitness Test (TKJI), this tool is considered less relevant because it has not been revalidated for more than two decades to align with the characteristics of modern children (Widiyanto et al., 2015). In response to this gap, the Indonesian Student Fitness Test (TKSI) was introduced as a cutting-edge innovation that adopts and modifies globally evidence-based instruments (Habibie et al., 2024). The TKSI is designed to precisely measure 5 essential components like cardiorespiratory endurance, core strength, power, agility, and hand-eye coordination (Baun et al., 2025). The strength of this instrument lies in its ability to guide testing, manage data digitally, and predict children's future athletic potential (Morgulev & Azar, 2026). By utilizing the objective outputs of the TKSI, physical education teachers can design individualized training programs tailored to the specific anthropometric needs of students (Latino et al., 2024; González-Peño et al., 2023). And then, the validation and implementation of new instruments like the TKSI at the grassroots level are of critical urgency to generate an accurate, objective, and contextually relevant fitness database that keeps pace with the times.

Empirical conditions in the field indicate a significant gap between curriculum regulations and the reality of assessment implementation in schools (Wahyu & Mufti, 2025; Rizky & Amal, 2025). Based on initial observations at public elementary schools throughout the Pabelan subdistrict, Mungkid, Magelang, PJOK learning activities are conducted formally, but the measurement of student fitness using standardized instruments has never been implemented. Without objective evaluation, physical education teachers and school administrators face difficulties in designing targeted exercise programs or curriculum interventions (Balay-as & Bandoc, 2024). This issue is exacerbated by a lack of shared understanding between parents and school officials regarding the importance of monitoring children's physical activity outside of school hours. Failure to conduct periodic physical monitoring risks leading to neglect of the decline in children's motor skills from an early age (Srinithiwat et al., 2025). For this reason, the implementation of a genuine fitness evaluation in this elementary school cluster is urgently needed to identify the root causes of students' physical decline, which is local in nature but has global implications.

Based on this background, this study aims to evaluate the physical fitness levels of 5th grade students at public elementary schools throughout the Pabelan subdistrict, Magelang, using the

Indonesian Student Fitness Test (TKSI). The results of this study can provide an overview of the students' physical condition and help formulate recommendations for structured physical activity intervention programs for educational institutions. Furthermore, this study is expected to educate the community, parents, and school officials regarding the significance of physical fitness in supporting children's academic achievement and holistic well-being. In conclusion, this study holds fundamental urgency to fill the gap in objective fitness data in the region to realize a "Fit Indonesia" generation.

RESEARCH METHODS

The Research Design

This study employs a quantitative approach with a descriptive design aimed at systematically identifying, mapping, and describing the physical ability profiles of students (Creswell, 2014; Siedlecki, 2021). Data collection was conducted through field-based testing using the standardized Indonesian Student Fitness Test (TKSI) Phase C instrument for fifth-grade elementary school students. The assessment structure in this instrument evaluates five components of children's physical and motor fitness, including: (1) a coordination test using the child ball method, (2) an accuracy test using the tap-tap ball technique, (3) an agility test based on the 4x10m shuttle run (get ball) activity, (4) a muscle strength test using the "move the ball" procedure, and (5) a cardiorespiratory endurance test using the 600-meter run. The data was then analyzed using descriptive statistics to provide a clear, systematic, and fact-based picture of the physical fitness levels of 5th grade students at public elementary schools throughout the Pabelan sub-district, Magelang.

The Research Population

This study was conducted at public elementary schools in the Pabelan subdistrict of Magelang, specifically at Pabelan 2 Public Elementary School and Pabelan 3 Public Elementary School. The study was conducted in February 2025. The population for this study consisted of all fifth-grade students at public elementary schools in the Pabelan subdistrict, with a sample selected using total sampling. Details of the population are shown in Table 1 below:

Table 1. Population of students at public elementary schools in the pabelan subdistrict

No.	School Name	Grade	Boys	Girls	Frequency
1.	SD Negeri Pabelan 2	5th A	13	5	18
2.	SD Negeri Pabelan 2	5th B	11	6	17
3.	SD Negeri Pabelan 3	5th	8	12	20
Total			**32**	**23**	**55**

The Data Analysis

The data were analyzed using SPSS version 27 for Windows. Descriptive statistics were used to systematically describe the measurement results through frequency, percentage, mean, and standard deviation. The percentage of the research results was calculated using the following formula:

$$P = f / n \times 100$$

Notes:
P = percentage
f = frequency or number of students in each category
n = total number of students

After the percentage values were determined, the students' physical fitness results were classified into 5 categories: excellent, good, fair, poor, and very poor. Category grouping is based on the mean (M) and standard deviation (SD). The use of category norms based on the mean and standard deviation aligns with the principles of physical fitness analysis, as physical test results

need to be presented in categorical form for easier interpretation. The following is the categorization of physical fitness assessment in Table 2.

Table 2. Categorization of physical fitness assessment

No.	Range	Category
1.	$X > M + 1{,}8\ SD$	Excellent
2.	$M + 0{,}6\ SD \leq X \leq M + 1{,}8\ SD$	Good
3.	$M - 0{,}6\ SD \leq X < M + 0{,}6\ SD$	Fair
4.	$M - 1{,}8\ SD \leq X < M - 0{,}6\ SD$	Poor
5.	$X < M - 1{,}8\ SD$	Very Poor

(Sudijono, 2013:452)

RESULTS AND DISCUSSION

Physical Fitness Levels of Boys Students

Data on the physical fitness of boys' students at public elementary schools throughout the Pabelan subdistrict were collected using the TKSI, with a total of 32 students participating. Based on the analysis results, the mean was 15.59; the median was 16.00; the mode was 15.00; the standard deviation was 3.740; the minimum score was 5.00; and the maximum score was 21.00. The analysis results in Table 3 show that no students fell into the "Very Good" category, or 0%. A total of 9 students (28%) were in the "Good" category, 16 students (50%) were in the "Fair" category, 5 students (16%) were in the "Poor" category, and 2 students (6%) were in the "Very Poor" category. Based on these results, it can be concluded that the physical fitness level of boys' students at public elementary schools throughout Pabelan subdistrict is generally in the "Fair" category, as this category has the highest frequency compared to the other categories.

Table 3. Physical fitness assessment data for boys' students

No.	Interval Score	Category	Frequency	Percentage
1.	$22 \leq X \leq 25$	Excellent	0	0%
2.	$18 \leq X \leq 21$	Good	9	28%
3.	$14 \leq X \leq 17$	Fair	16	50%
4.	$10 \leq X \leq 13$	Poor	5	16%
5	$5 \leq X \leq 9$	Very Poor	2	6%
	Total		**32**	**100%**

Physical Fitness Levels of Girls Students

Physical fitness data for girls' students at public elementary schools throughout the Pabelan subdistrict was collected using the TKSI, with a total of 23 female students participating. Based on the analysis results, the mean was 12.174; the median was 12.33; the mode was 14.00; the standard deviation was 2.348; the minimum value was 8.00; the maximum value was 17.00; and the range was 9.00. The analysis results in Table 4 show that no students fell into the "Very Good" or "Good" categories, each at 0%. A total of 8 students (35%) were in the "Fair" category, 9 students (39%) were in the "Poor" category, and 6 students (26%) were in the "Very Poor" category. Based on these results, it can be concluded that the physical fitness level of girls' students at public elementary schools throughout Pabelan Subdistrict is generally in the "Poor" category, as this category has the highest frequency compared to the other categories.

Tabel 4. Physical fitness assessment data for girls' students

No.	Interval Score	Category	Frequency	Percentage
1.	$22 \leq X \leq 25$	Excellent	0	0%
2.	$18 \leq X \leq 21$	Good	0	0%
3.	$14 \leq X \leq 17$	Fair	8	35%
4.	$10 \leq X \leq 13$	Poor	9	39%
5.	$5 \leq X \leq 9$	Very Poor	6	26%
	Total		**23**	**100%**

Overall Physical Fitness Levels of Students

Data on the physical fitness of students at public elementary schools in Pabelan subdistrict, with a total of 55 respondents. Based on the analysis results, the mean was 14.164; the median was 14.267; the mode was 15.00; the standard deviation was 3.630; the minimum score was 5.00; and the maximum score was 21.00. The analysis results in Table 5 show that no students fell into the "Very Good" category, or 0%. A total of 9 students (16%) were in the "Good" category, 24 students (44%) were in the "Fair" category, 14 students (25%) were in the "Poor" category, and 8 students (15%) were in the "Very Poor" category. Based on these results, it can be concluded that the overall physical fitness level of elementary school students in the Pabelan sub-district falls into the "Fair" category, as this category has the highest frequency compared to the others.

Tabel 5. Overall physical fitness assessment data for all students

No.	Interval Score	Category	Frequency	Percentage
1	$22 \leq X \leq 25$	Excellent	0	0%
2	$18 \leq X \leq 21$	Good	9	16%
3	$14 \leq X \leq 17$	Fair	24	44%
4	$10 \leq X \leq 13$	Poor	14	25%
5	$5 \leq X \leq 9$	Very Poor	8	15%
	Total		**55**	**100%**

CONCLUSION AND SUGGESTIONS

Based on the research findings, the overall level of physical fitness among 5th grade students at public elementary schools in the Pabelan subdistrict of Magelang falls into the "Fair" category. This is indicated by the results of an evaluation using the TKSI on 55 students, where 24 students (44%) fell into the "Fair" category, 9 students (16%) into the "Good" category, 14 students (25%) into the "Poor" category, 8 students (15%) into the "Very Poor" category, and no students were in the "Very Good" category. By gender, male students had the highest percentage in the "Fair" category at 50%, while female students had the highest percentage in the "Poor" category at 39%. The results of this study indicate that students' physical fitness levels are not yet optimal and still require attention through more targeted increases in physical activity. Future research is recommended to involve a larger sample size to ensure more comprehensive results.

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