

**Analysis of Physical Fitness Levels in Urban and Rural Klaten Students**Ubaidillah Kamal¹, Agus Darmawan^{2*}¹²Physical Education, Health, and Recreation, Semarang State University, Indonesia**Keywords**

Physical fitness;
elementary school
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Abstract

Physical fitness is one of the key factors supporting the health, growth, and learning ability of elementary school students. Differences in environmental characteristics between urban and rural areas are thought to influence students' physical fitness levels. This study aims to compare the physical fitness levels of elementary school students in urban and rural areas of Klaten Regency. The study employed a survey method using a comparative quantitative approach. The sample consisted of 89 male and female students with an average age of 11 years, selected using purposive sampling, comprising 48 students from SD Muhammadiyah 1 Tonggalan and 41 students from SDIT Persada Bayat. Data collection was conducted on April 20–24, 2026, using the Indonesian Physical Fitness Test for ages 11–12, which included a 40-meter run, 30-second sit-ups, 30-second sit-to-stand, standing long jump, and a 600-meter run. Data were analyzed using descriptive statistics and the Independent Samples t-test after meeting the normality and homogeneity tests. The results showed no significant differences in the bent arm hang, sit-up, and vertical jump components. However, there were significant differences in the 40-meter run and 600-meter run components. Urban students demonstrated better performance in the speed component, while rural students performed better in the cardiorespiratory endurance component. These findings suggest that environmental characteristics have the potential to influence specific physical fitness components in elementary school students.

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INTRODUCTION

Physical fitness is a physical condition that enables a person to perform various daily activities effectively without experiencing excessive fatigue and still having energy reserves to perform other activities (Kapti & Winarno, 2022). For elementary school students, physical fitness plays a crucial role in supporting growth, health, academic concentration, and participation in school activities (Pratama & Winarno, 2022). Therefore, the level of physical fitness deserves attention as one of the indicators of students' health quality and as a physical and psychological activity that is useful for maintaining and improving the quality of health and fitness (Wardani et al., 2025).

Physical fitness levels are influenced by various factors, including physical activity, age, gender, nutritional status, and living environment (Aprilia & Januarto, 2022; Wahid & Kurniawan, 2023). Lack of nutritious food intake can cause weakness, lack of focus, and low immunity, which will directly affect physical fitness (Sari et al., 2023). Urban and rural environments have distinct characteristics regarding activity patterns, environmental conditions, and community lifestyles. Students living in rural areas tend to have higher levels of physical activity through various daily activities, whereas students in urban areas are more prone to sedentary behavior due to technological advancements and the increasing ease of transportation (Pranata, 2022).

Some several studies indicate differences in physical fitness levels based on residential area characteristics. (Pazrudin et al., 2024) found that elementary school students in rural areas have better physical fitness levels compared to those in urban areas. Another study by (Tiara et al., 2024) showed that socioeconomic factors are also associated with students' physical fitness levels. Nevertheless, research comparing the physical fitness levels of elementary school students in urban and rural areas of Klaten Regency remains limited. Furthermore, previous studies have predominantly used the Indonesian Student Fitness Test (TKSI) instrument; therefore, a study employing the Indonesian Physical Fitness Test in this context is still needed.

Klaten Regency has a geographical composition consisting of both urban and rural areas, making it a relevant location to examine differences in students' physical fitness levels. Based on these conditions, this study aims to analyze differences in the physical fitness levels of elementary school students between urban and rural areas in Klaten Regency using the Indonesian Physical Fitness Test instrument. The results of this study are expected to serve as a basis for the development of physical education programs tailored to the characteristics of the students' environments.

METHODS

Research Design

This study employs a quantitative approach with a comparative design to identify differences in the physical fitness levels of elementary school students from urban and rural areas in Klaten Regency. The research activities were conducted on April 20–24 at SD Muhammadiyah 1 Tonggalan and SDIT Persada Bayat. These two schools were selected because they represent the characteristics of urban and rural areas in Klaten Regency.

Population and Sample

The study population included all fifth grade students at both schools. The sample was selected using purposive sampling, taking into account the participants' characteristics in relation to the study objectives. The criteria used included male and female students, aged approximately 11 years, in good health, and willing to participate in the entire series of assessments. Based on these criteria, 89 participants were selected, consisting of 48 students from SD Muhammadiyah 1 Tonggalan and 41 students from SDIT Persada Bayat.

Research Instruments

Measurement The level of physical fitness is measured by a test called the Indonesian Physical Fitness Test for children aged 10 to 12 years. This test was developed by the Ministry of National Education through the Center for Physical Quality Development. Indonesian

Physical Fitness Test is a standard measuring tool that has been widely used in Indonesia to evaluate the physical fitness condition of school children. This instrument was chosen because it can measure several main parts of physical fitness, such as speed, strength and endurance of arm muscles, strength and endurance of abdominal muscles, explosive power of leg muscles, and endurance of the cardiovascular system (Denny, 2022). The Indonesian Physical Fitness Test for children aged 10 to 12 years has been proven to have a fairly good level of accuracy and consistency. Based on (Dhia, 2024), the results of the validity test using Aiken's V showed a coefficient value of 0.884 for the male group and 0.897 for the female group. In addition, the results of the reliability test showed a coefficient value of 0.911 for the male category and 0.942 for the female category. These values indicate that Indonesian Physical Fitness Test is an appropriate and consistent tool, so it can be used well to measure the physical fitness conditions of elementary school students in this study. Details of the test items used in this study can be seen in **Table 1**.

Table 1. Indonesian Physical Fitness Test

Test Items	Measured Components
40 meter Sprint	Speed
Bent Arm Hang	Arm muscle strength and endurance
30 second sit ups	Abdominal muscle strength and endurance
Vertical jump	Lower-body explosive power
600 meter Run	Cardiorespiratory endurance

Results from each test item are initially recorded as raw figures—such as the time required, number of repetitions, or jump height. Subsequently, these raw values are converted into scores based on official standards for the 10–12 age group, with a scoring range of 1 to 5 for each item. The scores from all items are then aggregated to determine an overall physical fitness score. Finally, this total score is classified into a physical fitness category based on standards: Excellent, Good, Average, Poor, or Very Poor.

Data Collection Procedure

Data collection was conducted in person with the supervision of physical education teachers. Before the test began, participants received an explanation regarding the research objectives and the procedures for each test item. All measurements followed the standard procedures of the Indonesian Physical Fitness Test for ages 11–12, ensuring relatively uniform testing conditions for all participants (Mendikbudristek, 2022). The results of each test item were recorded and then converted into scores according to the norms for ages 11–12 (Mendikbudristek, 2022). The scores for each item were then summed to obtain each participant's physical fitness score.

Data Analysis

Data were analyzed using descriptive statistics, including the mean, standard deviation, minimum value, and maximum value, to describe students' physical fitness levels (Sugiyono, 2022). Before hypothesis testing was conducted, the data were first tested for normality using the Shapiro–Wilk test and for homogeneity of variances using Levene's Test. The normality test aims to determine whether the data is normally distributed, while the homogeneity test is used to determine the equality of variances across groups (Ghozali & Kusumadewi, 2023). After meeting the assumptions of normality and homogeneity, hypothesis testing was performed using the Independent Sample t-test to determine the difference in physical fitness levels between students in urban and rural areas. All data analysis was conducted using SPSS at a significance level of 0.05 (Ghozali & Kusumadewi, 2023).

RESULTS AND DISCUSSION

Descriptive analysis was conducted to provide an overview of the physical fitness levels of elementary school students in urban and rural areas of Klaten Regency. The results of the descriptive analysis are presented in **Table 2**.

Table 2. Descriptive Analysis Results

Variabel	Group	Mean	Highest	Lowest	Standard Deviation
Bent Arm Hang	Urban	19,56	30	10	5,02
	Rural	20,74	31	5	6,34
Sit Up	Urban	15,90	25	5	4,53
	Rural	16,44	23	6	4,08
Vertical Jump	Urban	32,27	51	16	6,61
	Rural	32,44	44	15	6,02
40 Meter Sprint	Urban	7,01	10,34	4,71	1,23
	Rural	7,95	10,68	4,85	1,44
600 Meter Run	Urban	209,12	291,83	120,84	42,06
	Rural	163,21	215,04	107,85	25,25

Source: data processed by the researcher (2026)

Based on **Table 2**, the average bent arm hang, sit-up, and vertical jump abilities between urban and rural students show relatively similar values. More pronounced differences are observed in the 40 meter run and 600 meter run components. Urban students demonstrated better average times in the 40 meter run test, while rural students had better average times in the 600 meter run testmeter.

Before testing the hypotheses, the data was first examined to determine whether it had a normal distribution and homogeneous variance. The test results showed that the data met the requirements for parametric analysis using the Independent Sample t-test. The results of the test comparing the levels of physical fitness between urban and rural students are presented in **Table 3**.

Table 3. Result of the Independent sample t-test

Variabel	Sig. (2-tailed)	description
Bent Arm Hang	0,336	Not significant
Sit Up	0,565	Not significant
Vertical Jump	0,904	Not significant
40 Meter Sprint	0,002	Significant
600 Meter Run	0,000	Significant

The results of the independent samples t-test showed that there were no significant differences in the bent arm hang ($p = 0.336$), sit-up ($p = 0.565$), and vertical jump ($p = 0.904$) components between urban and rural students. These findings indicate that the strength and endurance of the arm muscles, the strength and endurance of the abdominal muscles, and the explosive power of the leg muscles among students in both regions are relatively comparable. This condition may be influenced by the homogeneous characteristics of the respondents, namely male students with a nearly identical age range, as well as receiving relatively similar physical education instruction at school. Additionally, physical fitness levels are influenced by various factors, such as physical activity, environment, and daily lifestyle habits; therefore, differences in residential areas do not always result in differences across all components of physical fitness.

In contrast, there were significant differences in the 40 meter run ($p = 0.002$) and the 600 meter run ($p = 0.000$). These results indicate that differences in physical fitness levels between urban and rural students are more evident in the aspects of speed and cardiorespiratory endurance. Urban students performed better on the 40 meter run test, while rural students demonstrated better performance on the 600-meter run test.

These findings suggest that the characteristics of the living environment can influence students' physical activity. Children living in rural areas generally have greater opportunities for daily physical activity, such as walking and playing outdoors. Conversely, children living in urban areas tend to have lower levels of physical activity due to limited play spaces and increased sedentary behavior (Pazrudin et al., 2024). Physical activity performed repeatedly in

daily life has the potential to improve cardiorespiratory endurance, as reflected in the results of the 600 meter run test. The results of (Pazrudin et al., 2024) study also show that differences in physical activity patterns and environmental conditions contribute to variations in the physical fitness levels of elementary school students.

The results of this study indicate that there are significant differences in the 40-meter and 600 meter running components between students from urban and rural areas. These findings are consistent with the results of (Pazrudin et al., 2024) study, which states that there are differences in physical fitness levels between elementary school students living in rural and urban areas. That study showed that students living in rural areas have healthier physical conditions compared to those living in cities. However, this study found more specific results: the differences primarily occurred in the components of speed and cardiorespiratory endurance, while the components of upper body muscle strength, core muscle strength, and lower body muscle power did not show significant differences. These results indicate that the influence of the living environment is more clearly evident in fitness components related to aerobic physical activity and daily mobility.

The results of this study differ from those of (Verianti, 2025), who found that rural students generally have better physical fitness levels than urban students. In this study, significant differences were found only in the components of speed and cardiorespiratory endurance, whereas the components of upper body strength, core strength, and lower body power did not show significant differences between the two groups. These differences in results are likely due to differences in sample characteristics, the instruments used, and the data analysis approaches applied. (Verianti, 2025) study assessed overall physical fitness using the TKSI, whereas this study analyzed each fitness component separately.

The findings of this study indicate that the living environment contributes differently to each component of physical fitness. Although urban and rural students have relatively comparable abilities in terms of muscle strength and power, differences are evident in their speed and cardiorespiratory endurance. Therefore, physical education programs in schools need to take into account the environmental characteristics of students in order to optimize the development of all components of physical fitness.

CONCLUSION

This study indicates that there are differences in physical fitness levels between elementary school students in urban and rural areas of Klaten Regency across certain components. The results of the assessments show that the three components bent arm hang, sit ups, and vertical jumps did not exhibit significant differences between the two analyzed groups. Conversely, there were substantial differences in the results of the 40 meter and 600 meter running tests. Students from urban areas tended to perform better in the speed component, while students from rural areas excelled in the respiratory and cardiovascular endurance components. These findings suggest that the characteristics of the environment in which a person lives can influence the development of specific fitness components. Therefore, physical education programs in schools must be designed in accordance with the students' surrounding conditions so that the development of physical fitness can proceed effectively and optimallymaksimal.

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