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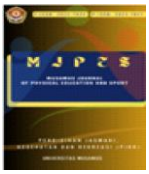

Physical Fitness of Grade 10 Students at SMA Santo Paulus: A 2026 Survey Using the Indonesian Student Fitness Test (TKSI)

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Abstract

Objectives. This study assessed the overall physical fitness and performance on individual fitness components of Grade 10 students at SMA Santo Paulus Martubung in 2026 using the Indonesian Student Fitness Test (TKSI).

Materials and Methods. This quantitative descriptive study involved 43 Grade 10 students. Physical fitness was assessed using the TKSI. Frequencies and percentages were used to summarise the distribution of students across the overall and component-specific fitness categories.

Results. Overall physical fitness was classified as Very Poor in 54% of students and Poor in 46%. Agility was the highest-performing component. Cardiorespiratory endurance, muscular endurance, and reaction time were predominantly classified as Very Poor.

Conclusions. All students assessed fell into the Poor or Very Poor overall fitness categories. Cardiorespiratory endurance, muscular endurance, and reaction time emerged as priorities for school-based physical fitness programmes.

Keywords: physical fitness, Indonesian Student Fitness Test, secondary school students, physical education

Introduction

Education is a lifelong process of human development. In today's modern era, education has become vital to human survival. From birth through old age, every individual has the right to access proper and equitable education. According to Law No. 20 of 2003, education is a planned and conscious effort to create a learning environment and process that enables students to participate actively. The educational journey involves various fields of knowledge that individuals need to understand and master. In a school setting, these are organized into subjects, each with its own distinct characteristics and scope. One subject that attracts significant student interest is Physical Education, Sports, and Health (PJOK). Physical education is a component of the educational process that utilizes systematically designed physical activities within the framework of the national

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education system. The demanding schedule of students at school necessitates an optimal level of physical fitness (Silalahi et al., 2023).

Formal education must be pursued within a school environment—an educational institution where the curriculum and instruction are structured to impart knowledge to students. Consequently, efforts to improve the quality of education require serious attention, particularly within schools, which serve as the foundation for all subsequent levels of learning. Since fundamental knowledge, skills, and behaviors are established here, schools require careful attention and guidance, with a continuous focus on enhancing quality through a framework centered on fostering excellence.(Muhammad Naufal Muzhaffar Yamin, 2024)

Physical fitness is fundamentally linked to an individual's physical capacity to perform daily activities effectively and efficiently over an extended period without experiencing significant fatigue, while still retaining enough reserve energy to engage in other tasks. Fitness can also be defined as a state in which an individual does not experience excessive exhaustion when performing physical activities. Furthermore, fitness refers to a set of physical characteristics possessed or attained by an individual, which relate to their ability to perform physical activities (Pratama Silalahi et al., 2023)

Physical fitness can also be defined as an individual's physical state that allows them to carry out daily activities without experiencing excessive fatigue, while still retaining the capacity to engage in other physical pursuits. Providing opportunities to learn movement through physical skills from an early age is crucial for maintaining and developing one's own condition as well as that of one's environment. This facilitates optimal skill development in adulthood and simultaneously supports healthy mental growth (abdillah surya siregar, devi catur winata, n.d.)

Physical fitness is closely linked to a student's physical condition; maintaining good fitness helps students avoid illness. Improving students' physical fitness levels allows them to participate in lessons comfortably, which, in turn, is expected to enhance their academic performance. This is the goal for students at SMA Santo Paulus—specifically, it is hoped that tenth-grade students will possess a high level of physical fitness, making it easier for them to engage with their coursework and improve their learning outcomes.(M Imran & Hasanuddin, 2024)

Physical fitness is an essential attribute for everyone, as it reflects an individual's capacity to carry out daily tasks—whether as a student, a university student, an employee, a farmer, or in any other role. Therefore, maintaining physical fitness is crucial for staying healthy.(Nugraheni & Belvana, 2023)

The development of physical fitness should be integrated into education from an early age—starting in elementary school and continuing through high school—via physical education. In reality, however, students often view physical activities negatively, fearing exhaustion, even though the very purpose of physical exercise is to improve one's fitness level.(Saldi et al., 2025)

According to the competency standards for school-based physical education, physical education is an educational process that utilizes systematically planned physical activities aimed at improving an individual's physical condition. In the context of lifelong human development, physical education plays a vital role by providing students with opportunities to engage directly in diverse learning experiences through physical activity.(devi catur winata et all, 2025)

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Furthermore, physical education aims to foster health, physical fitness, critical thinking skills, emotional stability, social skills, reasoning, and moral conduct through physical activities and sports. Physical education serves as a medium to foster the development of motor skills, physical capabilities, knowledge, reasoning, the internalization of values (encompassing mental, emotional, spiritual, and social attitudes), and the cultivation of healthy lifestyle habits—all of which contribute to balanced growth and development (Shodiqin, 2025). In the context of physical education, sports, and health (PJOK), there are five primary learning objectives: acquiring the skills necessary to engage in various physical activities; understanding the implications of physical activity for fitness; participating actively; maintaining physical fitness; and recognizing the value of physical activity as a contribution to a healthy lifestyle(Muhammad Naufal Muzhaffar Yamin, 2024). Given that physical fitness is one of these five core objectives, it is clear that students with poor physical fitness will struggle to receive and absorb the lessons provided by their teachers. Consequently, the goal of nurturing a future generation that excels in every aspect—a key aim of the school system—cannot be realized. Furthermore, such students will be unable to participate actively in an era of global competition; lacking a solid foundation, they will struggle to keep pace or distinguish themselves among their peers. Moreover, a lack of good physical fitness undermines a student's self-confidence in their academic pursuits; low fitness levels lead to rapid fatigue and a diminished ability to maintain concentration(Mona Damayanti, Tatang Muhtar, 2018).

To objectively assess the physical fitness of students, a standardized measurement tool is required. The Indonesian Student Fitness Test (Tes Kebugaran Siswa Indonesia, or TKSI) is an instrument designed to systematically and comprehensively evaluate the physical fitness levels of students in Indonesia. The TKSI measures various elements of physical fitness that are relevant to the age and characteristics of the students, providing an accurate reflection of their actual physical fitness status. It is highly recommended that the TKSI be administered in its entirety, without omitting or adding any components. This instrument serves as a means for data management and storage, provides guidance for conducting training and testing, and acts as a tool for identifying and developing students' athletic potential. The TKSI is tailored to different educational levels: Stage A for grades 1–2 of elementary school (SD), Stage B for grades 3–4, Stage C for grades 5–6, Stage D for junior high school (SMP/MTs), and Stages E & F for senior high school/vocational school (SMA/SMK) (Edi Bintoro, Adhe Saputra, 2025)

The use of the TKSI in research on the physical fitness of students participating in extracurricular activities is highly significant; it provides a standardized technique for assessing physical fitness levels and enables an objective evaluation of the effectiveness of extracurricular programs. It also assists in designing appropriate interventions to improve students' overall physical fitness. Since extracurricular activities take place within the school environment, the participants are still considered students, making the TKSI an appropriate instrument for assessing the physical fitness of students involved in such activities (Jurdan Martin siahaan, 2023)

In reality, however, the physical fitness level of students at SMA Santo Paulus remains unknown. To date, futsal training has focused primarily on game techniques and strategy, while physical fitness has not been measured in a structured manner using a standardized instrument. Given this background, the researcher is motivated to conduct a study titled "A Survey of the Physical Fitness Level of Grade X Students at SMA Santo Paulus Based on the Indonesian Student Fitness Test (TKSI) in 2026." Through this

study, it is expected that accurate and objective data will be obtained, which can subsequently be used to evaluate the students' physical fitness, as well as serve as a basis for planning, designing, and developing a futsal training program that is more effective, systematic, and aligned with the students' needs.

Materials and Methods

Study Design

This study employs a quantitative descriptive research design using a survey technique. A descriptive design was chosen because the study aims to provide a factual, accurate, and systematic account of students' physical fitness levels, without applying any specific interventions or treatments to the research subjects.

According to Creswell (2021), quantitative descriptive research is used to explain phenomena systematically based on statistical data, without manipulating variables. A descriptive survey design is appropriate here because the study does not seek to examine causal relationships or the influence of one variable upon another; rather, it aims to map and identify the contributions of motivational factors, environmental factors, and training programs to the consistency of the athletes' training.

A quantitative approach is utilized because the data collected consist of numerical values derived from the Indonesian Student Fitness Test (TKSI), which are subsequently analyzed using descriptive statistical techniques. Through this design, the researcher seeks to obtain an objective overview of the physical fitness status of 10th-grade science (IPA) students at SMA Santo Paulus.

Study Participants

According to Sugiyono (2018, p. 81), a sample is a subset of the total number and characteristics of a given population; the sample drawn from that population must be truly representative of the population being studied.
Another perspective, offered by Arikunto (2019, p. 109), defines a sample as a portion or representative subset of the population under study.
Arikunto (2017, p. 173) further notes that a sample reflects the values and traits inherent in the population. Sugiyono (2017, p. 81) defines a sample as a part of the population that serves as the data source for a study. Specifically, Sugiyono (2017, p. 81) states: "A sample is a part of the total number and characteristics possessed by the population." Consequently, the sample for this study consists of the entire population, which comprises 43 students.

Statistical Analysis

Data obtained from the Indonesian Student Fitness Test (TKSI) were analyzed using descriptive statistical methods.
The data analysis steps include:

1. Calculating the score for each test item.
2. Summing the total scores for each student.

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3. Classifying the test results based on TKSI norms or categories (e.g., excellent, good, fair, poor, and very poor).
4. Calculating the percentage for each category to determine the distribution of the students' physical fitness levels.

The analysis results are presented in tables and percentages to facilitate drawing conclusions regarding the physical fitness levels of Grade 10 students at SMA Santo Paulus.

TKSI Scoring Categories

The scores from each test item are summed and compared against a categorization table to determine the fitness level. The categorization table is provided below:

Table 1. TKSI Scoring Categories

No	Score Range	Category
1	27–30	Excellent
2	23–26	Good
3	19–22	Fair
4	15–18	Poor
5	≤14	Very Poor

Source: Sugito Agi et al. (2021)

Basic Formula for TKSI Percentages

The formula used is the frequency divided by the total sample size, multiplied by 100%.

$$\text{Percentage (P)} = (F / N) \times 100\%$$

Legend:

- P: The percentage being calculated
- F: Frequency (the number of students in a specific category, e.g., Excellent, Good, Fair, Poor, or Very Poor)
- N: The total number of students or the total sample size

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RESULTS

This research was conducted at SMA Santo Paulus Martubung, located in Medan, North Sumatra. As a secondary educational institution in the Martubung area, the school facilitates learning and the development of student potential, including in the fields of sports and physical health. Through the Physical Education, Sports, and Health (PJOK) curriculum, the school aims to improve students' physical fitness levels to support their academic pursuits and daily activities. The subjects of this study were 10th-grade students at SMA Santo Paulus Martubung during the even semester of the 2026 academic year, who underwent physical fitness assessments using the Indonesian Student Fitness Test (TKSI). The assessments were carried out in accordance with the procedures established in the TKSI guidelines. The TKSI instrument comprises six components: an eye-hand coordination test, a reaction time test, an agility test (T-Test), a leg muscle explosive power test (Vertical Jump), a shoulder and arm muscle endurance test (Dipping Test), and a cardiorespiratory endurance test (Bleep Test). All tests were administered following the procedures stipulated in the TKSI guidelines.

This study employs a quantitative descriptive method, aiming to determine the physical fitness level of 10th-grade students at SMA Santo Paulus Martubung based on the Indonesian Student Fitness Test (TKSI). The research sample consists of 43 students, comprising 20 boys and 23 girls. All students participated in a series of physical fitness tests covering several fitness components, in accordance with the TKSI guidelines. Based on the measurements obtained for each component, the data were classified into five categories: Excellent, Good, Fair, Poor, and Very Poor. Subsequently, the measurement results were analyzed using descriptive statistics—specifically frequencies and percentages—to describe the students' physical fitness levels.

The results of the students' physical fitness tests show a distribution of categories that varies based on gender and the type of test. In the overall physical fitness test (TKSI), no students fell into the "Very Good," "Good," or "Average" categories. Meanwhile, 46% of students were classified as "Below Average" (comprising 70% of the boys and 26% of the girls), and the majority—54%—fell into the "Very Poor" category (comprising 30% of the boys and 74% of the girls). In the hand-eye coordination test, the majority of students were in the "Average" category (44%), followed by "Below Average" (40%) and "Good" (16%); no students were classified as "Very Good" or "Very Poor." In the reaction time test, the largest group of students (52%) fell into the "Very Poor" category, followed by "Below Average" (30%), "Average" (13%), and "Good" (5%). The agility test results show that the majority of students (80%) were in the "Good" category—consisting of 78% of the girls and 80% of the boys—with the remaining 20% falling into the "Average" category.
In the explosive power test, the majority of students fell into the "Poor" category (56%), followed by "Average" (19%), "Good" (16%), and "Very Poor" (9%). In the arm and shoulder muscular endurance test (dipping test), the majority of students were in the

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"Very Poor" category (47%), followed by "Poor" (32%), "Average" (19%), and "Good" (2%). In the cardiorespiratory endurance test (bleep test), no students fell into the "Very Good," "Good," or "Average" categories; instead, the majority (72%) were in the "Very Poor" category, followed by 28% in the "Poor" category. These data indicate that the students' physical fitness levels vary significantly across different tests and categories, with certain components—such as the bleep test—revealing a significant weakness in cardiorespiratory endurance.

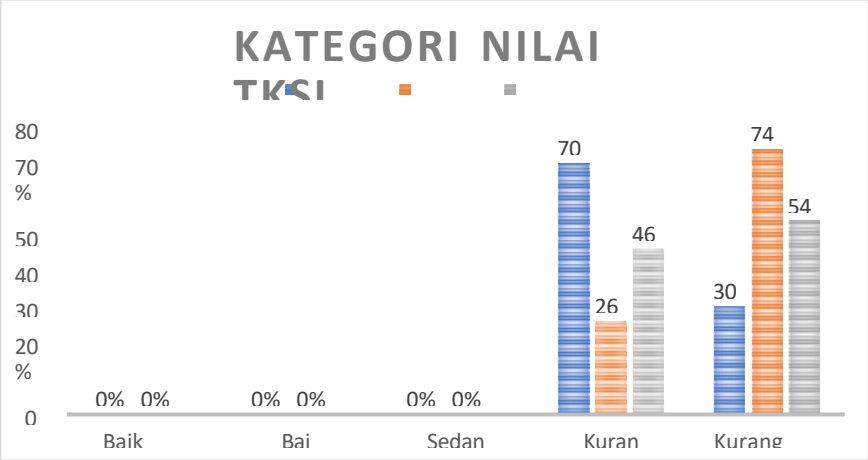

Figure 1. Diagram of the total fitness test for Indonesian students

Based on physical fitness measurements using the Indonesian Student Fitness Test (TKSI), the majority of students fall into the "Very Poor" category, accounting for 54% of the total. Within this category, female students represent the largest share at 74%, while male students account for 30%. Furthermore, 46% of students fall into the "Poor" category, consisting of 70% male students and 26% female students. Meanwhile, no students fall into the "Average," "Good," or "Very Good" categories; thus, each of these categories has a percentage of 0%. These results indicate that the physical fitness level of high school students is, in general, still in the "Very Poor" category. This suggests that most students possess a level of fitness that is not yet optimal for supporting daily physical activities or sports-related endeavors. This low level of fitness may be influenced by various factors, such as a lack of physical activity, low participation in sports, a sedentary lifestyle, and an absence of regular exercise. Physical fitness is defined as the body's ability to perform daily activities effectively and efficiently without experiencing excessive fatigue, while still retaining an energy reserve for other tasks. Therefore, efforts to improve physical fitness are necessary—through regular sports activities, structured physical training, and the adoption of a healthy lifestyle—so that students' fitness levels can improve, thereby supporting their overall health and academic achievement.

This study aims to determine the physical fitness level of Grade X students at SMA Santo Paulus Martubung in 2026, based on the Indonesian Student Fitness Test (TKSI).

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The assessment was conducted on 43 students—20 boys and 23 girls—using six test components: hand-eye coordination, reaction time, agility, leg muscle explosive power, shoulder and arm muscle endurance, and cardiorespiratory endurance.

The results indicate that the overall physical fitness level of the Grade X students at SMA Santo Paulus Martubung is relatively low. The TKSI findings show that 54% of the students fall into the "Very Poor" category, while 46% fall into the "Poor" category; no students reached the "Average," "Good," or "Very Good" categories. These findings suggest that most students lack the optimal physical condition required to support their academic and sports-related activities.

This low level of physical fitness may be influenced by several factors, such as low daily physical activity, a lack of regular exercise habits, increased sedentary behavior due to device usage, and an absence of structured physical training. Furthermore, physical fitness is also influenced by dietary patterns, rest, motivation to exercise, and a school environment that encourages physical activity. If this situation persists, students' ability to perform daily tasks or participate in Physical Education classes may decline.

Regarding the hand-eye coordination component, most students fall into the "Average" and "Poor" categories. Among boys, the "Average" category is most prevalent (70%), while among girls, the "Poor" category is most common (73%). These results indicate that the students' hand-eye coordination is not yet optimal, particularly among the girls. Hand-eye coordination is a crucial skill for various sports, including basketball, volleyball, badminton, table tennis, and soccer. This ability can be improved through consistent practice, including ball-tossing and catching drills, visual reaction exercises, small-sided games, and various forms of coordination training.

Regarding the "Hand Touch Reaction Test," the majority of students (52%) fall into the "Very Poor" category; among female students, this figure reaches 65%. This indicates that the students' reaction speed to stimuli remains low. Reaction ability is a key component of physical fitness, playing a crucial role in the success of physical movements during sports. This low level of reaction ability is likely due to a lack of training that emphasizes response speed to stimuli. Therefore, it is necessary to

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incorporate exercises that involve changes in direction, speed, and coordination, as well as games that require quick responses to cues.

In contrast to other components, the results of the "T-Test" indicate that the students' agility is generally good, with 80% of male students and 78% of female students falling into the "Good" category. These findings suggest that most students are capable of changing direction rapidly while maintaining good body balance. This may be attributed to the physical activities

frequently performed by students during physical education (PJOK) classes or in their daily play. Nevertheless, students who fall into the "Moderate" category should still engage in regular agility training to further optimize their performance.

Regarding the "Vertical Jump" component, the research results show that the explosive power of the students' leg muscles is in the "Poor" category. A large majority of female students (79%) fall into the "Poor" category, while male students are distributed across the "Moderate," "Poor," and "Very Poor" categories. This indicates that the ability to generate explosive force within a short period remains low. Leg muscle explosive power is essential for activities such as jumping, sprinting, and executing explosive changes in movement. To improve this, students should engage in plyometric training—such as squat jumps, box jumps, and bounding—as well as progressive leg-strengthening exercises.

In the "Dipping Test" component, the majority of students fall into the "Very Poor" category. A total of 66% of female students fall into this category, while the male students are predominantly in the "Moderate" category. These results indicate that the muscular endurance of the students' shoulders and arms is currently inadequate. This low level of muscular endurance may be attributed to a lack of strength training for the upper body. Therefore, a structured exercise program—incorporating activities such as push-ups, dips, planks, pull-ups, and light resistance training—should be implemented on a regular basis to improve muscular endurance.

Discussion

This study aims to determine the physical fitness level of Grade X students at SMA Santo Paulus Martubung in 2026, based on the Indonesian Student Fitness Test (TKSI).

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This low level of physical fitness may be influenced by several factors, such as low daily physical activity, a lack of regular exercise habits, increased sedentary behavior due to device usage, and an absence of structured physical training. Furthermore, physical fitness is also influenced by dietary patterns, rest, motivation to exercise, and a school environment that encourages physical activity. If this situation persists, students' ability to perform daily tasks or participate in Physical Education classes may decline.

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The component that yielded the lowest results was the Bleep Test. All male students (100%) fell into the "Very Poor" category, while the female students were predominantly in the "Poor" and "Very Poor" categories. These results indicate that the students' cardiorespiratory endurance remains very low. Cardiorespiratory endurance is a primary

component of physical fitness, as it relates to the capacity of the heart, lungs, and circulatory system to supply oxygen during physical activity. The low Bleep Test scores suggest that the students are not accustomed to engaging in sustained physical activity of moderate to high intensity. Consequently, schools should enhance aerobic training programs—such as jogging, interval running, circuit training, cycling, or games that involve continuous physical activity.

Overall, this study indicates that while students possess a good level of agility, most other components of physical fitness fall into the "Poor" or "Very Poor" categories. This results in a low final score on the TKSI (Indonesian Physical Fitness Test). These findings suggest that physical education (PJOK) in schools should place greater emphasis on the balanced development of all physical fitness components, rather than focusing solely on movement skills. Implementing regular, measurable, progressive, and continuous training programs is expected to improve students' physical fitness, thereby ensuring they are in better physical condition to support their health, academic activities, and athletic performance.

Acknowledgments

Based on the research findings regarding the physical fitness level of Grade X students at SMA Santo Paulus Martubung, as assessed through the Indonesian Student Fitness Test (TKSI) in 2026, the following conclusions can be drawn:

1. The physical fitness level of Grade X students at SMA Santo Paulus Martubung is generally in the low category. According to the Indonesian Student Fitness Test (TKSI) results, 54% of the students fall into the "Very Poor" category, while 46% fall into the "Poor" category. None of the students reached the "Average," "Good," or "Very Good" categories. These results indicate that the students' physical fitness levels are not yet optimal, necessitating attention through programs designed to increase physical activity and structured exercise.
2. An analysis of the individual components of the Indonesian Student Fitness Test (TKSI) yielded the following results:

- The hand-eye coordination test was predominantly in the "Average" category.

o The reaction time test (Hand Touch Reaction Test) was predominantly in the "Very Poor" category.

o The agility test (T-Test) was predominantly in the "Good" category, making it the component with the best performance.

o The leg muscle explosive power test (Vertical Jump) falls predominantly into the "Poor" category.

o The shoulder and arm muscle endurance test (Dipping Test) falls predominantly into the "Very Poor" category.

o The cardiorespiratory endurance test (Bleep Test) falls predominantly into the "Very Poor" category, making it the lowest-performing fitness component.

3. The research results indicate that although students possess a good level of agility, most other fitness components—particularly cardiorespiratory endurance, muscle endurance, reaction time, and leg muscle explosive power—remain in the "Poor" category. Therefore, a regular, measurable, and continuous physical training program is necessary to improve the students' level of physical fitness.

Conflict of Interest

Thank you to the teachers, students, and principal of SMA Santo Paulus Martubung Tahun 2026

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