

Differences in Physical Fitness of Grade XI Students between MPLB and PPLG Majors at SMK N 2 Semarang

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Abstract

This study aims to determine the differences in physical fitness levels of eleventh grade students between the MPLB (Office Management and Business Services) and PPLG (Software and Game Development) majors at SMK Negeri 2 Semarang. This study uses a quantitative approach with a survey design. The research sample consisted of 72 students consisting of 36 students majoring in MPLB and 36 students majoring in PPLG. The instrument used was the Nusantara Student Fitness Test (TKPN) aged 15–19 years which includes measuring Body Mass Index, V-sit and reach, squat thrust, sit up, and PACER test. Data analysis techniques used descriptive statistics and the Mann-Whitney test. The results showed that the overall physical fitness level of SMK Negeri 2 Semarang students was in the good category, with 8 students (11%) in the very good category, 33 students (46%) in the good category, 19 students (26%) in the sufficient category, 8 students (11%) in the less than average category, and 4 students (6%) in the very poor category. The average TKPN value of MPLB major students was 2.94 with a standard deviation of 0.71, while the PPLG major obtained an average value of 3.02 with a standard deviation of 0.69. The results of the hypothesis test using Mann-Whitney showed that there was no significant difference in the TKPN value between MPLB and PPLG majors with a significance value of $0.421 > 0.05$, but the mean rank value of PPLG majors was 37.60 slightly higher than that of MPLB majors at 35.40. Based on these results, it can be concluded that there is no significant difference in the level of physical fitness between MPLB and PPLG majors, although PPLG majors tend to have slightly better fitness values.

Keywords: Physical Fitness, MPLB, PPLG, TKPN

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INTRODUCTION

Physical fitness supports human physical activity in carrying out work and movement. An individual who is physically fit will be able to perform physical activities better than someone who is not (Natal, 2022). Physical fitness can be improved through regular, measured, programmed, and systematic exercise. A fit physique effectively minimizes the risk of injury during physical activity or strenuous exercise.

Students at SMK N 2 Semarang currently show low enthusiasm and a tendency to be lazy about active exercise. Although there is a Physical Education subject, its duration is limited to only about two hours once a week. This condition is exacerbated by students' higher interest in electronic devices and *online games*, where they feel very comfortable playing for long periods without getting bored (Taopan, 2019). At SMK Negeri 2 Semarang, there are differences in the characteristics of learning activities between the Office Management and Business Services (MPLB) and Software and Game Development (PPLG) majors. PPLG students tend to spend a lot of time with sedentary activities or sitting still in front of a computer screen to do coding and game development. In contrast, MPLB students, although also active in the office, have different movement dynamics in business service simulations.

A common problem in schools is a decrease in enthusiasm and fatigue during learning, especially in the final hours. This is an indication of suboptimal fitness. Therefore, researchers consider it important to examine the differences in physical fitness levels between the two majors in order to provide recommendations for physical activity patterns appropriate to the workload of each major. As stated by Giriwijoyo (2017), exercising three to five times a week is recommended. In relation to improving student academic achievement, physical activity will improve cognitive abilities, memory, and other skills (Karim, 2018).

Based on a preliminary study conducted by researchers on April 6, 2026, through interviews with 5 students majoring in MPLB and 5 students majoring in PPLG at SMK N 2 Semarang at

random, it was found that all respondents (10 students) were obliged to participate in at least one extracurricular activity. The results of the interviews showed that the majority of students, namely 8 people, often complained of fatigue that appeared especially at night and in the morning. This fatigue condition was triggered by the density of daily activities, including working on school assignments that took up time until late at night. In addition, the lack of rest time was also caused by other independent activities that had to be completed by the students before they started their daily routine schedule quite early in the morning.

It's important for students to be physically fit to help them participate in learning with enthusiasm and high motivation, leading to optimal learning outcomes. To achieve good physical fitness, regular physical activity and exercise are essential. Giriwijoyo (2017) suggests exercising three to five times a week. Physical activity, in turn, improves cognitive abilities, memory, and other skills (Colmenero, 2014).

Seeing this background, the researcher intends to study the differences in physical fitness of class XI students between the MPLB and PPLG departments at SMK Negeri 2 Semarang.

METHOD

The research method used in this study was a quantitative approach with a survey design. The sample used was 11th-grade students from the MPLB and PPLG majors at SMK Negeri 2 Semarang.

The instrument used in this study was the Nusantara Student Fitness Test (TKPN) for students aged 15-19 years. The procedures included measuring Body Mass Index, V-sit and reach, Squad thrust, Sit-ups, and the PACER test. Physical fitness *is not only a necessity for athletes but also an obligation that school-age children must have to support their daily activities* (Wolfe et al., 2020). The data analysis technique used correlation, including prerequisite tests for normality and homogeneity analysis, and hypothesis testing.

The research procedure measures the level of physical fitness for Body Mass Index using kilograms and meters, for the V-sit and reach test

using a meter, for Sit up using a time unit of 60 seconds, Squat thrust using a time unit of 30 seconds and for the Pacer test using a level.

RESULTS AND DISCUSSION

Results

On average, students at SMK N 2 Semarang have a good level of physical fitness. If suboptimal fitness results are found, this is usually due to low physical activity or infrequent exercise, even though exercise is a key factor in maintaining physical fitness. The results of the data analysis from this study are presented below:

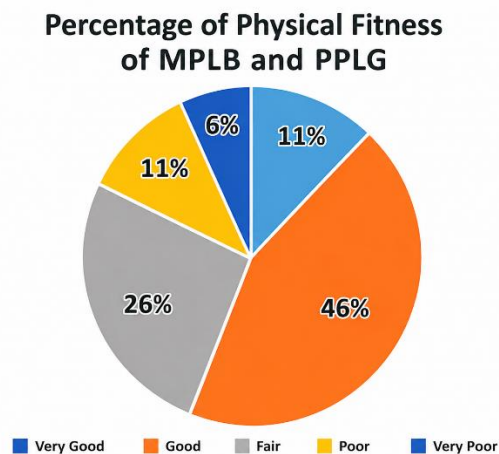


Figure 1. Percentage of Physical Fitness of SMK N 2 Semarang

In the data above, it is known that physical fitness is divided into categories of excellent, good, sufficient, less, and very less. Students of SMK N 2 Semarang have a physical fitness level in the excellent category of 8 students (11%), good category of 33 students (46%), sufficient category of 19 students (26%), less category of 8 students (11%), and very less category of 4 students (6%). Based on these results, the overall level of physical fitness of students of SMK N 2 Semarang is in the good category.

Descriptive Statistics			
	N	Mean	Standard Deviation
TKPN MPLB	36	2.94	0.71
TKPN PPLG	36	3.02	0.69

Table 1. Descriptive Statistics of Physical Fitness of TKPN

From the results above, it can be seen that the Nusantara Student Fitness Test for the MPLB major has an average score of 2.94 with a standard

deviation of 0.71. Meanwhile, the results of the Nusantara Student Fitness Test for the PPLG major have an average score of 3.02 with a standard deviation of 0.69. Overall, both groups have the same sample size, namely 36 students, but there is a slight difference in the average score and standard deviation. The difference is not too large. The TKPN group for the PPLG major tends to have a higher average score and a smaller spread of scores compared to the TKPN group for the MPLB major.

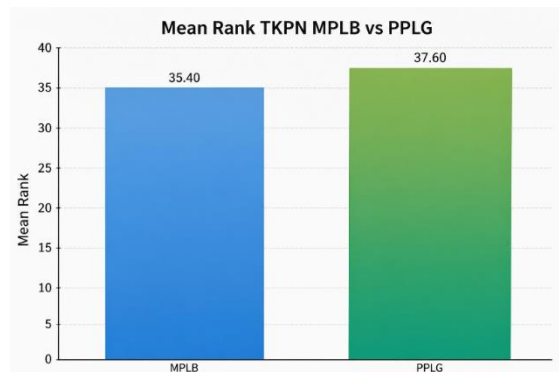


Figure 2. TKPN MPLB and PPLG

Based on the test results using Mann-Whitney, it can be seen that there is no significant difference in the TKPN value between the MPLB and PPLG majors. This finding is proven by the sig value = 0.421 > 0.05. Based on the mean rank value, it can be seen that the TKPN value of the PPLG major = 37.60 is higher than the MPLB major which is = 35.40.

Discussion

Sports activities are activities undertaken by individuals to maintain physical fitness and health. Given the importance of sports in human life, physical education has been taught and included in school curriculum. This aims to instill in individuals the habit of participating in sports from an early age. Therefore, sports are essential for supporting daily activities. Physical education is a learning process aimed at developing individuals, both as individuals and members of society, in a conscious and planned manner through various activities. This process is aimed at achieving physical growth, health, fitness, abilities and skills, intelligence, and balanced character and personality development to shape

quality Indonesians based on the values of Pancasila (Janwar, 2019).

The goal of physical education is to develop health, physical fitness, critical thinking skills, emotional stability, social skills, and moral reasoning and behavior through physical activities and sports (Herlina, 2020). However, children's physical activity at school is generally limited and occurs mostly during breaks and during physical education classes.

In this regard, physical education, sports, and health play a crucial role as a means of providing physical activity for students in the school environment. Physical fitness in school - age children is crucial because it is closely related to learning motivation. Students who are ill tend to have difficulty concentrating during lessons. High learning motivation can also drive improved academic achievement. Therefore, physical fitness significantly influences learning outcomes, and school- age children have great potential for optimal development, including physical aspects (Prastyawan et al., 2022).

Physical fitness has benefits in building muscle strength and endurance, increasing aerobic endurance, increasing body resistance, burning calories, reducing stress, and increasing vitality. It is important for every individual to have a level of fitness that allows them to carry out life activities optimally (Sugiyanto & Sugihartono, 2018) .

Based on the results of the research conducted, it was found that the physical fitness level of 11th grade students at SMK Negeri 2 Semarang was generally in the good category. This finding indicates that most students are still in good physical condition to support various daily activities, both academic activities at school and activities outside of school. Physical fitness is a crucial component in students' lives because it relates to the body's ability to carry out activities effectively and efficiently, and without experiencing excessive fatigue. Students with good physical fitness tend to be more enthusiastic, have optimal endurance, and are able to participate in learning with better concentration. According to Prakoso and Haryanto (2021), good physical fitness in school

adolescents plays a significant role in improving learning readiness, productivity, and overall health.

The distribution of physical fitness categories shows that the largest group is in the good category at 46%, followed by the sufficient category at 26%, the very good category at 11%, the poor category at 11%, and the very poor category at 6%. These data indicate that although the majority of students are in the good category, there are still a number of students with low fitness levels. This condition requires serious attention from schools and parents because low physical fitness can impact decreased stamina, low concentration in learning, and an increased risk of health problems. According to Kusuma and Andriyani (2020), students with low physical fitness tend to tire easily, are less active, and do not optimally participate in the learning process in class. Therefore, efforts to improve physical fitness must be carried out continuously through habits of active and healthy living.

Based on the results of the comparison between majors, it was found that students majoring in PPLG had a slightly higher average physical fitness score than students majoring in MPLB. The PPLG major obtained a mean score of 3.02 with a standard deviation of 0.69, while the MPLB major obtained a mean score of 2.94 with a standard deviation of 0.71. The difference in average scores indicates that PPLG students have a slightly better fitness level, but the difference is not too large. The results of the Mann-Whitney test also showed that there was no significant difference between the two majors, so statistically both groups had relatively similar levels of physical fitness. According to Sari and Wicaksono (2022), small differences in average fitness scores between student groups are often influenced by individual physical activity habits, not solely due to differences in major programs at school.

The lack of significant differences between the MPLB and PPLG majors may be due to several factors. First, both majors are within the same school environment , resulting in relatively similar learning schedules, break times, and physical education intensity. Second, students

from both majors have equal access to extracurricular activities and school sports facilities. Third, students' lifestyles in the modern era tend to be more uniform, particularly in their use of digital technologies such as smartphones, social media, and online games, which can reduce daily physical activity. According to Nugraha and Permata (2021), the increasing sedentary lifestyle among school-aged adolescents is one of the causes of declining physical fitness levels, especially if not balanced with regular exercise.

In addition to school environmental factors, physical fitness is also influenced by diet, sleep quality, and exercise habits at home. Students who have a balanced diet, get enough rest, and engage in regular physical activity tend to have better physical fitness than those who are less active. This aligns with research by Maulana and Fitria (2020), which states that the combination of good nutrition, adequate sleep, and regular exercise positively contributes to improving endurance and physical fitness in adolescents. Therefore, improving student fitness is not only the responsibility of the school but also requires support from family and the surrounding community.

Physical Education, Sports, and Health (PJOK) plays a strategic role in improving students' physical fitness. Through PJOK learning, students are given the opportunity to engage in various movement activities that can train muscle strength, cardiovascular endurance, agility, flexibility, and body coordination. Furthermore, PJOK also instills the values of sportsmanship, discipline, cooperation, and a healthy lifestyle. According to Ramadhan and Putri (2023), PJOK learning that is carried out actively, fun, and varied can increase students' interest in participating in physical activity on an ongoing basis. Therefore, PJOK teachers need to design innovative learning to increase students' motivation to move and exercise.

Schools also need to create support programs outside of formal school hours to maintain students' physical fitness. Programs such as group morning exercise, fun walks, inter-class sports competitions, school sports clubs, and

healthy living campaigns can be effective alternatives. These activities can foster a culture of active movement within the school environment and reduce students' sedentary habits. According to Hidayat and Pranata (2022), schools that consistently provide additional physical activity programs have been shown to have students with better fitness levels than schools that rely solely on physical education (PJOK) instruction in the classroom.

The results of this study indicate that students majoring in MPLB and PPLG at SMK Negeri 2 Semarang have relatively similar levels of physical fitness and are in the good category. Although the PPLG major has a slightly higher average score, the difference is not significant. Therefore, physical fitness improvement should be provided to all students regardless of major. This effort is crucial to ensure students are physically healthy, enthusiastic about learning, and optimally prepared to face the demands of education and daily life.

CONCLUSION

Based on the results of the study, it can be concluded that the physical fitness level of grade XI students of SMK Negeri 2 Semarang is generally in the good category. Students majoring in MPLB have an average physical fitness score of 2.94, while those majoring in PPLG have an average physical fitness score of 3.02, so PPLG students tend to have slightly higher scores. However, based on the results of the Mann-Whitney test, a significance value of $0.421 > 0.05$ was obtained, indicating that there was no significant difference in the level of physical fitness between students majoring in MPLB and PPLG. Therefore, increasing physical fitness needs to be done evenly to all students through routine physical activity, effective PJOK learning, and the implementation of a healthy lifestyle.

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