



Physical Fitness for Vocational High Schools: Physical Condition Profile of Grade 11 Male Students

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Abstract

Background: Physical fitness is essential for vocational students' health, learning performance, and work readiness. However, limited up-to-date fitness data restricts schools in designing effective programs, underscoring the need for systematic assessment of students' physical fitness profiles, especially in vocational learning contexts.

Aims: This study aimed to analyze the physical fitness profile of grade 11 male students in a vocational high school, focusing on identifying their overall physical condition as a basis for health and fitness intervention planning.

Methods: A descriptive quantitative approach using a survey method was employed. Participants consisted of 11 grade 11 male students from the Animation major at SMK Syubbanul Wathon Secang, Magelang, selected through purposive sampling. Physical fitness was measured using the Indonesian Physical Fitness Test, covering body composition, balance, coordination, strength, explosive power, speed, agility, and endurance. Data were analyzed using descriptive statistics to classify students' physical fitness levels.

Result: The findings revealed that the majority of students demonstrated a moderate level of physical fitness. While several components showed adequate performance, some students were categorized at a low fitness level, indicating areas requiring improvement. Overall, the results suggest that students possess physical fitness potential that can be enhanced through structured and targeted exercise programs.

Conclusion: The study concludes that the physical fitness profile of grade 11 male vocational students is predominantly at a moderate level. These findings underscore the importance of integrating systematic physical fitness monitoring and tailored fitness interventions within vocational education to support students' health, learning effectiveness, and future work readiness.

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INTRODUCTION

Physical fitness is an important aspect in supporting the productivity and quality of life of young people, including Vocational High School (SMK) students. In the global context, Sustainable Development Goals (SDGs) point 3 emphasizes the importance of ensuring healthy lives and promoting well-being for all ages, which includes increasing physical activity among adolescents (United Nations, 2020). The Indonesian government also emphasizes the importance of physical education in the national curriculum to shape students' character and health (Prasetyo & Sari, 2025). Research by (Bagun, 2022) shows that physical education can contribute to the achievement of the SDGs through the promotion of healthy and inclusive lifestyles. Besides that, (Fröberg & Lundvall, 2021) emphasized the role of physical education in the context of the 2030 Agenda and SDGs to achieve sustainable development. Research by (Nurhaini, 2021) also highlighted the importance of vocational students' work readiness in supporting the achievement of SDGs.

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Although SMK students are more focused on mastering vocational skills, maintaining physical fitness is still important to support their learning and practical activities. Study by (Loviani et al., 2022) found that a good understanding of health-related fitness can improve the active lifestyle of vocational students. In addition, research by (Paulino da Silva Bento et al., 2021), showed that the circuit training approach can significantly improve the physical fitness of vocational students. Study by (Cronin et al., 2020) also showed that the physical education and sports curriculum can develop students' life skills in the United Kingdom. Therefore, maintaining physical fitness is not just a complement, but an important part in shaping vocational students who are healthy, resilient, and ready to face the challenges of real life.

To understand the physical fitness level of students, measuring their physical condition profile is an important step. Physical fitness measurements, including jumping tests, push-ups, and sit-ups, can provide a comprehensive picture of students' health status (Aziz, 2022). Study by (Han et al., 2024) also emphasized the importance of measuring physical fitness parameters in vocational and inclusive education students. Research by (Nagrale & Jiandani, 2024) shows that challenges in implementing the physical education curriculum can affect the effectiveness of measuring students' physical fitness. By understanding the physical condition, we can assist students to grow into individuals who are not only skilled, but also healthy and passionate about their daily lives.

The author conducted a preliminary study (pre-research) at SMK Syubbanul Wathon Secang Magelang. As a result, there are several problems related to students' physical fitness. One of them is the unavailability of current data on the physical condition of grade 11 male students in the last two years. The absence of this data makes it difficult for the school to design a fitness improvement program that suits the needs of students. In addition, the lack of awareness of the importance of physical fitness among students and educators is also a challenge in implementing health programs in schools.

The focus of the problem is the absence of up-to-date data on the physical condition of students in the past year. Accurate and up-to-date data is needed to evaluate the effectiveness of the fitness programs that have been implemented and to design more targeted interventions. Without such data, efforts to improve students' physical fitness risk being ineffective and unsustainable. Therefore, collecting up-to-date data is a crucial step in supporting the health and learning achievement of vocational students. Based on the problems described, this study aims to analyze the physical condition profile of grade 11 male students at SMK Syubbanul Wathon, Secang, Magelang. The results of this study are expected to provide a comprehensive picture of the students' physical fitness level, which can then be used as a basis in designing effective and sustainable health intervention programs in the school environment.

METHOD

Participants

The participants in this study were 11th grade students of SMK Syubbanul Wathon Secang Magelang consisting of 3 majors or specializations namely Agribusiness of Agricultural Product Processing (APHP), Animation, and Accounting. This study is specialized in the population of male students in the Animation department. The population involved were students majoring in animation with a total of 27 students. The selection of participants was based on purposive sampling with certain criteria until the research participants were obtained (Creswell & Creswell, 2018). The sample involved was 11 male students majoring in animation at SMK Syubbanul Wathon Secang Magelang with the age range of 15-19 years old.

This sample selection is expected to provide a complete and in-depth picture of the physical condition of male students in the Animation department, so that the results of the study can be a real consideration to support their health and productivity in a typical and dynamic learning environment.

Research Design

This research uses a descriptive quantitative approach with a survey method (Fraenkel et al., 2019), through physical fitness measurements using the Indonesian Physical Fitness Test (TKJI) instrument. This measurement was conducted on March 20, 2023, in the environment of SMK Syubbanul Wathon Secang, Magelang. This method was chosen because it can provide an objective

picture of the students' physical fitness level, which is important to support their learning process and vocational skills development. As expressed by (Andiansyah et al., 2024), The measurement of physical fitness with TKJI can help in evaluating the overall physical condition of students and become the basis for planning a targeted fitness improvement program. The implementation of this physical fitness test not only aims to measure students' physical abilities, but also to foster awareness of the importance of maintaining health and fitness in everyday life. Through a humanistic approach, students are expected to understand that physical fitness is an integral part of their overall well-being. In line with the views expressed by (Bangun et al., 2022), structured and systematic physical education can increase students' awareness of the importance of physical activity and a healthy lifestyle, which ultimately has a positive impact on their quality of life.

Instruments

The instrument used to measure the physical condition profile has gone through standardization that meets the elements of validity and normality as a measuring tool (Andiansyah et al., 2024). The components of the physical fitness test include a) body mass index / IMT (height, weight, arm length, leg length); b) balance (right standing stroke, left standing stroke); c) coordination (30 second tennis ball throwing catch); d) strength (30 second sit up); e) explosive power (vertical jump); f) speed (20-meter sprint); g) agility (million); h) endurance (MFT/V02Max). All these components are designed to illustrate aspects of students' overall physical fitness, not only in terms of strength and speed, but also in terms of coordinative ability and endurance. With this approach, the measurement results are not just numbers, but also a reflection of how students' bodies adapt to the physical activities they face every day, both in the classroom and in the practical workshop. An in-depth understanding of the results of each test item can be a material for joint reflection between teachers, students, and school authorities to create a healthier lifestyle and support the optimal learning process.

Procedures

Data collection in this study began with a socialization process to students and accompanying teachers regarding the purpose, benefits, and procedures for conducting physical fitness tests. This activity was carried out so that participants understood the importance of their involvement and felt comfortable when following the series of measurements. After obtaining approval from the school and verbal consent from the students, the activity continued with recording the identity of the participants, including age, height, and weight which was part of the calculation of body mass index (BMI). Furthermore, arm and leg length measurements were taken as initial supporting data needed before entering the physical test stage.

After anthropometric measurements, participants were directed to do a light warm-up to minimize the risk of injury during the test. All test components are carried out sequentially and adjusted to the physical condition of each student. Balance, coordination, strength, and explosive power tests were carried out first because they were less energy-intensive, then continued with speed, agility, and ended with an endurance test using the Multi-Stage Fitness Test (MFT) method. During the measurement process, each student receives assistance and recording of results by a team of examiners who have understood the standards of test implementation. All data collected was then systematically recapitulated to be further analyzed as material for reflection on the students' physical fitness profile.

Data Analysis

Data analysis in this study was carried out descriptively quantitatively to describe the overall physical fitness profile of students. Each component of the test, such as strength, endurance, speed, and agility, was analyzed using descriptive statistics to obtain the mean, standard deviation, and distribution of scores. This approach allowed researchers to identify common patterns and individual variations in students' physical abilities. Quantitative descriptive analysis is effective in assessing an individual's physical fitness level, as it can provide a clear picture of strengths and weaknesses in different aspects of physical fitness (Figueira et al., 2021).

The results of this analysis not only provide information about students' physical condition, but also provide a basis for designing exercise programs that suit their needs. By understanding the

aspects of fitness that need to be improved, schools can develop more targeted interventions to support student health and performance. Quantitative descriptive data is essential in designing effective exercise programs, as it allows for customization based on the specific needs of the target group (De Pilli et al., 2024).

RESULTS AND DISCUSSION

Results

The results revealed data including body mass index (BMI), balance test, coordination test, strength test, explosive power test, speed test, and endurance test. First, data obtained related to BMI. BMI measurements include data on height, weight, arm length and leg length to determine body mass index categories with guidelines from standardized calculations. Based on the test results obtained in the BMI test, there are 1 student who has an obesity, 1 student is at overweight (risk of obesity), 7 students are normal, and 2 students into the underweight category. BMI Data Processing Results can be seen in Table 1.

Table 1. BMI Data Processing Results

Initial Name	BMI	Category	High (cm)	Weight (kg)	Arm Length	Leg Length
MIR	21,08	Normal	154	50	53	80
MMI	20,45	Normal	164	55	57	85
MYR	19,38	Normal	159	49	61	89
AW	18,44	Under	163	49	59	86
FY	16,73	Under	164	45	61	85
MZG	27,48	Obesity	163	73	61	83
MFK	19,84	Normal	165	54	56	89
EM	19,59	Normal	175	60	63	93
SRJ	24,72	Over	181	81	66	98
RAK	21,62	Normal	149	48	55	74
LWA	19,78	Normal	159	50	55	85

Source: Research Data 2023

Second, data obtained regarding the balance test. In the balance test (standing stork), the results obtained in the Excellent category were 6 students, the good category was 1 student, and 4 other students were in the moderate category. This static balance test is done by standing on the tip of one foot (tiptoe) on the dominant foot. Balance test data processing results can be seen in Table 2.

Table 2. Balance Test Data Processing Results

Initial Name	Standing Stork		Score	Category
	Right	Left		
MIR	07,75	13,47	3	Medium
MMI	26,04	31,33	3	Medium
MYR	56,34	43,15	5	Very Good
AW	52,28	22,02	5	Very Good
FY	20,29	25,07	3	Medium
MZG	19,92	29,09	3	Medium
MFK	56,68	54,25	5	Very Good
EM	57,23	53,95	5	Very Good
SRJ	55,18	53,13	5	Very Good
RAK	28,69	39,51	4	Good
LWA	52,98	38,58	5	Very Good

Source: Research Data 2023

Third, data obtained regarding the coordination test. In the coordination test, by throwing a tennis ball. The results obtained are 1 student in the very good category, 1 student in the good

category, and the others of the students are in the category below. Coordination test data processing results can be seen in [Table 3](#).

Table 3. Coordination Test Data Processing Results

Initial Name	Results (Repetition)	Score	Category
MIR	3	3	Medium
MMI	3	2	Low
MYR	5	1	Very Low
AW	5	1	Very Low
FY	3	1	Very Low
MZG	3	1	Very Low
MFK	5	5	Very Good
EM	5	4	Good
SRJ	5	1	Very Low
RAK	4	4	Low
LWA	5	4	Low

Source: Research Data 2023

Fourth, data obtained regarding the strenght test. In the strenght test, using a test in the form of sit ups for the duration of implementation which is 30 seconds. The results obtained are 10 students included in the less category. Strenght test data processing results can be seen in [Table 4](#).

Table 4. Strenght Test Data Processing Results

Initial Name	Results (Repetition)	Score	Category
MIR	3	3	Medium
MMI	3	2	Low
MYR	5	1	Very Low
AW	5	1	Very Low
FY	3	1	Very Low
MZG	3	1	Very Low
MFK	5	5	Very Good
EM	5	4	Good
SRJ	5	1	Very Low
RAK	4	4	Low
LWA	5	4	Low

Source: Research Data 2023

Fifth, data obtained regarding the explosive power test (vertical jump). In the explosive power test, using a vertical jump test. In the power test, use the vertical jump test. This test aims to measure muscle explosiveness and explosive power. The results obtained were 1 student in the good category and the others in the less category. Explosive power test data processing results can be seen in [Table 5](#).

Table 5. Vertical Jump Test Data Processing Results

Initial Name	Results (cm)	Score	Category
MIR	60	3	Medium
MMI	69	4	Good
MYR	41	1	Very Low
AW	40	1	Very Low
FY	38	1	Very Low
MZG	31	1	Very Low
MFK	55	3	Medium
EM	48	2	Low
SRJ	32	1	Very Low

RAK	55	2	Medium
LWA	49	2	Low

Source: Research Data 2023

Sixth, data obtained regarding the speed test. In the speed test, a short-distance running (sprint) speed test was used. In the power test, use the vertical jump test. This test aims to measure muscle explosiveness and explosive power. The results obtained showed that 1 student was in the low category and the others were in the category above it. Speed test data processing results can be seen in [Table 6](#).

Table 6. Speed Test Data Processing Results

Initial Name	Results (second)	Score	Category
MIR	04.04	4	Good
MMI	04.05	4	Good
MYR	03.58	5	Very Good
AW	04.56	3	Medium
FY	04.59	2	Low
MZG	03.81	5	Very Good
MFK	03.47	5	Very Good
EM	03.70	5	Very Good
SRJ	03.97	4	Good
RAK	03.86	5	Very Good
LWA	03.65	5	Very Good

Source: Research Data 2023

Seventh, data obtained regarding the endurance test. In the endurance test, using a multistage level test. The results obtained were 2 students in the good category and the others in the less category. Endurance test data processing results can be seen in [Table 7](#).

Table 7. Endurance Test Data Processing Results

Initial Name	Standing Stork		Score	Category
	Right	Left		
MIR	07,75	13,47	3	Medium
MMI	26,04	31,33	3	Medium
MYR	56,34	43,15	5	Very Good
AW	52,28	22,02	5	Very Good
FY	20,29	25,07	3	Medium
MZG	19,92	29,09	3	Medium
MFK	56,68	54,25	5	Very Good
EM	57,23	53,95	5	Very Good
SRJ	55,18	53,13	5	Very Good
RAK	28,69	39,51	4	Good
LWA	52,98	38,58	5	Very Good

Source: Research Data 2023

After all the data is obtained, it is then processed into a physical condition profile. A total of 6 items (without BMI) will be processed, namely balance test, coordination test, strength test, explosive power test, speed test, and endurance test. The results of data processing are then interpreted through classification or categorization into three categories, namely good, moderate, and less. Based on the overall results of the physical fitness test on 11 male students, the average score of 3 is in the Moderate category. Physical Condition Profile (6 physical fitness test items) data processing results can be seen in [Table 8](#).

Table 8. Physical Condition Profile (6 physical fitness test items)

Name	Physical Fitness Test Items						Average Score	Category
	1	2	3	4	5	6		
MIR	3	2	2	4	4	4	3	Medium
MMI	3	3	2	3	4	1	3	Medium
MYR	5	2	3	4	5	3	3	Medium
AW	5	1	2	1	3	1	2	Low
FY	3	1	2	1	2	1	2	Low
MZG	3	1	2	1	5	1	2	Low
MFK	5	5	2	3	5	4	4	Good
EM	5	4	2	2	5	1	3	Medium
SRJ	5	1	2	1	4	1	2	Low
RAK	4	4	2	2	5	1	3	Medium
LWA	5	4	2	2	5	1	3	Medium
Max. Score	5	5	3	4	5	4	4	
Min. Score	3	1	2	1	2	1	2	
Average	4	2	2	2	4	2	3	

Source: Research Data 2023

Discussions

The results showed that the average physical fitness profile of students was in the moderate category. This finding reflects the general condition of adolescents of SMK age, where physical activity tends to decrease due to increased academic demands and lack of time for exercise. According to previous research, decreased physical activity in adolescents can negatively impact their physical and mental health (Biddle et al., 2019). Therefore, it is important for educational institutions to encourage students to stay physically active to support their health and academic performance.

Physical fitness plays an important role in supporting the learning and practical activities of vocational students. A study by (Donnelly et al., 2016) showed that students who have good physical fitness levels tend to have higher concentration and academic achievement. This emphasizes the importance of integrating physical fitness programs in the vocational education curriculum to support students' learning success.

This study makes a new contribution by presenting the latest data on the physical fitness profile of vocational school students in Indonesia, particularly in the Magelang region. In contrast to previous studies that focused more on general school students, this study highlights the physical condition of students in vocational schools who have different needs and challenges. A locally tailored approach is essential in designing effective fitness programs (Bailey et al., 2009).

Of the 11 students tested, there were 4 students who fell into the low fitness category. This condition requires special attention because it can affect their ability to participate in physically demanding practical activities. Early intervention through a structured physical exercise program can help improve students' physical fitness safely and effectively (Faigenbaum et al., 2009).

To overcome the problem of low fitness in some students, it is recommended to implement a physical exercise program tailored to individual needs. The study by (Strong et al., 2005) emphasizes the importance of regular and varied physical activity to improve adolescent health and fitness. The program can include progressively designed strength, endurance, and flexibility exercises.

Overall, this study confirms the importance of monitoring and improving the physical fitness of vocational students as an integral part of the vocational education process. With accurate data and appropriate interventions, schools can help students reach their full potential in both academic and practical skills. This is in line with the goal of education to produce graduates who are healthy, competent, and ready to face the challenges of the world of work.

Implications

The findings of this study imply that physical fitness should be considered an integral component of vocational education, not merely a supplementary activity. The predominance of moderate fitness levels among grade 11 male students indicates sufficient physical potential that can

be further developed through structured and context-appropriate fitness programs. Improving students' physical condition is likely to support learning concentration, practical skill performance, and overall work readiness, which are essential outcomes of vocational education.

Research Contribution

This study contributes to the field of physical education by providing updated empirical data on the physical fitness profile of vocational high school students, a population that is often underrepresented in fitness research. By focusing on male students in a specific vocational major, this study highlights the unique physical fitness characteristics and needs of vocational learners. The findings serve as a baseline reference for schools and researchers in designing fitness monitoring and intervention programs tailored to vocational education contexts.

Limitations

Despite its contributions, this study has several limitations. The sample size was relatively small and limited to one school and one vocational major, which restricts the generalizability of the findings. In addition, the descriptive design does not allow for causal conclusions regarding factors influencing students' physical fitness levels. These limitations suggest that the results should be interpreted with caution.

Suggestions

Future research is recommended to involve larger and more diverse samples across different vocational schools and study programs. Longitudinal or experimental studies examining the effectiveness of specific fitness interventions for vocational students would provide stronger evidence for practice. It is also suggested that schools integrate regular physical fitness assessments and personalized exercise programs to sustainably enhance students' physical condition, health, and vocational readiness.

CONCLUSION

This study was conducted in response to the need identified in the Introduction for up-to-date and accurate data on the physical fitness of vocational high school students, particularly to support health, learning performance, and work readiness. The findings presented in the Results and Discussion sections demonstrate that this expectation was fulfilled, as the physical fitness profile of grade 11 male students was predominantly in the moderate category. Although students have not yet reached optimal fitness levels, the results indicate clear physical potential that can be developed through structured, targeted, and sustainable fitness programs. These findings confirm that physical fitness is a relevant and necessary component of vocational education, supporting students' concentration, practical skills, and overall preparedness for future occupational demands.

Beyond addressing the initial research objectives, this study also offers prospects for the development and application of its findings. The results provide a valuable baseline for schools to design evidence-based physical fitness interventions that are aligned with the characteristics and needs of vocational students. Future research is encouraged to expand the scope by involving larger and more diverse samples, different vocational majors, and longitudinal or experimental designs to evaluate the effectiveness of specific fitness programs. In this way, the present study contributes not only to empirical knowledge but also to the practical advancement of physical education strategies that promote healthy, resilient, and work-ready vocational school graduates.

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Hopefully the results of this study can provide benefits for the development of physical fitness and the quality of learning in the school environment.

AUTHOR CONTRIBUTION STATEMENT

KU conceptualized the study, identified the research problem, designed the research framework, conducted data collection, performed data analysis, and drafted the original manuscript. KU also led the interpretation of the results and coordinated all stages of manuscript revision. AMN contributed to the refinement of the research design, provided methodological guidance, offered critical academic feedback on data interpretation, and supported the improvement of the manuscript's scientific quality. Both authors reviewed and approved the final version of the manuscript and take full responsibility for the integrity and accuracy of the work.

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