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Physical Fitness Level of Basketball Extracurricular Students at SMK PGRI Tanjung Raja, Ogan Ilir

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Abstract

Objectives. The primary objective of this study was to assess the level of physical fitness, particularly aerobic endurance, of male students who participate in basketball extracurricular activities at SMK PGRI Tanjung Raja, Ogan Ilir. The study aimed to determine the students' cardiovascular fitness levels using the Cooper 2,400-meter run test and to categorize their performance according to established Cooper Test standards.

Materials and Methods. The research involved 20 male students. The 2,400-meter Cooper Test was used to measure aerobic endurance. Students ran the required distance on a 400-meter track, and their time was recorded. The results were classified into five categories: Very Good, Good, Average, Poor, and Very Poor, based on the Cooper Test.

Results. The results showed that 5 students (25%) had "Good" endurance, 7 students (35%) were "Average," and 8 students (40%) were in the "Poor" category. No students achieved "Very Good" or "Very Poor." The average time to complete the test was 13.58 minutes, placing most students in the "Average" level.

Conclusions. The study revealed that a significant proportion of students (75%) fell within the Average to Poor categories of aerobic fitness, despite their involvement in a physically demanding sport such as basketball. This indicates that current training routines may lack sufficient aerobic conditioning. It is recommended that more structured and targeted endurance training be incorporated into the extracurricular basketball program to enhance the students' overall physical fitness and sports performance.

Keywords: Aerobic Endurance, Basketball, Cooper Test, Physical Fitness, High School Students

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Introduction

Physical fitness is a fundamental component of overall health and plays a critical role in supporting optimal physical performance, particularly in sports that require endurance, strength, and agility (DHULI et al., 2022). Among high school students, participation in extracurricular sports such as basketball is expected to promote not only athletic skills but also physical well-being, social interaction, and character development (Wang et al., 2024).

Basketball is a high-intensity, intermittent team sport that demands a high level of physical fitness. Players must be able to perform repeated sprints, change direction rapidly, and sustain high levels of physical exertion for extended periods (Kong et al., 2015). Therefore, adequate aerobic endurance is essential for maintaining performance throughout training and competitive matches. Aerobic fitness contributes significantly to recovery between sprints and to overall match performance (Modric et al., 2020). One of the widely accepted measures of aerobic endurance is the Cooper 2,400-meter test, which provides a reliable estimate of an individual's cardiovascular capacity (Cooper, 1968).

In the Indonesian context, extracurricular activities are integral to the development of students' non-academic competencies (Munadi & Khuriyah, 2023). Through sports programs, students are encouraged to develop discipline, teamwork, and healthy lifestyles. However, many schools face challenges in implementing structured physical training due to limited resources, lack of professional coaching, and inconsistent attendance (Bisa, 2023). As a result, the intended benefits of these programs may not be fully realized.

Preliminary observations at SMK PGRI Tanjung Raja suggest that students participating in basketball extracurriculars exhibit varying levels of physical fitness. While some demonstrate above-average stamina and movement efficiency, others show signs of fatigue early in practice sessions. These inconsistencies raise concerns regarding the effectiveness of current training regimens and the overall physical condition of the participants.

Given the importance of aerobic endurance in basketball, it is imperative to assess the physical fitness levels of students engaged in these extracurricular activities. An objective measurement of their endurance levels will help identify gaps and inform the design of more effective training programs. This study aims to evaluate the aerobic endurance of male students involved in the basketball extracurricular program at SMK PGRI Tanjung Raja using the 2,400-meter Cooper Test. The results are expected to serve as a reference for coaches and physical education teachers in developing targeted interventions to enhance students' fitness and sports performance.

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Materials and Methods

Study Participants.

This study involved 30 male students who were active participants in the basketball extracurricular program at SMK PGRI Tanjung Raja, Ogan Ilir, South Sumatra, Indonesia. Participants were selected using purposive sampling based on their consistent attendance and active involvement in the basketball program over the last six months. All participants were in good health and had no reported injuries that would impair performance. Anthropometric and demographic characteristics are presented in Table 1.

Table 1. Anthropometric Data of the Participants

No	Variable	Measurement Unit	Mean	Standard Deviation	Coefficient of Variation (%)
1	Height	cm	65.8	5.43	3.27
2	Body Weight	kg	5.2	6.31	11.43
3	Age	years	6.5	0.62	3.76

All participants and their guardians were informed of the study's purpose, and informed consent was obtained before data collection.

Statistical organization.

This research employed a descriptive quantitative design aimed at measuring the physical fitness levels of students through a standardized endurance test. The 2,400-meter Cooper Test was selected due to its reliability and validity as a field-based assessment of aerobic capacity (Cooper, 1968). The test was administered during regular basketball training sessions under the supervision of a physical education teacher and trained observers to ensure accuracy and consistency.

Participants were instructed to run continuously for 2,400 meters on a standard athletic field. The total time taken to complete the distance was recorded using a stopwatch with a precision of 0.01 seconds. The test was conducted in the morning to minimize the effects of fatigue and heat, and all students were given appropriate warm-up time before starting the test.

The endurance level of each student was evaluated based on the Cooper test norms, which classify performance as Very Poor, Poor, Fair, Good, or Excellent according to age and gender-specific standards.

Data Collection Instrument

The main instrument used in this study was the Cooper 2,400-meter Run Test, which has been widely adopted in physical fitness assessments globally. The run test reflects cardiovascular endurance and is simple to implement in school settings without specialized

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equipment. In addition to the performance time, supporting data such as age, weight, and height were collected to control for confounding variables.

Statistical Analysis

All data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics, including mean, standard deviation, and coefficient of variation, were computed to summarize participant characteristics and test results. Frequency distribution and percentage were used to categorize the endurance levels based on test scores. Results were then interpreted using the standard Cooper Test classifications for adolescent males.

Results

This study aimed to assess the physical fitness level of basketball extracurricular students at SMK PGRI Tanjung Raja Ogan Ilir. The fitness test was conducted on February 7, 2025, using a 2400-meter run test. A total of 20 students participated in the test. The test results are presented in Table 2.

Table 2. 2400-Meter Run Test Results

No	Initials	Time (minutes)
1	Rak	13.20
2	Fit	11.50
3	Ard	12.05
4	Zak	11.42
5	Bim	12.26
6	Anc	17.58
7	Zul	12.20
8	Fah	12.40
9	Don	16.15
10	Jak	16.30
11	Ags	15.10
12	Amr	11.38
13	Dik	12.55
14	Bas	12.02
15	Kad	16.04
16	Fen	13.06
17	Dim	15.02
18	Kha	15.12
19	Ton	14.30
20	Faj	12.01

The data analysis shows that the average time to complete the 2400-meter run was 13.58 minutes, with a standard deviation (SD) of 1.77 minutes. The minimum time recorded was 11.38 minutes, and the maximum time was 17.58 minutes.

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Table 3. Descriptive Statistics of Physical Fitness Test

Variable	Unit	Mean	SD	Min	Max
2400-meter run time	Minute	13.58	1.77	11.38	17.58

Based on the Cooper test classification for individuals under 30 years old, the results are categorized as follows:

Category	Time Interval (minutes)	Frequency	Percentage
Very Good	< 10.19	0	0%
Good	10.20 – 12.04	5	25%
Average	12.05 – 14.29	7	35%
Poor	14.30 – 17.59	8	40%
Very Poor	> 18.00	0	0%
Total		20	100%

Discussion

This study assessed the physical fitness level of students participating in the basketball extracurricular program at SMK PGRI Tanjung Raja, using a 2400-meter run as the primary test. The findings revealed that the majority of students fell within the "poor" (40%) and "average" (35%) fitness categories, with only a small proportion (25%) classified as "good." These results indicate that while some students possess acceptable endurance levels, a significant portion demonstrate suboptimal cardiorespiratory fitness, which may hinder their overall sports performance and physical health.

The average completion time of 13.58 minutes suggests moderate endurance capacity, but it falls short of the "very good" standard typically expected of youth athletes, particularly those engaged in sports requiring high stamina, such as basketball. The variation in performance, as seen in the minimum and maximum times (11.38 to 17.58 minutes), reflects inconsistencies in physical preparedness and possibly varying levels of training adherence among the students.

Multiple factors may contribute to this condition. First, nutritional habits significantly influence athletic performance. Inadequate or unbalanced nutrition may compromise energy levels, muscle function, and recovery. Second, insufficient rest can lead to fatigue and decreased physiological recovery, affecting the results of endurance tests. Third, the lack of structured, progressive physical training may result in underdeveloped aerobic capacity. This highlights the need for a more focused and consistent physical training program integrated into the extracurricular curriculum.

These findings align with the study of (Serio et al., 2023), which emphasized the role of regular training in improving the speed, agility, and endurance of students involved in sports. Similarly, Irianto (2000) highlighted that physical fitness is determined by the interplay between balanced nutrition, sufficient rest, and effective exercise routines (Martín-Rodríguez et al., 2024).

In summary, the results underscore the necessity for a structured training protocol tailored to the specific physiological demands of basketball. Improving cardiovascular endurance through a scientifically designed physical conditioning program would not only elevate performance levels but also reduce the risk of fatigue and injury, ultimately supporting the students' athletic development and overall well-being.

Conclusions

The study concludes that the physical fitness level of basketball extracurricular students at SMK PGRI Tanjung Raja Ogan Ilir remains within the average to poor categories, based on the results of the 2400-meter run test. The average completion time of 13.58 minutes indicates moderate aerobic endurance, which is a critical component of basketball performance. While a portion of students achieved good fitness levels, a majority require targeted interventions to improve their cardiovascular capacity.

These findings suggest that the current training program may benefit from enhancement through structured physical conditioning. Integrating regular endurance training, proper nutrition education, and sufficient rest into the students' routines could significantly improve their overall fitness. By addressing these areas, students will not only improve their athletic performance but also develop better health outcomes and greater readiness for competitive sports activities.

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