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Smoking Behavior On The Physical Fitness Of Male Students At State Junior High School 22 Sigi

Arief Aditya Rifandy[1], Fila Delfia[2], Tri Murtono*[3], Delvi Kristanti Liloi[4], Rahmah[5]

[1,2,3,4,5]Affiliation: Physical Education, Health, and Recreation, Faculty of Teacher Training and Education, Tadulako University, Palu, Indonesia

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Abstract

This research is a quantitative research with a descriptive correlational approach. This research aims to determine the relationship between smoking behavior and physical fitness in male students ofJunior High School 22 Sigi. The sample used in this study were 10 male students in grades VII and VIII of Junior High School 22 Sigi. Based on the results of data analysis, it can be concluded that the level of physical fitness of students who are classified as smokers tends to be low. Of the 10 smoker students, only 2 students (20%) have physical fitness in the "Good" category, while most are in the "Moderate" to "Poor" category. A total of 3 students (30%) are included in the "Moderate" category, 4 students (40%) are in the "Poor" category, and there is even 1 student (10%) who is in the "Very Poor" category. Thus, it can be concluded that smoking habits have a negative correlation with students' physical fitness, where the higher the intensity or duration of smoking, the lower the level of physical fitness.

*Corresponding email: trimurtono57@gmail.com

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INTRODUCTION

Smoking among adolescents, particularly junior high school students, has become a serious health problem in Indonesia. According to the 2019 Global Youth Tobacco Survey (GYTS), 19.2% of male students and only 2.3% of female students reported smoking (Ministry of Health of the Republic of Indonesia, 2020). This data indicates that smoking is much more prevalent among male adolescents, which can have negative health impacts, including reduced physical fitness.

Physical fitness is the body's ability to perform daily physical activities without experiencing excessive fatigue and still have energy reserves for other activities. For junior high school students (SMP), physical fitness is crucial because they are experiencing rapid growth and development. However, smoking can disrupt the function of the respiratory and cardiovascular systems, ultimately leading to decreased physical fitness. Research conducted by (Sari et al. 2020) showed that male junior high school students who smoke have lower lung capacity and aerobic endurance compared to students who do not smoke.

The impact of smoking on adolescent physical fitness has also been supported by various studies. (Pratama and Wijaya, 2019) revealed that smoking negatively impacts aerobic capacity and muscle endurance in adolescents. This study, conducted on 100 male junior high school students in Central Java, showed that students who smoked had significantly lower VO_2 max (aerobic capacity) values compared to students who did not smoke. These findings indicate that smoking can hinder students' physical performance in carrying out daily activities.

Furthermore, Nugroho et al. (2021) found that male junior high school students who smoked had lower levels of physical fitness based on fitness tests such as the 1,000-meter run, push-ups, and sit-ups. This study, involving 150 students in Yogyakarta, showed that smoking not only affects lung health but also reduces physical abilities in terms of endurance, muscle strength, and stamina.

These findings align with previous research showing that the harmful substances in cigarettes, such as nicotine and carbon monoxide, can disrupt oxygen transport in the blood and reduce the efficiency of the heart and lungs (WHO, 2021; US Department of Health and Human Services, 2014). As a result, adolescent smokers tend to experience decreased physical performance and tire more quickly during intense physical activity.

Environmental and social factors play a significant role in influencing smoking behavior in adolescents. Research conducted by Rahmawati et al. (2022) shows that peer influence and a smoking family environment are the dominant factors driving junior high school students to start smoking. This study, conducted in Jakarta, involved 200 male junior high school students, and the results showed that students living in environments with a high number of smokers tended to have lower levels of

physical fitness. This was due to both passive exposure to cigarette smoke and their active smoking habits.

Smoking is a serious public health problem in Indonesia and a major contributing factor to various chronic diseases, such as heart disease, lung cancer, and respiratory disorders, which can lead to death. Although most smokers are aware that smoking can trigger dangerous diseases, including cancer, this does not necessarily prevent them from smoking.

According to the World Health Organization (WHO), the number of smokers in Indonesia is expected to increase to around 90 million people by 2025, or approximately 45% of the total population (WHO, 2021). One group vulnerable to smoking is adolescents. Some adolescents consider smoking a way to relax, express themselves, or demonstrate maturity, thus making this behavior normal (Julaecha, 2021).

Smoking has become a common habit among adolescents, including junior high school students, who should be in the early stages of physical and mental development. If left unchecked, this trend could negatively impact the health of Indonesia's future young generation.

Smoking at an early age can have significant negative impacts on health, particularly physical fitness. Various studies have shown that smoking can reduce lung capacity, inhibit physical growth, and weaken the body's endurance for intense physical activity (US Department of Health and Human Services, 2014; Susanto et al., 2020). Harmful substances in cigarettes, such as nicotine and carbon monoxide, are known to reduce the efficiency of oxygen transport in the blood and put a strain on the heart and lungs, thus reducing overall physical performance.

This condition is certainly a serious concern, especially for school-age students, such as junior high school students, because physical fitness plays a crucial role in supporting their academic and non-academic activities. Students with good physical fitness tend to have higher levels of concentration, greater self-confidence, and greater endurance in facing the challenges of school activities (WHO, 2020; Sari & Nugroho, 2019).

METHODS

This research is a quantitative study using a descriptive correlational approach, which aims to determine the relationship between smoking behavior and physical fitness levels in male students at Junior High School 22 Sigi. This approach is used to describe the phenomena that occur and analyze the extent to which these variables have a significant relationship. Through this approach, data is collected systematically, then analyzed statistically to test the formulated hypotheses (Notoatmodjo, 2012; Sugiyono, 2017).

Participants

The subjects in this study were male students at Junior High School 22 Sigi, aged 13-15. Ten participants were selected based on specific criteria: students who had a smoking habit and were willing to participate in the study.

Sampling Procedures

This study used a purposive sampling method with the consideration that the sample must meet certain criteria, namely male students aged 13-15 years who attend Junior High School 22 Sigi and are willing to take a physical fitness test and fill out a smoking behavior questionnaire. The population in this study amounted to 26 students, while the sample used was 10 students. The sample selection was carried out by considering the suitability of the respondent's characteristics to the research objectives. The data collection process was carried out at the sports field ofJunior High School 22 Sigi with the permission of the school.

Materials and Apparatus

The research instrument used consists of two main parts, namely:

(1) Smoking behavior questionnaire, designed to collect data on smoking frequency, duration of smoking habit, and number of cigarettes consumed per day. This questionnaire uses a closed scale with structured answer choices to facilitate data analysis.

(2) Indonesian Physical Fitness Test (TKJI), which is used to measure students' physical fitness levels. TKJI includes five physical test components, namely 50 meter run (speed), 60 second pull-up (arm muscle strength and endurance), 60 second sit-up (abdominal muscle strength and endurance), vertical jump (leg muscle explosive power), and 1,000 meter run (cardiovascular endurance). This TKJI instrument refers to the physical fitness measurement standards that have been set by (Ministry of Education and Culture of the Republic of Indonesia 2010).

Procedures

This research procedure was carried out in several stages. The first step was to determine the research subjects, namely male students fromJunior High School 22 Sigi who met the criteria for respondents. Next, the researcher explained the research objectives, the procedures to be implemented, and obtained consent from the respondents.

The next stage was the distribution of a smoking behavior questionnaire to obtain data on respondents' smoking habits. Afterward, physical fitness was measured using the Indonesian Physical Fitness Test (TKJI) for the 13-15 age group. This test included a 50-meter run, 60-second pull-ups, 60-second sit-ups, a vertical jump, and a 1,000-meter run.

All data obtained from the questionnaire and the TKJI results were then recorded and systematically processed. The data was then analyzed using descriptive and correlational statistical techniques to determine the relationship between smoking behavior and physical fitness.

Design or Data Analysis

Data analysis techniques are divided into two types of analysis, namely:

1. Descriptive Analysis of smoking behavior and physical fitness data will be described in the form of mean, mode, and standard deviation.

2. Correlational analysis To test the relationship between smoking behavior and physical fitness, the person product moment correlation test was used with the formula:

$$r_{xy} = \frac{N\,\Sigma xy\ -\ (\Sigma x)(\Sigma y)}{\sqrt{\{(N\,\Sigma x^2) - (\Sigma x)^2\}\{(N\Sigma y^2) - (\Sigma y)^2\}}}$$

RESULT

Study ThisThe survey was conducted on all 10 male students in grades VII and VIII ofJunior High School 22 Sigi who were smokers. Based on the results of the questionnaire distributed to male students, it was found that some students exhibited smoking behavior with varying frequency and intensity. Some students smoked regularly every day, while others only smoked at certain times, such as when gathering with peers.

Table 1. Questionnaire Results and Observations on the Smoking Habits of Grade VII and VIII Students

No	Number of Cigarettes that consumed/Day	Number of Students	Category
2	1 – 10	4	Light
3	11 – 20	3	Currently
4	> 20	3	Heavy

Based on table 1Shows that if the number of cigarettes consumed/per day is calculated, 1-10 cigarettes of students in the light category are 4 students, in the moderate category with the number of cigarettes consumed/per day 11-20 are 3 people and for students in the heavy category with consuming cigarettes > 20 cigarettes per day are 3 people.

Physical Fitness Test Results

Physical fitness test results showed that students who smoked lightly were more physically fit than those who smoked heavily. The physical fitness test measured several aspects, including:

Statistical data shows that light smokers (N=4) had the highest average score of 3.55, followed by moderate smokers (N=3) at 3.00, and heavy smokers (N=3) at 1.73. The median and mode also tended to be higher in the light group. The highest standard deviation was found in the moderate group (1.195), indicating greater variation in the data. The total scores for each group were 71 (light), 45 (moderate), and 26 (heavy). Overall, the heavier the smoking level, the lower the score obtained.

Table 2. Statistical Data

		Light	Currently	Heavy
N	Valid	4	3	3
	Missing	0	5	5
Mean		3.55	3.00	1.73
Median		4.00	3.00	2.00
Mode		4	4	1
Standard Deviation		.945	1,195	.799
Sum		71	45	26

Table 3. Overall physical fitness results of smoking students

No	Category	Ffrequency	Ppresentati
1	Very Good (5)	0	0%
2	Good (4)	2	20%
3	Average (3)	3	30%
4	Poor (2)	4	40%
5	Very Poor (1)	1	10%
Amount		10	100%

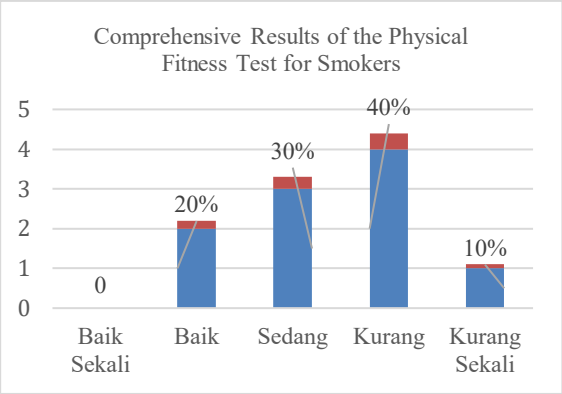

Figure 1. Diagram Comprehensive Results of the Physical Fitness Test for Smokers

Based on Figure 1, it can be concluded that the physical fitness level of students classified as smokers tends to be low. Of the 10 smoker students, only 2 students (20%) have a physical fitness category of "Good", while the majority are in the "Average" to "Poor" category. A total of 3 students (30%) are in the "Average" category, 4 students (40%) are in the "Poor" category, and there is even 1 student (10%) who is in the "Very Poor" category. This shows that smoking habits have a negative impact on students' physical fitness levels, so that the majority of smokers have less than optimal physical condition.

DISCUSSION

Based on the results of a study conducted on male students ofJunior High School 22 Sigi, a significant difference in physical fitness levels was found between students classified as light, moderate, and heavy smokers. Physical fitness assessment was carried out using the Indonesian Physical Fitness Test (TKJI) which includes five main components: 50-meter run (speed), 60-second body lift (arm strength), 60-second sitting position (abdominal muscle strength), vertical jump (leg muscle explosive power), and 1000-meter run (cardiovascular endurance).

In general, students classified as light smokers still demonstrated relatively good fitness levels. In items such as the sit-up jump and vertical jump, most of them fell into the "Good" and "Very Good" categories. However, the 1000-meter run results showed that nearly half of this group fell into the "Poor" category, indicating the onset of negative effects of smoking on the cardiovascular system and endurance.

Meanwhile, students who were moderate smokers showed a more pronounced decline in performance. While some students still achieved "Good" scores on items such as the sit-up jump and vertical jump, the dominance of the "Average" and "Poor" categories began to emerge, particularly on tests of speed (50-meter dash) and endurance (1000-meter run). This suggests that increased smoking frequency and duration are beginning to impact broader aspects of physical fitness.

Heavy smokers demonstrated the most striking results, with significant declines in physical fitness across nearly all aspects of the test. Not a single heavy smoker ranked in the "Good" or "Very Good" categories. In the 1000-meter run, all heavy smokers ranked in the "Very Poor" category. These findings suggest that the higher the intensity of smoking, the greater the negative impact on physical fitness, particularly on endurance and muscle strength.

These findings align with research by Rahman and Setiawan (2020), which found that student smokers demonstrated lower physical fitness performance, particularly on aerobic endurance tests. The nicotine and carbon monoxide in cigarettes impair the efficiency of oxygen transport to muscles, reducing lung capacity and physical endurance. Fitriani and Wibowo (2022) also found that smoking in adolescents is directly linked to decreased physical fitness, with the higher the smoking frequency, the lower the fitness test results.

In general, data shows a downward trend in physical fitness as smoking increases. This is also supported by WHO (2015), which states that smoking can reduce lung capacity, reduce cardiovascular efficiency, and slow the body's recovery after physical activity.

International studies such as (Louie, 2014) confirm that even in adolescents with light smoking habits, there is a decrease in cardiorespiratory activity and exercise tolerance. Research at Udayana University also shows a negative correlation ($r = –0.376$) between smoking frequency and Multi-Stage Fitness Test results, indicating that the more frequently a person smokes, the lower their physical fitness level (Yunita et al., 2020).

Interestingly, the relationship between smoking and physical fitness is bidirectional. Low physical fitness exacerbates the effects of smoking, while good physical fitness can actually be a protective factor. Individuals with optimal physical fitness tend to have better heart and lung function, smoother oxygen circulation, and higher endurance, potentially reducing the urge to smoke or accelerating the process of quitting (Miller & Daniels, 2021).

Conversely, smokers with low fitness experience fatigue, shortness of breath, and decreased performance during physical activity more quickly. This suggests that physical fitness is not solely affected by smoking but can also be a determining factor in how much smoking affects the body.

The results of this study reinforce previous findings that smoking, even at low levels, negatively impacts students' physical fitness. This impact increases with increasing smoking volume and frequency. Therefore, healthy lifestyle interventions from school age are crucial to prevent the decline in physical fitness associated with smoking.

Decreased physical fitness can interfere with daily productivity, including academic achievement. People with poor physical fitness tend to tire more easily, lack focus, and are susceptible to health problems, which can impact performance at school and in other social activities (Kaur et al., 2019). To improve physical fitness, students are encouraged to engage in regular physical activity or exercise, which can improve heart and lung function and metabolic efficiency.

CONCLUSION

Based on the data analysis, it can be concluded that the physical fitness level of students classified as smokers

tends to be low. Of the 10 smoker students who were the subjects of the study, only 2 students (20%) had a fitness level in the "Good" category. Most students were in the lower categories, namely 3 students (30%) in the "Average" category, 4 students (40%) in the "Poor" category, and 1 student (10%) even fell into the "Very Poor" category.

Thus, it can be concluded that smoking habits have a negative correlation with students' physical fitness, where the higher the intensity or duration of smoking, the lower the level of physical fitness. This finding strengthens evidence that smoking negatively impacts adolescents' physical abilities, particularly in aspects of endurance, muscle strength, and cardiovascular function.

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