



# Physical Fitness of Active and Passive Smokers

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**Abstract.** The issue in this study is the inadequate physical fitness of students at Universitas Negeri Padang's Faculty of Sports Science, which is likely due to a large number of active and passive smokers among the students. The goal of this study was to see if there was a difference in physical fitness between active and passive smokers. The research is comparative in nature. The population is 60 people, and the sample is taken using a purposive sampling approach, primarily for male students who are passive smokers (23 people) and active smokers (23 people), for a total of 46 people. A multistage fitness test is utilized as the instrument. An independent sample t-test is used in the analytical approach. The results revealed that most active smokers' physical fitness was in the poor category, with an average of 37.17. The majority of passive smokers' physical fitness was poor, with an average of 34.43. Based on the results of the statistical tests,  $t_{\text{observed}} 0.78 < t_{\text{table}} 1684$ .

**Keywords:** physical fitness · active smoker · passive smoker

## 1 Introduction

Students in the sports science faculty must be physically healthy to participate in all campus events, whether academic, non-curricular, or recreational.[1] Physical fitness is a physical characteristic that enables a person to have a productive life. Students require stable physical condition for various reasons, including the fact that they must attend many practical courses in a single day. All practical lecture activities function well; students must be physically healthy.

Students of Universitas Negeri Padang's Faculty of Sports Science already have high physical fitness because physical fitness is one of the conditions for prospective new students who want to attend the Faculty of Sports Science. However, some students' fitness levels drop during lectures. Many students who soon experience tiredness in practical courses attest to this.

The reduction in physical fitness among students at the Faculty of Sports Science will impact their everyday activities as stated by [2] that physical fitness is a condition of health in which the body can do all daily tasks without becoming fatigued. As a result, it is critical to understand the reasons for the drop in student physical fitness so that the same situation does not occur again.

The reduction in physical fitness at Universitas Negeri Padang's Faculty of Sports Science may be due to students who are avid smokers. Smoking habits will undoubtedly

impact health and wellness, as conveyed by [3] that cigarettes are tobacco products that can harm one's health. As a result, being an active smoker harms health and physical fitness.

Some students are involved as passive smokers and active smokers since they are in an atmosphere where most are active smokers. [4] says that if you have a smoking family member or surroundings, you are exposed to passive smoking. Some students assume that being a passive smoker has no negative impact on physical fitness. Students who smoke passively do not endeavor to escape the cigarette smoke created by active smokers. According to [5], smoking is harmful to both active and passive smokers. As a result, it is critical to compare the physical fitness of active smokers with students who become passive smokers.

## 2 Methodology

This sort of research is part of a comparative analysis undertaken in January 2020 on the campus of the Faculty of Sports Science, Universitas Negeri Padang. The population in this study consisted of as many as 60 students who took the Physical Fitness Development course, and the sampling technique used purposive sampling, specifically for male students as active smokers and passive smokers, with 23 active smokers and 23 passive smokers, for a total sample of 46 people. The study's goal was to see a difference in physical fitness between active and passive smokers. The multistage fitness test was employed to get the research results. A new test formula (t-test) was utilized for independent samples to test the hypothesis.

## 3 Results

### 3.1 Description of Data

The following results can be derived based on physical fitness assessments taken in active and passive smokers groups.

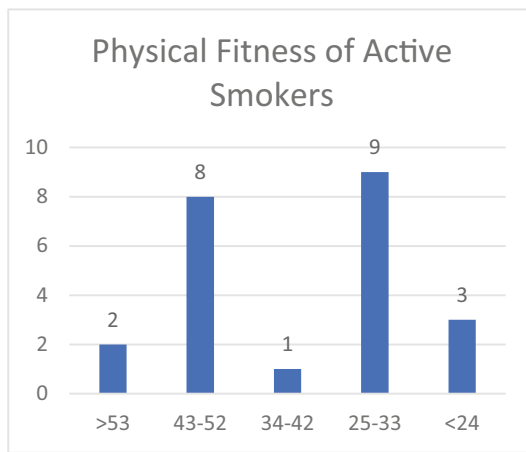
#### 3.1.1 Physical Fitness of Active Smokers

Measurement of physical fitness in the active smoker group obtained mean = 37.17, median = 32.9, mode = 25.7, highest score = 53.1, lowest score = 22.15, standard deviation = 10.73. More complete physical fitness measurements can be seen in the following Table 1.

From Table 1, it can be seen that two students have excellent physical fitness, eight students have good physical fitness, one student has sufficient physical fitness, nine students have low physical fitness, and three students have physical fitness in the very low classification. So most of the students' physical fitness as active smokers is in the low category, and a small portion is in the sufficient category. The following is a Fig. 1 of Physical fitness of active smokers.

**Table 1.** Physical fitness of active smokers

| Physical fitness | Absolute Frequency | Relative Frequency (%) | Classification |
|------------------|--------------------|------------------------|----------------|
| >53              | 2                  | 8.7                    | Excellent      |
| 43-52            | 8                  | 34.78                  | Good           |
| 34-42            | 1                  | 4.35                   | Sufficient     |
| 25-33            | 9                  | 39.13                  | Low            |
| <24              | 3                  | 13.04                  | Very low       |
| Amount           | 23                 | 100                    |                |



**Fig. 1.** Physical fitness of active smokers

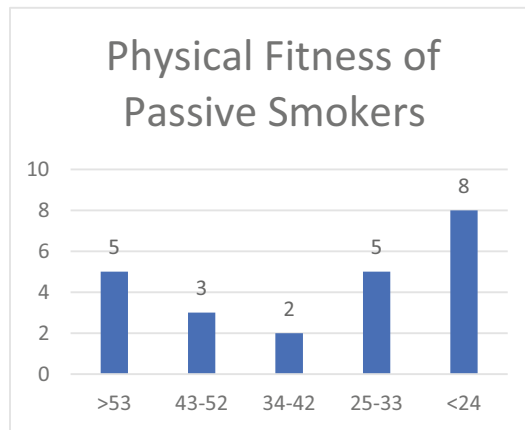
### 3.1.2 Passive Smoking Physical Fitness

Measurement of physical fitness in the passive smoking group obtained mean = 34.43, median = 29.5, mode = 22.5, highest score = 53.7, lowest score = 19.6 standard deviations = 13.05. More complete physical fitness measurements can be seen in the following Table 2.

From Table 2, it can be seen that five students have excellent physical fitness, three students have a good category, two students have moderate physical fitness, five students have low physical fitness, and eight students have very low physical fitness classification. So most of the students' physical fitness as passive smokers is in the deficient category, and a small portion is in the sufficient category. The following is a Fig. 2 of Physical fitness of passive smokers:

**Table 2.** Physical fitness of passive smokers

| Physical fitness | Absolute Frequency | Relative Frequency (%) | Classification |
|------------------|--------------------|------------------------|----------------|
| >53              | 5                  | 21.74                  | Excellent      |
| 43-52            | 3                  | 13.04                  | Good           |
| 34-42            | 2                  | 8.7                    | Sufficient     |
| 25-33            | 5                  | 21.74                  | Low            |
| <24              | 8                  | 34.78                  | Very low       |
| Amount           | 23                 | 100                    |                |

**Fig. 2.** Physical fitness of Passive smokers

### 3.2 Test Requirements Analysis

Before the data were analyzed, a requirements analysis test was conducted to ensure that the data in this study came from a normally distributed population and the data variance was homogeneous.

#### 3.2.1 Normality Test

The normality test of the data was carried out using the Liliefors test. Based on the Liliefors test on the physical fitness data of active smokers, it was obtained that  $L_0 = 0.1771$  while the  $L_{table}$  at 0.05 was 0.1815, so that  $L_0 < L_{table}$ , then the data came from a normally distributed population and the physical fitness data of the smokers' group passively obtained  $L_0 = 0.1695$  while the  $L_{table}$  at 0.05 is 0.1815, so that  $L_0 < L_{table}$ , then the data comes from a normally distributed population.

### 3.2.2 Homogeneity Test

The homogeneity test was carried out using the F test and obtained F count = 1.48, while the F table at 0.05 was 2.07. So that Fcount < Ftable, then the data has a homogeneous variance.

### 3.3 Hypothesis Test

Hypothesis testing is done by using the independent sample t-test formula. The data analysis conducted using the independent sample t-test shows that the  $t_{\text{observed}}$  is 0.78 and the  $t_{\text{table}}$  is 1.684 because  $t_{\text{count}} < t_{\text{table}}$ , the hypothesis is rejected, meaning that the physical fitness of students who smoke actively and passively smoke is not significantly different.

## 4 Discussion

Based on statistical tests, the results showed no significant difference between the physical fitness of active smokers and passive smokers, and most of the students' physical fitness was classified as poor. It proves that both active and passive smokers students have low physical fitness.

[6] while smoking is defined as smoking a cigarette, the cigarette itself is a roll of tobacco wrapped in palm leaves or paper. One cigarette includes over 3,000 different compounds: nicotine, carbon monoxide, and tar. Nicotine boosts the release of adrenaline, raises the heart rate, blood pressure, and oxygen demand in the heart, and disrupts cardiac rhythm. Carbon monoxide may bond to hemoglobin, preventing oxygen from circulating throughout the body and organs from functioning. Meanwhile, according to [7], cigarettes contain psychotropic and addictive substances, namely nicotine, leading to cardiovascular disease. Because of the numerous negative consequences created by cigarettes, it will also impact the physical fitness of smokers, both active and passive smokers. Because active smokers and passive smokers are not much different, as mentioned by [8], active smokers directly engage in smoking activities and have a smoking habit. They also inhale cigarette smoke straight from their mouths, whereas passive smokers inhale smoke from active smokers.

One effort that may be made to improve students' physical fitness in the sports science faculty is to lower the proportion of students who are active smokers. If the number of active smokers falls, so will the number of passive smokers. As a result, it is critical to understand a person's development stages into an avid smoker. According to Leventhal & Clearly in [8], there are four stages of becoming an active smoker: (1) the preparatory stage, namely getting a pleasant picture of cigarettes. (2) the initiation stage at this stage a person tries to smoke, (3) the stage becomes a smoker, at this stage, a person becomes a smoker, (4) the maintenance stage of smoking at this stage a person is already dependent on cigarettes.

The preventive steps for students so as not to become active smokers are to break the chain according to the stages that have been presented above and provide knowledge about the dangers of being a smoker that can reduce physical fitness and its impact on others as passive smokers. So that it is hoped that the students of the Faculty of Sports

Science at Universitas Negeri Padang will again have good physical fitness because with good physical fitness, students will be more productive, as stated [9]. Good physical fitness will make a person highly effective and obey [10]. Physical fitness has a positive relationship with academic achievement.

## 5 Conclusion

Based on the research and discussion described above, the conclusion in this study is that there is no significant difference between the physical fitness of active smoking students and passive smoking students.

## References

1. Arsil, *Physical Education and Sports Measurement and Evaluation Test*. Padang: FIK UNP, 2009.
2. S. Hanrdiansyah, "The effect of the interval training method on increasing the physical fitness of students majoring in sports education," *J. Penjakora*, vol. 4, no. 2, pp. 83–92, 2018.
3. RL Pradania, E. Rimawati, and Nurjanah, "Mild/Light Cigarette Addiction in Students," *J. Visikes*, vol. 11, no. 2, pp. 132–140, 2012.
4. Nadimin, "The Effect of Vegetable, Fruit and Passive Smoker Consumption Habits on the Total Antioxidant Capacity of Pregnant Women The Effect of Vegetables, Fruits Consumption and Passive Smokers on Antioxidants Total Capacity in Pregnant Women," *J. MKMI*, vol. 14, no. 2, pp. 181–189, 2018.
5. N. Rahmah, N. Dewi, and SD Rahardja, "Cytogenic Analysis of Buccal Mucosal Micronucleus in Active and Passive Smokers," *J. Doctor. Tooth*, vol. 1, no. 1, pp. 15–20, 2016.
6. T. Farihah, "Determination of Physical Fatigue Patterns in Active Smokers Using the Response Surface Methodology (Case Study: Industrial Engineering PS student UIN Sunan Kalijaga)," *J@ti Undip J. Tek. Ind.*, vol. 11, no. 2, p. 107, 2016, doi:<https://doi.org/10.14710/jati.11.2.107-112>.
7. A. Harianingrum, Z. Naftali, and D. Marliyawati, "The Effect of Smoking Degrees on Tubal Function," *J. Doctor. Diponegoro*, vol. 7, no. 2, pp. 1166–1181, 2018.
8. N. Hajjah, "PSocial Behavior of Active Smokers and Responses to Posters Warning the Dangers of Smoking on Cigarette Packaging," *J. Online Mhs.*, vol. 3, no. 1, pp. 14–16, 2015.
9. P. Jasmani, U. Muhammadiyah, P. Pekalongan, A. Petanque, and K. Pekalongan, "Physical Fitness Profile of Petanque Athletes in Pekalongan Regency," *Ati Safitri, Imroatul Maghfiroh, Ahmad Khafis, Gilang Nuari Panggraita*, vol. 4, no. I, pp. 126–137, 2021.
10. HY Handayani, "Survey of Physical Fitness Levels of Students of Sports Education Class of 2017 STKIP PGRI Bangkalan," *J. Sports Science*, vol. 2, no. 1, pp. 1–132, 2019, [Online]. Available: <http://univpgri-palembang.ac.id>.

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