

## Cardiorespiratory Fitness of *Pencak Silat* Extracurricular Participants at SMK Angkasa

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### Abstract

The aim of this research is to determine cardiorespiratory fitness in students who take part in the *Pencak silat* extracurricular at SMK 1 Angkasa. This type of research uses a non-experimental category with descriptive observational research methods. The population of this study consisted of 10 students participating in the *Pencak silat* extracurricular with an age range of 16-18. This research used an instrument in the form of the 6MWT (6 minutes walking test). The research results prove that the average expected distance that can be covered by SMK 1 Angkasa *Pencak silat* participants is around 769m, while the research results prove that the average distance covered by students is around 461m. The next data result for the expected percentage is 80.09% while the research results prove that the average percentage of SMK 1 Angkasa *Pencak silat* participants is 60.01%.

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## 1. INTRODUCTION

According to (Suryo Ediyono, Sahid Teguh Widodo, 2019) in their article, *Pencak silat* is part of Indonesian culture that has developed over centuries. With the various geographical and ethnological situations and developments experienced by the Indonesian people, *pencak silat* has emerged as a culture and method of self-defense and has become local wisdom for the bearers of this culture. (Gristyutawati, Purwono, & Widodo, 2012) explains that noble character is the basis for the cultural norms of society which make *pencak silat* a heritage of the Indonesian nation. Apart from the connection between *Pencak silat* and culture, (Mulyana, 2013) also explains that the identity of the Indonesian nation is formed through the reflection of the community's cultural teachings which are able to give birth and create noble values of the character quality of *Pencak Silat*. Apart from that, according to (Purbodjati, 2018) *pencak silat* is an effort to develop physical, mental and spiritual mental aspects in individual development by instilling cultural values with the aim of forming the quality of identity with a national personality. From all the descriptions explained above, *Pencak silat* is ultimately a fitness activity that supports the physical and mental abilities of the perpetrator. Where *pencak silat* can be one of the sporting activities that shapes the characteristics of the nation, especially for students at their educational level.

The popularity of *Pencak silat* as a sporting activity has made *Pencak silat* one of the extracurricular activities held in schools. Not only because *Pencak silat* is an Indonesian heritage that needs to be preserved, but also because the benefits of *Pencak silat* are very good for children's growth and development both physically and mentally, making *Pencak silat* one of the favorite extracurricular activities. According to Opan Arifudin, 2022, extracurricular activities are activities that generally constitute and serve as a forum for

students who have an interest in participating in these activities in accordance with students' interests, talents, hobbies, personality and creativity which can be used as a tool to detect students' talents and is designed systematically so that it can give birth to and develop the potential of students as well as an arena for developing students' character in various activity approaches. This is supported by a quote from the large Indonesian dictionary as quoted by (Marlya Fatira AK, 2021), namely: "an activity that is outside the program written in the curriculum, such as leadership training and student development". According to Asmani (2011: 62), extracurricular activities are educational activities outside subject hours and counseling services to help develop students according to their needs, potential, talents and interests through activities specifically organized by educators and/or educational staff who are capable and authorities at school.

So, in applying *Pencak silat* as an extracurricular, it is hoped that it can build students' character both in terms of physical fitness, which in this research will focus on cardiorespiratory fitness, which in the scientific explanation is described as follows.

### **Cardiorespiratory Fitness**

According to (Raden Ayu Tanzila 1, Emir Rasyid Hafiz, 2019) in their article Cardiorespiratory fitness is the ability of the circulatory and respiratory systems to supply fuel and oxygen during sustained physical activity. It is said that cardio respiration is one of the basic standards and assets for physical fitness. So, by knowing the level of cardiorespiratory fitness, it will also show the level of physical fitness. This is supported by the Ministry of National Education (2000), which states that cardiorespiratory endurance is the main factor in physical fitness.

### **Physical fitness**

Physical fitness is a condition where a person carries out physical tasks or work and does not feel excessive fatigue. Fitness level can be interpreted as each individual's ability to carry out activities and have enough energy to cope when carrying out urgent activities.

Physical fitness is a reflection of the ability to function systems that can realize an improvement in the quality of life in every physical activity. Nutritional intake from food quality is a factor that influences physical fitness (Sulistiono, 2014). Age, gender, body shape, health level, body weight, rest patterns and physical activity are factors that influence the level of physical fitness (Mukti, 2014).

From the various explanations above, it can be concluded that cardiorespiratory fitness is one of the main assets for physical fitness. Where respiratory fitness itself can be developed in one of the *Pencak silat* sports. This raises a question for the author regarding the respiratory fitness condition of students, especially SMK 1 Angkasa students who take part in the *Pencak silat* extracurricular. This research was conducted to prove that by participating in *Pencak silat* extracurricular activities, SMK 1 Angkasa students have good cardiorespiratory fitness.

## **2. RESEARCH METHOD (12 Pt)**

### **Research Target/Subject**

The population of this study were students at SMK 1 Angkasa, Bandung Regency who took part in *pencak silat* extracurriculars and several students at SMK 1 Angkasa who did not take part in *pencak silat* extracurriculars. The sample for this research was 10 students of SMK 1 Angkasa who took part in the *pencak silat* extracurricular with the following number of males being 8 and females being as follows 2. With an age range of 16-18 years.

**Data, Instruments, and Data Collection Techniques**

In this research, the method used for cardiorespiratory fitness uses a descriptive observational method. Observational descriptive research is research that describes a situation or problem that is explored through observations that occur in the field.

To research Cardiorespiratory Fitness in SMK 1 Angkasa *pencak silat* participants, the instrument used was the application of the 6MWT (6 minutes walking test) which according to Omni Calculator, which is a Polish startup that presents hundreds of calculators made specifically to solve health problems, 6MWT (6 minutes walking test) is a simple technique that is quite accurate for determining a person's fitness level, especially cardiorespiratory fitness.

According to Omni Calculator, the 6-minute walk test is a submaximal exercise test that measures the distance walked in a time span of 6 minutes. It is a quick and inexpensive measure of physical function, as it reflects the capacity to perform daily activities. It can be used to assess a person's functional status, their response to treatment, and their prognosis. Benefits of the 6-minute walk test:

- Simplicity;
- Low cost;
- Easy to standardize; And
- Low load (can be done even for elderly and weak people)

**Table 1.** Example of taking Cardiorespiratory Fitness data with 6MWT

N o	Name	Gender	Age	Heig ht	Weigh t	6MWT in healthy body	Distance traveled/ 6 minutes	Ideal percentag e	Percentag e
1	Stude nt A	P	16	170	55	800.7	750	80.89%	93.66%
2	Stude nt B	L	15	158	54	650	650	82.40%	82.27%

**Using Formulas**

**MAN:**

$$6MWD = (7.57 \times TB) - (5.02 \times \text{Age}) - (1.76 \times BW) - 309$$

**WOMAN:**

$$6MWD = (2.11 \times TB) - (2.29 \times BB) - (5.78 \times \text{Age}) + 667$$

Where:

6MWD — 6-minute walking distance, in meters;

TB — in cm;

BW — in kg; And

Age — in years.

6-minute walk test - norm

The equation described above predicts the distance a student must travel based on height, weight, age, and gender. Norm limits are set, namely:

**MAN:**

lower limit = 6MWD – 153

**WOMAN:**

lower limit = 6MWD – 139

Based on the method described above, students are said to have good cardiorespiratory abilities if their 6MT results, this lower limit will be an indicator of the cardiorespiratory fitness of SMK 1 Angkasa *pencak silat* participants. If a student's percentage result is lower than the lower limit percentage, it means that the student has poor cardiorespiratory fitness. Meanwhile, if the student's percentage result is higher than the lower limit percentage, it means that the participant has good physical fitness.

**3. RESEARCH RESULTS AND DISCUSSION (12 Pt)**

Results of research conducted at SMK 1 ANGKASA on July 4 2024. With a sample size of 33.3% of the population. With a total of 8 men and 2 women, the resulting data is in Table 2.

**3.1. Research result**

ANALYSIS OF CARDIORESPIRACY FITNESS DATA OF VOCATIONAL SCHOOL 1 ANGKASA <i>PENCAK SILAT</i> PARTICIPANTS								
Student's name	Gender	Age	Height	Weight	6MWT in healthy body	Distance traveled /6 minutes	Ideal percent age	Percentage
Joshua	L	16	154	45	686.48	450	78%	65.55%
Fathir	L	16	167	53	769.9	457	80%	59.36%
Rasya	L	17	170	63	769.78	488	80%	63.39%
Fikri	L	17	167	50	770.16	468	80%	60.77%
Farid	L	17	170	49	794.42	449	81%	56.52%
Single	L	16	173	69	786.74	450	81%	57.20%
Judge	L	16	169	57	777.86	485	80%	62.35%
Galih	L	17	166	53	757.38	465	80%	61.40%
Naila	P	16	150	41	797.13	449	81%	56.33%
Arifah	P	18	160	50	786.06	450	81%	57.25%
<b>TOTAL</b>					7695.91	4611	800.86%	600.11%
<b>AVERAGE</b>					769,591	461.1	80.09%	60.01%

**3.2. Discussion**

The data above is the result of a calculator formulation for the 6MWT (6 minutes walking test) method for SMK 1 Angkasa extracurricular *pencak silat* participants. Based on these data, it shows that gender is not a factor that influences the level of

cardiorespiratory fitness. The average value of cardiorespiratory fitness percentage is 60.01% and it can be concluded that overall, the *pencak silat* extracurricular participants at SMK 1 Angkasa do not meet the cardiorespiratory fitness standards using the 6MWT (6 minutes walking test) method that the author hopes for.

The average expected distance that can be covered by SMK 1 Angkasa *pencak silat* participants is around 769m while research results prove that the average distance covered by students is around 461m. The next data result for the expected percentage is 80.09% while the research results prove that the average percentage of SMK 1 Angkasa *pencak silat* participants is 60.01%.

Based on Omni Calculator experts, the reasons that can occur for lowered expectations are as follows. 1) Shorter height; 2) Women; 3) Lack of motivation; 4) Body weight is higher than body height; 5) lung disease; 6) Older age.

This is supported by the statement of Ermin Rahmawati, one of the authors in the Maliki Encyclopedia, who stated that the results of the 6MWT vary greatly and are influenced by several factors, namely: Age, height, weight and gender. The motivation of the participants also influences the level of cardiorespiratory fitness of the extracurricular *pencak silat* participants at SMK 1 Angkasa. Participants who know the importance of cardiorespiratory fitness levels are motivated to improve them. According to Febrianta (2015) cardiorespiratory fitness will support achievement. Extracurricular activities can also affect participants' cardiorespiratory fitness, especially from a physical perspective. Teaching and learning activities at school are an example of activities carried out by participants outside of *pencak silat* training activities.

#### 4. CONCLUSION

From studies in the field, the author observed that results that were less than the author's expectations were due to motivational factors that prevented students from maximizing their abilities in carrying out the 6MWT test. *Pencak silat* is filled with a variety of aggressive movements, very different from consistent walking movements which are fairly monotonous.

#### 5. SUGGESTION

From the results of the data explanation described above. It can be concluded that the *Pencak silat* participants at SMK 1 Angkasa did not meet the cardiorespiratory fitness ability standards applied with the 6MWT (6 minutes Walking Test). The author believes that this occurs as a result of students' lack of motivation towards the test method which is quite different and monotonous compared to the *Pencak silat* movement itself.

For this reason, the author suggests that further research be carried out by adding encouragement/motivation when carrying out the 6MWT (Minutes Walking Test). So that participants can get maximum results.

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