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PHYSICAL FITNESS ANALYSIS OF PENCAK SILAT ATHLETES AT PPS JOKOTOLE

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Abstract

This research⁸ motivated by the importance of physical fitness level in supporting the performance of pencak silat athletes², especially in the aspects of strength, endurance, speed, and muscle explosive power. This study aims to analyze the physical fitness level of PPS Jokotole pencak silat athletes aged 16–19 years using the Indonesian Physical Fitness Test (TKJI). The research method used is descriptive quantitative with survey techniques through tests and measurements of 10 athletes selected using purposive sampling. The research instrument used TKJI aged 16–19 years which includes sit ups, hanging elbow bends, vertical jumps, 60-meter runs, and 1200-meter runs. The results showed that 100% of athletes were in the very good category in the sit up test, 60% were in the moderate category in the hanging elbow bend test, 50% were in the poor category and 10% were very poor in the vertical jump test, while the 60-meter run test showed 30% in the very good category and 30% in the moderate category. In the 1200-meter run, 40% of athletes were in the "poor" and "very poor" categories, respectively. The study concluded that the physical fitness levels of PPS Jokotole athletes were still suboptimal, particularly in the components of leg muscle explosiveness and cardiovascular endurance, necessitating a more structured and sustainable training program.

Keywords: Physical fitness; Pencak silat; TKJI; Athlete; Physical condition.

INTRODUCTION

Physical fitness is a crucial element in supporting a person's quality of life, health, and performance in physical activity. Physical fitness not only relates to the body's ability to complete daily activities without excessive fatigue, but also reflects a person's physical ability to maintain optimal physical condition (Jannah et al., 2024). In the context of competitive sports, physical fitness is a key component determining an athlete's success in training and competitions. Athletes with good fitness levels tend to have more stable physical abilities, greater endurance, and a lower risk of injury than those with less than optimal physical condition (Jahsy et al., 2025). In martial arts such as pencak silat, physical fitness plays an important role because competition activities require a combination of speed, strength, endurance, agility, and good muscle explosive power.

Pencak silat as a traditional sport native to Indonesia has developed into a competitive sport that is competed at regional, national and international levels (Jaya Catur Arya Utama & Noortje Anita Kumaat, 2024). In addition to its cultural

and artistic value, pencak silat also demands a high level of physical fitness, as each athlete must be able to perform high-intensity attacks, defenses, evasions, and techniques within a specific timeframe. Therefore, the physical fitness of pencak silat athletes needs to be monitored regularly to determine their level of physical readiness for training and competition. ¹ A good level of physical fitness can positively impact an athlete's performance, while ¹ a low level of physical fitness can hinder technical ability and reduce the effectiveness of movement during competition (Arifin, 2018).

⁵ Physical fitness is influenced by various factors, including physical activity, exercise patterns, nutritional status, and the intensity of regular exercise. Regular physical activity has been shown to increase heart and lung capacity, muscle strength, and endurance (Setiawan et al., 2022). In competitive sports, a systematic and measurable training program is crucial for improving an athlete's physical fitness. Therefore, measuring an athlete's physical condition requires valid instruments tailored to their age and the needs of the sport.

One of the most widely used instruments to measure physical fitness is ⁴ the Indonesian Physical Fitness Test (TKJI). The TKJI is a standardized measurement tool used to determine physical fitness levels based on specific age groups through several test items, including sprinting, hanging body lifts or hanging with bent elbows, sitting position, vertical jump, and middle-distance running. This instrument is able to describe various components ⁴ of physical fitness, such as speed, muscular strength, muscular endurance, explosive power, and cardiovascular endurance (Muh. Saldi et al., 2025). The use of TKJI is considered effective because it is able to provide objective data regarding an individual's overall physical condition.

Several previous studies have discussed the physical fitness levels of athletes and pencak silat participants. Research conducted by (Huda et al., 2024) In extracurricular pencak silat participants aged 10–12 years, it was shown that most participants were in the good fitness category. Another study by (Rohmah Miftachur Ninik, 2022) ⁷ used the Multistage Fitness Test (MFT) to measure VO2Max in pencak silat athletes and found that the majority of athletes were still

in the insufficient to adequate category. The results of this study demonstrate that the physical fitness of pencak silat athletes can vary depending on the athlete's characteristics, training program, and the measurement instrument used.

However, research on physical fitness in pencak silat athletes still has limitations, especially in the scope of fitness components measured (Susanto & Siagian, 2025). Some studies focus solely on one aspect of physical fitness, such as endurance or VO2Max, and therefore fail to provide a comprehensive picture of an athlete's physical fitness level. Furthermore, research examining the physical fitness of pencak silat athletes at PPS Jokotole is still very limited, even though the school is a training ground for pencak silat athletes who actively participate in various championships (Irfandi et al., 2021).

The scientific novelty of this study lies in the comprehensive use of the TKJI instrument to analyze the physical fitness levels of PPS Jokotole pencak silat athletes aged 16–19 years. This study not only assesses one component of physical condition, but also measures several aspects of physical fitness simultaneously, including muscle strength, muscular endurance, speed, explosive power, and cardiovascular endurance. Thus, the results of this study are expected to provide a more complete picture of the athletes' physical condition as a basis for evaluation and the development of more effective training programs.

Based on the description, the problem in this study is how the physical fitness level of PPS Jokotole pencak silat athletes and what fitness components still need improvement. This study aims to analyze the physical fitness level of PPS Jokotole pencak silat athletes aged 16–19 years using the Indonesian Physical Fitness Test (TKJI) instrument so that objective data can be obtained regarding the athletes' physical condition as a basis for developing a more targeted and sustainable training program.

METHOD

This study uses a quantitative approach with a descriptive approach. The descriptive approach was chosen because the study aims to describe the physical fitness levels of PPS Jokotole pencak silat athletes based on the results of the Indonesian Physical Fitness Test (TKJI). The research method was conducted

through a survey using testing and measurement techniques to obtain objective data regarding the athletes' physical condition (Rajagukguk & Putra, 2022).

The research was conducted at the PPS Jokotole Pencak Silat Padepokan, located in Kamal District, Bangkalan Regency. The study was conducted face-to-face over two sessions, according to a schedule determined by the researchers and the pencak silat school.

The population in this study was all 10 PPS Jokotole pencak silat athletes. The sampling technique used purposive sampling, which is a technique for determining samples based on certain criteria that are in accordance with the research objectives. The sample criteria in this study included PPS Jokotole pencak silat athletes aged 16–19 years and actively participating in training activities. Based on these criteria, the entire population met the requirements, resulting in a total sample of 10 athletes consisting of male and female athletes.

The research instrument used was the Indonesian Physical Fitness Test (TKJI) for the 16–19 age group. This instrument was chosen because it has appropriate assessment standards for measuring the level of physical fitness of adolescents. The test components in the TKJI include a 60-meter sprint to measure speed, a body lift or bent-elbow hang to measure arm and shoulder muscle strength and endurance, a sit-up to measure abdominal muscle strength and endurance, a vertical jump to measure leg muscle explosiveness, and a 1,200-meter run to measure cardiovascular endurance.

Data collection techniques were carried out through direct tests and measurements of all research samples (Ardiansyah et al., 2023). Prior to the test, researchers conducted initial observations and recorded data on athletes who met the research criteria. Next, they prepared the tools, instruments, and assessment sheets used during the measurement process. Each athlete underwent the entire series of physical fitness tests according to the TKJI implementation procedures. The results of each test item were recorded based on the TKJI assessment norms for 16–19 years olds.

The data analysis technique used is quantitative descriptive analysis with percentages (Isnawati et al., 2020). Physical fitness test data was analyzed to

determine the athletes' fitness levels for each test component. The results were then presented in frequency distribution and percentage tables to facilitate interpretation.

¹¹ The percentage formula used in this study is as follows:

$$P = F/N \times 100\%$$

Information:

P = Percentage.

F = Frequency.

N = Number of research samples.

Based on the results of these calculations, the athlete's physical fitness level is then ³ classified into the categories of very good, good, moderate, poor, and very poor ⁵ according to the norms of the Indonesian Physical Fitness Test (TKJI).

RESULT AND DISCUSSION

³ This study was conducted on 10 PPS Jokotole pencak silat athletes aged 16–19 years. Physical fitness levels were measured using the Indonesian Physical Fitness Test (TKJI), which consists of five test items: ² sit-ups, hanging, vertical jump, 60-meter run, and 1,200-meter run. The results are presented in the form of frequency distributions and percentages for each physical fitness component. The characteristics of the research sample include gender, age, weight, height, and body mass index of PPS Jokotole pencak silat athletes.

Table 1. Characteristics of PPS Jokotole Pencak Silat Athletes.

Gender	Age	BB (kg)	TB (cm)	IMT
L	17	60	167	21,6
L	16	58	166	21,1
L	18	55	162	24,3
L	16	60	160	23,5
L	16	59	160	23,1
P	17	47	155	19,6
P	17	49	157	19,9
P	18	50	158	20,1
P	17	51	152	22,1
P	16	43	153	18,4

⁶ Based on Table 1, it is known that all respondents were in the 16–19 years age range, which fits the adolescent TKJI measurement category. The study sample consisted of five male and five female athletes.

Table 2. Sit Up Test Results

Category	Frequency	Percentage
Very Good	10	100%
Good	0	0%
Average	0	0%
Poor	0	0%
Very Poor	0	0%
Amount	10	100%

Based on Table 2, all athletes were in the excellent category, with a percentage of 100%. These results indicate that the strength and endurance of the abdominal muscles of the PPS Jokotole athletes are classified as very good.

Table 3. Results of the Hanging Test

Category	Frequency	Percentage
Very Good	1	10%
Good	1	10%
Average	6	60%
Poor	2	20%
Very Poor	0	0%
Amount	10	100%

The research results showed that the majority of athletes, at 60%, were in the moderate category. Meanwhile, 20% of athletes were in the poor category, and only 10% were in the good or excellent category.

Table 4. Vertical Jump Test Results

Category	Frequency	Percentage
Very Good	0	0%
Good	0	0%
Average	0	0%
Poor	5	50%
Very Poor	5	50%
Amount	10	100%

Based on the measurement results in Table 4, all athletes were in the "poor" and "very poor" categories, with percentages of 50% each. These results indicate that the athletes' leg muscle explosive power is still low.

Table 5. 60 Meter Running Test Results

Category	Frequency	Percentage
Very Good	3	30%
Good	2	20%
Average	3	30%
Poor	2	20%
Very Poor	0	0%
Amount	10	100%

The research results showed that athletes' speed abilities varied considerably. Most athletes fell into the excellent and average categories, with percentages of each reaching 30%.

Table 6. 1200 Meter Running Test Results

Category	Frecuency	Percentage
Very Good	0	0%
Good	0	0%
Average	2	20%
Poor	4	40%
Very Poor	4	40%
Amount	10	100%

Based on Table 6, the majority of athletes fall into the "less than" and "very less" categories, with percentages of 40% each. This indicates that the athletes' cardiovascular endurance is still

Discussion

The research results show that the physical fitness levels of PPS Jokotole pencak silat athletes varied across each component. Overall, abdominal muscle strength was in the excellent category, while leg muscle explosiveness and cardiovascular endurance were still relatively low (Hutabarat & Nurhidayat, 2026).

In the sit-up component, all athletes received excellent marks. This indicates that the athletes' abdominal muscle strength and endurance have optimally developed. Abdominal muscles play a crucial role in maintaining body stability, movement balance, and technical effectiveness during both attack and defense in pencak silat (Yanti & Yusradinafi, 2024). The results of this study show that the training program carried out by athletes has been able to increase core muscle capacity to the maximum.

In contrast to the sit-up results, the body hang test showed that most athletes were in the moderate category. This indicates that the athletes' arm and shoulder muscle strength and endurance are still suboptimal. In pencak silat, arm muscle strength is essential for punching, catching, and defense. These results indicate that athletes still need more targeted and sustained upper body muscle strength training.

In the vertical jump component, all athletes were in the poor or very poor category. The low vertical jump results indicate that the athletes' leg muscle explosiveness is still weak. Leg muscle explosiveness is a crucial component in

pencak silat because it is related to the ability to execute fast kicks, jumps, and explosive movements during competition. This condition is thought to be influenced by a lack of regular plyometric and leg strength training. Therefore, a special training program is needed to improve the athletes' leg muscle explosiveness.

The results of the 60-meter dash test indicated that some athletes already possessed quite good speed capabilities. Speed is a crucial component in pencak silat because it relates to the ability to attack and evade an opponent's attack quickly. However, some athletes still fell into the weaker category, requiring increased sprint and speed training to ensure the equitable development of all athletes' abilities.

In the 1,200-meter run, most athletes fell into the "poor" or "very poor" categories. These results indicate that the athletes' cardiovascular endurance is still low. Cardiovascular endurance is crucial for supporting athlete performance during competition, particularly in maintaining energy levels and reducing fatigue. Low endurance can be influenced by suboptimal aerobic training intensity. Therefore, a gradual and continuous endurance training program is necessary to improve athletes' aerobic capacity.

Overall, the research results indicate that the physical fitness level of PPS Jokotole pencak silat athletes is not yet fully in the good category. While abdominal muscle strength has shown optimal results, several other aspects, such as leg muscle explosiveness and cardiovascular endurance, still require special attention. These results can serve as a basis for evaluation for coaches in developing more systematic, targeted training programs tailored to the physical needs of pencak silat athletes.

CONCLUSION

Based on the results of the study using the Indonesian Physical Fitness Test (TKJI), the physical fitness level of PPS Jokotole pencak silat athletes aged 16–19 years showed varied outcomes in each test component. Abdominal muscle strength and endurance were categorized as very good, while speed ability was classified as fairly good. However, leg muscle explosive power and cardiovascular endurance were still in the poor to very poor category, indicating that the athletes' overall

physical condition has not yet reached an optimal level. Therefore, a more structured and continuous training program is needed, particularly to improve endurance and leg muscle explosive strength. Coaches are encouraged to enhance the intensity and variation of physical training, while athletes are expected to maintain discipline in training and physical conditioning. Future studies should involve larger samples and additional variables to provide more comprehensive findings regarding the physical fitness of pencak silat athletes.

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