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Physical condition profile of Pencak Silat athletes on coaching talented athletes in Yogyakarta special region

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Abstract

The purpose of this study is to determine the physical condition of coaching talented athletes (PAB) DIY pencak silat athletes. The research method used is the survey method. The population and sample in this study were all PAB DIY athletes in the sport of pencak silat totaling 42 people and sampling using total sampling technique. The instruments used are the 20 meter run speed test, sit and reach, shuttle run, vertical jump, push up, sit up, Vo2max (Balke). Data calculation and analysis techniques in this study through a quantitative approach in the form of percentages. Based on the results of the study, it can be seen that the average results of the physical condition of PAB DIY athletes in pencak silat sports show satisfactory results, which are in the good category, with a mean value of 590.24 and standard deviation of 40.63. Based on the results of the study, the physical condition of PAB DIY martial arts athletes who are very good is 19%, 36% good category, 17% sufficient category, 21% less, and 7% very poor category.

Keywords: Physical condition, athlete, pencak silat

Introduction

In achievement sports, especially the sport of Pencak Silat, is currently a sport that has developed to various parts of the world and has been competed at regional, national and international levels. Pencak Silat has 2 categories that are competed in, namely the sparring and art categories ^[1]. In the implementation of the *Pencak Silat* match, there are currently changes in the match rules, where the current rules have changed a lot from the previous rules, so the coaches need to understand the new rules in the Pencak Silat match. The basic principle of *pencak silat* matches is to get points by making attacks and defenses. To be able to carry out these attacks and defenses, mastery of the movement skills of basic *pencak silat* techniques and also good physical condition is needed.

There are 4 aspects that need to be considered to achieve optimal performance, namely physical, technical, tactical, and mental. Looking at some of the aspects that athletes must have to be able to achieve optimal performance, physicality is one of the factors that support success in achieving achievements for athletes. In *pencak silat*, the biomotor components needed are endurance, strength, speed, coordination, and flexibility ^[2].

According to Suharno in ^[3], physical condition coaching aims to increase the athlete's physical condition ability to peak conditions and is useful for carrying out sports activities in achieving optimal performance. There are several studies on the physical condition of *pencak silat*, including mentioning that physical conditions such as explosiveness, endurance, strength, and agility are an important factor in performing various techniques in *pencak silat* ^[4]. In addition, there are several supporting factors such as several dominant physical components such as strength, flexibility and balance ^[5].

One of the efforts of the Yogyakarta Special Region Government to foster and improve the physical condition of athletes to be maintained is the formation of the Talented Athlete Development (PAB). PAB is an athlete coaching managed by the local government which aims to foster athletes who are expected to become athletes who can excel. PAB is a forum for coaching student athletes in the Special Region of Yogyakarta (DIY) who have the ability,

talent and potential for optimal achievement development [6]. The existence of the PAB program in the Special Region of Yogyakarta is the spearhead for capturing students who have talent in various sports to then be fostered in stages and continuously towards achieving achievements at the regional, national and international levels.

Especially in Yogyakarta, the PAB for *pencak silat* sports is tasked with fostering athletes at a young age or students to have fighting spirit, commitment and hard work through programmed and continuous sports training. The initial stage of this coaching is a screening of sports which is then followed up with talent scouting activities carried out by the DIY Provincial Education Office in collaboration with the Universitas Negeri Yogyakarta (UNY) Faculty of Sports Science. *Pencak silat* athletes who enter the PAB program in Yogyakarta are selected athletes who have gone through a rigorous selection process in the form of physical, skill, psychological and other ability tests.

To see the extent of the performance of PAB DIY athletes in coaching, it is necessary to review the physical condition of athletes. It is hoped that with data related to the physical condition of athletes, coaches can evaluate the programs that have been implemented, and can prepare further programs to prepare athletes to achieve the best performance in the match. There are several studies related to the physical condition of athletes, including mentioning that the results of the physical condition of West Java PPLP (Student Training Education Center) athletes in *pencak silat* sports are 0% in the excellent category, 41.18% in the good category, 35.29% in the sufficient category, 17.65% in the less category, and 5.88% in the very poor category (Sundara *et al.*, 2020). Furthermore, for other research on the physical condition of swimming athletes Club Tri Tunggal Grobogan district is 10% in the very good category, 30% in the good category, 20% in the medium category, 30% in the less category, and 10% in the very less category [7]. From some of these studies have similarities related to the research studied, namely related to the physical condition of athletes, which this research is expected to be able to help trainers to evaluate and develop the programs they apply.

There are several studies on the physical condition of athletes with this research. In this study, the focus of research is on the physical condition of martial arts athletes who have not previously been studied as a whole test. Based on this, researchers are interested in researching the physical condition of PAB DIY athletes by reviewing all components of the physical tests tested. This research is considered important because it has the aim of knowing the level of physical condition of PAB DIY *pencak silat* athletes in the dominant physical components in the sport of *pencak silat*, so it is hoped that later it can provide information and contribute to the development of PAB DIY *pencak silat* athletes. And also, this research is expected to be an additional reference for coaches in seeing the physical condition of PAB DIY athletes in preparing for matches for targeted results.

Materials and Methods

The method the author uses in research is a quantitative descriptive method with a survey approach. The population in this study were all PAB DIY *pencak silat* athletes totaling 42 people. With the sampling technique using total sampling, the entire population was sampled [8]. This means that the sample of this study was 42 PAB DIY *pencak silat*. The author uses

physical condition instruments as a way of collecting research data. These physical condition tests include strength endurance tests, namely the 20-meter run speed test, sit and reach, shuttle run, vertical jump, push up, sit up, Vo2max (Balke). The data analysis technique used with a quantitative approach through statistics in the form of percentage analysis, namely by dividing between the number of scores obtained and the total score multiplied by 100%.

Results and Discussion

Based on the data processing and analysis that has been carried out, the score distribution of each test is obtained. Here are some test results on each component of the physical condition of PAB DIY *pencak silat* athletes.

20 Meter Running Speed Test

It is a test performed by running straight as fast as possible over a distance of 20 meters. This test is a modification of the Indonesian Physical Fitness Test (TKJI) Kemendikbud 2008. The result of PAB athletes in running test was given below.

Table 1: The result of running test

Criteria	Frequency	Percentage
Very Good	9	21%
Good	18	43%
Adequate	12	29%
Poor	2	5%
Very poor	1	2%

The information presented in Table 1 shows that the results of the PAB test in *pencak silat* sports on the physical component of the 20-meter run show quite satisfactory results, which are in the good category, it is necessary to improve again so that in the future it is in the very good category.

Shuttle Run Test

The shuttle run test is a test used to measure the agility of athletes. Here are the test results.

Table 2: Shuttle Run Percentage

Criteria	Frequency	Percentage
Very Good	14	33%
Good	17	40%
Adequate	5	12%
Poor	5	12%
Very Poor	1	2%

Reviewing the information in Table 2, it can be said that the PAB test program for *pencak silat* sports on the physical component of the Shuttle Run shows quite satisfactory results, which shows that the average is in the good and very good categories, it needs to be improved again so that in the future it can be dominated in the very good category.

Sit and Reach Test

One linear flexibility test that is used to gauge the hamstring and lower back's extensibility is the sit-and-reach test. It is a test performed by pushing both hands forward from a sitting position. This test is a modification of the V-Sit and Reach the Presidential Physical Fitness Test. This is done to measure the muscle flexibility of the lower back and hamstrings. The result of sit and reach test in PAB athletes is presented below.

Table 3: Sit & Reach Percentage

Criteria	Frequency	percentage
Very good	11	26%
Good	11	26%
Adequate	15	36%
Poor	3	7%
Very poor	2	5%

Based on the information in Table 3, it can be said that the PAB test program for *pencak silat* sports on the physical component of sit and reach is in the sufficient category. This still needs to be improved so that in the future it can be categorized as good or very good.

Vertical Jump Test

The vertical jump test is a useful tool for assessing the strength of the muscles in athletes' lower body and seeing any potential areas where athlete's physical fitness may be lacking. Regular testing allows us to monitor improvements in our capacity to vertical leap as well as improvements in our general physical condition. Based on the finding, the result of vertical jump in PAB athletes is drawn below.

Table 4: Results of the vertical jump test

Criteria	Frequency	Percentage
Very good	4	10%
Good	10	24%
Adequate	11	26%
Poor	13	31%
Very poor	4	10%

The information presented in Table 4 shows that the results of the PAB test for *pencak silat* sports on the physical component of Vertical Jump show unsatisfactory results, which are in the less category, namely 31%. This shows the need for further improvement so that in the future it is in the excellent category.

Push Up Test

Push up tests are given to athletes in order to assess upper body fitness, measure upper body muscle endurance, especially the chest and triceps muscles, and assess upper body muscle strength and stamina.

Table 5: Push up test results

Criteria	Frequency	Percentage
Very good	4	10%
Good	9	21%
Adequate	12	29%
Poor	9	21%
Very poor	8	19%

Table 5 indicates that the results of the PAB test for *pencak silat* sports on the physical component of Push Up have results that are in the sufficient category, so that it is necessary to make further improvements in the future to Push Up training.

Sit Up test

Athletes are given a sit-up test as a form of exercise to strengthen the abdominal muscles, back, and core muscles by lying down, bending the knees, then, lifting the body up. Crunches aim to measure the strength and endurance of the abdominal muscles. The result of sit up test are given below.

Table 6: The result of sit up test for PAB athletes

Criteria	Frequency	Percentage
Very good	5	12%
Good	8	19%
Adequate	12	29%
Poor	9	21%
Very poor	8	19%

Based on the data presented in Table 6, it shows that the results of the PAB test for *pencak silat* sports on the Sit Up physical component show the results, which are in the sufficient category, so that it is necessary to make further improvements in the future to Sit Up training.

Vo2 Max Test (Balke)

The maximum amount of oxygen that the body is capable of holding and utilizing is known as Vo2 max (maximum oxygen volume). This is because body requires a lot of oxygen to make energy when we workout. Our body's ability to hold oxygen increases with exercise-related energy. One of the running tests used to assess someone's cardiorespiratory health is the Balke Test formula. To administer this test, we ask the subject to run for a set amount of time at a set speed. In this context, we set fifteen minutes. The test's outcomes will reveal details regarding a person's body's capacity to oxidize oxygen. The table below illustrated the finding.

Table 7: Vo2 Max test results

Criteria	Frequency	Percentage
Very good	16	38%
Good	15	36%
Adequate	7	17%
Poor	1	2%
Very poor	3	7%

Based on the information contained in Table 7, it shows that the results of the PAB *pencak silat* sports test on the physical component of Vo2max (Balke 15 Minutes) show satisfactory results, which are in the very good category, namely 38%.

Overall Data Analysis Results

To know the overall data analysis results, the researchers tried to performed the statistical analysis below.

Table 8: Overall data analysis results

SD	40,63
Mean	590,24
N	42
Max. Score	661
Min. Score	496

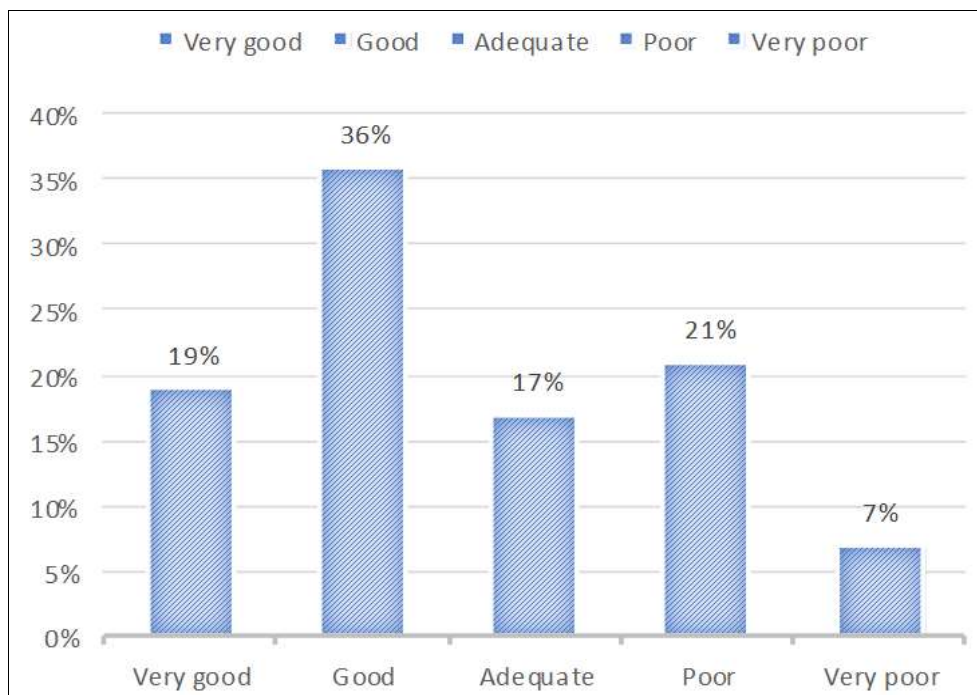


Fig 1: Data analysis results on physical components

Based on the research results that have been presented as well as in Table 8 and Figure 1, it shows that the results of the PAB *pencak silat* sports test on the physical component as a

whole show satisfactory results, which are in the good category. With a mean value of 590.24 and a standard deviation of 40.63.

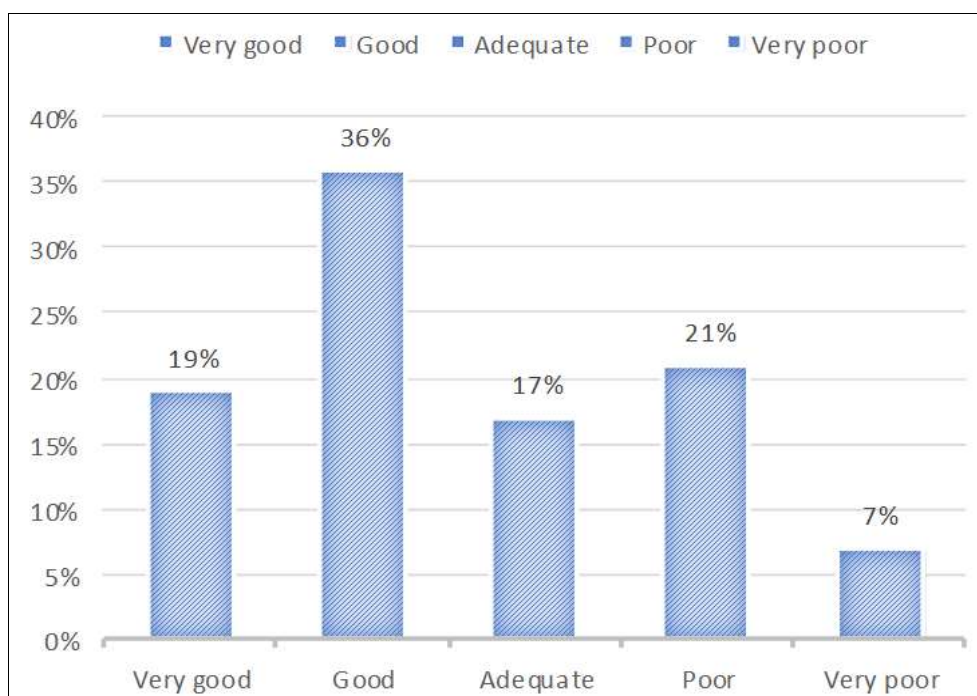


Fig 2: Average value of the physical component

The average physical component can be said to be satisfactory. Push up and sit ups are in the bottom 2 categories at 79.55 and 79.33 but are still classified as good. While running has the highest value with 90.64. This was followed by Vo2max (86.79) and Sit & Reach (86.45). Other physical components are at a good value but need to be improved for success in fast movements, especially in *pencak silat*.

Therefore, further physical training should be more improved centered on sit ups and push up so that athletes have excellent physical condition endurance and are truly ready. In the end, victory or success in the competition can be achieved and

achieve the expectations of the coaches or policy makers.

Discussion

Physical condition is one of the most important supports for athlete achievement apart from technique, tactics and mentality^[9]. Physical condition training program planning must be planned properly, this is systematically to increase endurance and functional abilities of the body system so that it can lead to players achieving better achievements as expected.

Pencak silat has two factors that can affect the condition or

achievement of athletes, namely internal and external factors^[10]. Internal factors, namely physical condition, are indeed a very vital factor, this is because physical condition can be the main capital in developing other aspects, one of which is the technical aspect. Mastery of good techniques if not balanced with excellent physical condition, will also not produce maximum performance. Mastery of techniques and tactics can be realized effectively if supported by a good level of physical condition. Likewise with technique, this is absolutely supported by a good level of physical condition such as: kicking, punching, dodging and slamming techniques^[11].

In the *pencak silat* branch, good speed will have a big effect on the match result points displayed. This will be illustrated when a fighter is in a match situation, an athlete will find it easy to realize *pencak silat* techniques such as attacking, dodging and parrying as well as positioning the body when protecting and composing a series of attacks against sparring opponents. Therefore, speed and satisfactory results require physical condition abilities that need to be implemented regularly. As has been done in this study, there are several components of physical tests given. To achieve or get the maximum speed as desired, it is influenced by muscle tension, reaction speed, coordination, and muscle strength possessed by *pencak silat* athletes^[12].

According to^[13], strength, endurance, speed, agility, flexibility, power, accuracy, reaction and balance have an important role in improving athlete performance. In addition, *pencak silat* also requires physical, technical, tactical and mental mastery in order to defeat opponents^[14].

Conclusion

The most important component for *pencak silat* athletes is the bio motor which includes speed, strength, endurance, flexibility, and coordination. However, of all these aspects, the speed and strength components are the most dominant factors because when the two components are put together, it will produce the power that is needed in *pencak silat* matches.

Suggestion

Physical training in martial arts athletes is the main thing that must be owned. So, athletes are expected to be able to have endurance or a healthy body condition by paying attention to tricks in competing. It is hoped that further researchers can examine all sports by paying attention to the age vulnerability of athletes and using instrument benchmarks that are in accordance with the physical endurance test.

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