

Predominant Analysis of Physical Condition of Sparring Category Pencak Silat Athletes

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Abstract: Physical condition ability is an important element in achieving martial arts achievement. Attention to improving the quality of physical condition must pay attention to factors that adhere to the principle of periodisation, the energy system used, and the predominance of biomotor components. There are several variations on the physical condition test for sparring category pencak silat athletes. Therefore the author wants to examine the dominant physical condition components for 14-17 year old sparring category pencak silat athletes. This study aims to analyse the dominant physical condition components in the sparring category pencak silat. This research method is quantitative with a descriptive approach to 43 sparring category pencak silat athletes aged 14-17 years. The instruments used are 9 physical condition instruments for sparring category pencak silat athletes. Data analysis techniques using percentages and a Likert scale of 1-5. The results showed that of the 9 (nine) test items carried out, there were 5 dominant physical components in the "very good" category, namely speed (13.9%), arm power (32.6%), leg power (44.1%), agility (53.5%), and aerobic endurance (44.1%). It can be concluded that there are five dominant physical condition components in pencak silat. It is recommended that the five elements of physical components need to be prioritised in providing training portions. However, this research needs to be conducted again considering that the subjects in this study were limited to the scope of Jember district athletes.

Keyword : Physical Condition, Pencak Silat, Sparring Category

INTRODUCTION

Pencak silat is a traditional martial art originating from Indonesia and has been recognised internationally. In the sparring category, aspects of physical condition greatly affect the performance and results of the match, athletes are not only required to have high technical skills, but also optimal physical condition. The sparring category in pencak silat is a category that has elements of defence, attack,

tactics, and fighting techniques (Irawan, Nomi, & Peng, 2021). To support these abilities, a good physical condition is needed to support the athlete's performance during the match, which generally involves high intensity, speed, strength, endurance, and flexibility related to the development of technical, tactical, and strategic abilities in the match (Panjiantariksa, Doewes, & Utomo, 2020). Attention to improving the quality of physical condition must pay attention to factors that adhere to the principle of periodisation, the energy system used, and the predominance of biomotor components (Emral, 2017). Physical condition abilities must be developed and improved according to the characteristics and needs of each sport (Hanafi & Prastyana, 2020). Therefore, training programmes must adhere to the principle of specification where training must be similar or in accordance with the characteristics of the sport (Bompa & Buzzichelli, 2019). For this reason, coaches must analyse the characteristics of the sport they are engaged in, realising that each sport has different characteristics from one another. Based on this, the physical condition components of the sport must adjust from the needs of movement, the length of the match, and the extremities and muscles that work (Wiguna, 2021).

The components of pencak silat physical condition needed in the sparring category are endurance, strength, speed, flexibility, coordination, agility, and power (Kuswanto, 2016). Meanwhile, according to Lubis & Wardoyo (2014) the physical components in the sparring category of pencak silat include reaction speed, agility, coordination, strength, endurance, balance, flexibility and accuracy. Based on this, the physical training programme must lead to the needs of sparring category martial arts athletes. The training programme must be measured with test norms that can be used as a reference for evaluation and can determine the improvement of physical condition in athletes, which can be done by tests and measurements. The definition of a test is a data collection medium to obtain information about a person or object while measurement is a quantitative score derived from a test (Mackenzie, 2015). Physical condition tests for martial arts athletes are needed as an evaluation material of the training programme that has been carried out. Broadly speaking, pencak silat physical condition test instruments that are often used include flexibility tests, speed tests, arm strength tests, abdominal strength tests, leg muscle strength tests, agility tests, leg power tests, anaerobic endurance tests, and aerobic tests (Siswantoyo, Saputro, & Hadi, 2018; Syaifullah & Doewes, 2020). Previous research conducted by Kuswanto (2016) produced 9 items of physical tests for pencak silat in the sparring category which included flexibility, speed, arm power, abdominal strength, back strength, leg power, agility, aerobic endurance, anaerobic endurance and the results of his research were declared valid and showed a reliability coefficient.

Based on the description above, there are several variations regarding the physical condition test of sparring category pencak silat athletes. Therefore the

author wants to examine the dominant physical condition components for 14-17 year old sparring category pencak silat athletes. The aim is to find out what physical components are most dominantly used in the sparring category of pencak silat, because this review will have an impact as well as being related to the training programme carried out by the coach in improving performance according to the needs and dominant physical components, so that the training programme can be carried out in a measurable manner in accordance with the characteristics of the pencak silat sport.

METHOD

The research method in this study is quantitative with a descriptive approach. According to Maksum (2018) that descriptive research is research conducted to describe certain symptoms, phenomena or events. Data collection is carried out to obtain information related to certain phenomena, conditions, or variables and is not intended to conduct hypothesis testing. Likewise, the form of analysis usually uses descriptive statistics such as mean, median, percentage, ratio, and so on. In this study, the research subjects were sparring category pencak silat athletes and the number of athletes who were the subjects of this study were 43 male and female pencak silat athletes in the sparring category aged 14-17 years. This research is located at the pencak silat tapak suci hermitage on Jalan Rotawu 5 Sumbersari, Jember Regency.

The data taken is primary data which is done directly. To obtain data in this study, tests and measurements were carried out for each variable. A test is an instrument or tool to obtain information about individuals or objects. The instruments used from the research and development of Kuswanto (2016) which include Flexibility Instruments (Side Splite), Speed (40 m Sprint), Arm Power (Push up), Abdominal Strength (Sit up), Back Strength (Back up), Limb Power (Standing Triple Jump), Agility (Shuttle Run), Anaerobic Endurance (300 m Sprint), Aerobic Endurance (Bleep Test). Data analysis used a percentage formula and a Likert scale of 1-5 (Very less, Less, Medium, Good, Very Good). The Likert scale was used to measure the categorisation of the results of the study.

RESULTS

This study involved 43 male and female sparring category pencak silat athletes in Jember district aged 14-17 years. The description of the research data presents information about the age, gender, and physical condition test results of athletes. The following is a presentation of the data description of the results of research on sparring category martial arts athletes.

Table 1. By Age of Athlete

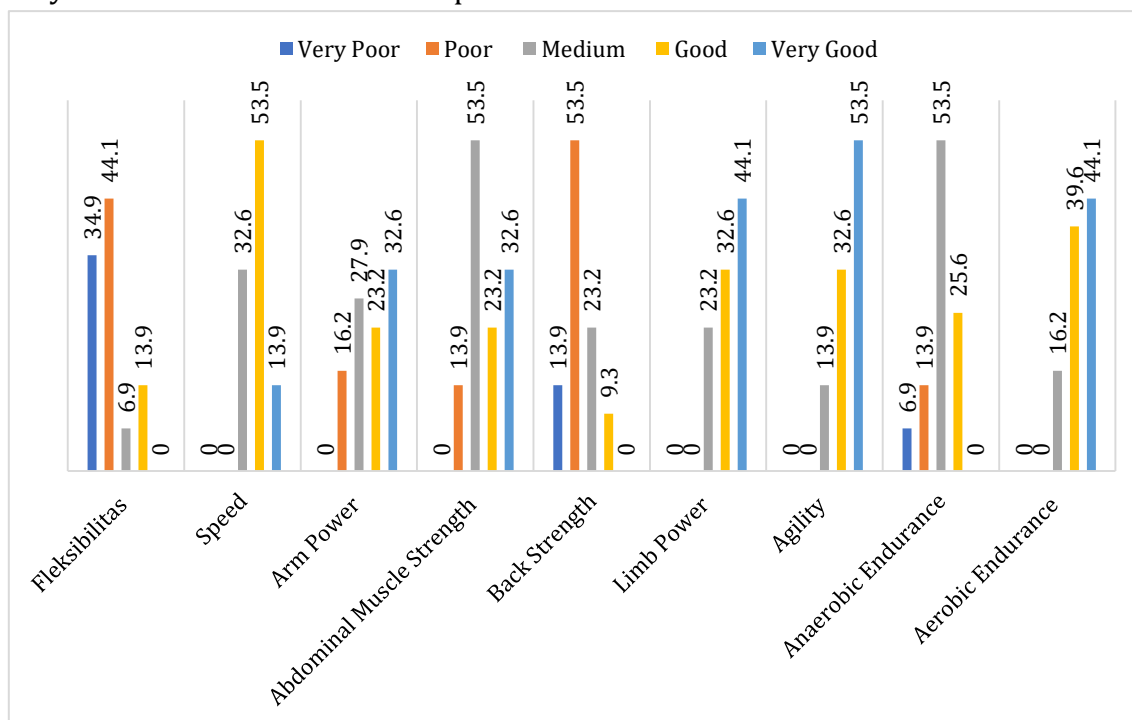
Age	Total	Precent (%)
14	9	20,9
15	13	30,2
16	11	25,6
17	10	23,2

Based on the table above, it can be seen that the age of athletes with the highest percentage (30.2%) is 15 years old and the age with the lowest percentage is 14 years old with a percentage of (20.9%). There are 11 people with a percentage of (25.6%) at the age of 16 years and (23.2%) at the age of 17 years.

Table 2. Gender

Gender	Total	Precent (%)
Male	29	67,4
Female	14	32,6

From the table it can be seen that the percentage level of subjects in this study was more men with a percentage of (67.4%) and for the female gender as many as 14 athletes with a percentage level of (32.6%), this indicates that this study has more male athletes compared to female athletes.



Picture 1. Results Graph

Based on the picture of the research results above, it can be stated that 9 (nine) test items obtained a diversity of results, starting from the results of the flexibility test it is known that of the 43 athletes who did the flexibility test the highest category was the "less" category (44.1%) and for the "moderate" category (6.9%) was the lowest category of the other categories. In the physical component of speed the "good" category is the highest category with a percentage (53.5%) and for the "very good" category (13.9%) while in the "moderate" category (32.6%) this indicates that the element of physical condition speed of all athletes is not a single person who gets the category "very less" and "less". In the physical condition element of arm power there are 14 athletes in the "very good" category (32.6%) which is the highest category compared to other categories, however, this is actually inversely proportional when the element of abdominal strength there are 23 athletes in the "less" category (53.5%) while the "good" category is only 4 athletes (9.3%) in the "very good" category, in fact none of the athletes can get it. These results go hand in hand with the results in back strength where the "good" and "very good" categories are also unable to obtain it. In the physical condition ability of leg power and agility, they obtained the "very good" category with a percentage of (44.1%) and (53.5%) respectively.

The most unique thing about the results of this study is in the physical condition of anaerobic endurance and aerobic endurance where in the "very good" category for anaerobic endurance none of the athletes were able to achieve it, instead the physical condition element of aerobic endurance there were 19 athletes with the category "very good" with a percentage of (44.1%). From the results of this study it can be concluded that of the 9 (nine) physical test items there are 5 dominant physical components in sparring category pencak silat athletes, namely speed, arm power, leg power, agility and anaerobic endurance. The five dominant elements are due to more athletes who can get the "very good" category compared to other elements of physical condition. However, this does not mean that other elements are not needed, it's just that the dominant elements in the physical condition need to be trained without ignoring other elements. This is a consideration for prioritising physical conditions in making training programs.

DISCUSSION

It can be clearly seen that there are 5 elements of physical condition by obtaining the "very good" category, namely aerobic endurance, agility, leg power, arm power and speed. So it can be interpreted that of the 9 test items produced, 5 elements of physical condition are dominant. This is in line with the results of research which states that during the pencak silat match the heart rate response will be faster along with changes in lactic acid so that aerobic endurance is needed during the match (Aziz, Tan, & Teh, 2002). The ability of aerobic endurance conditions is needed to maintain punch or kick techniques that are carried out

repeatedly, this aims to enable athletes to maintain performance during the match. The results of previous research also provide accurate information that leg muscle power has a big role in the frequency of sickle kicks, which means that the better the ability of leg muscles is directly proportional to the ability of sickle kicks (Aljuklan & Sukarmin, 2023). Therefore, the ability of leg muscle power needs to be a serious concern in the training process carried out. This is confirmed by the results of research which states that leg explosiveness has an indirect effect on sickle kick speed through agility by 57.3% and leg explosiveness, speed and agility simultaneously affect sickle kick speed (Tofikin, Damrah, & Nurmai, 2018). Leg muscle ability is a part of physical condition that cannot be ignored, so this ability needs to be a programme carried out in training models.

As an effort to improve the performance of martial arts athletes, speed ability is also an element that needs to be done, the ladder drill training model will be able to increase the speed of martial arts athletes. As conducted by Ghufron, Sucipto, & Beki (2020) who conducted treatment for 6 weeks showed very significant changes in the speed of martial arts athletes when ladder drill training was carried out. This is in line with the measurement of speed results in this study, although the instrument used in this speed is a 30-metre sprint with the acquisition of the "very good" category (13.9%) and the "good" category (53.5%), meaning that even though the characteristics of pencak silat sports the instruments used do not reflect the movements made during the match, therefore the element of physical condition speed needs to be taken into consideration for research or development that leads to the specifications of the movements of pencak silat sports. Of the 5 (five) physical components that fall into the "very good" category, the element of agility ranks highest with a percentage level (53.5%) the acquisition of these test results is increasingly convincing that the element of agility is the main factor in the physical condition of pencak silat athletes to achieve peak performance even without ignoring other elements of physical condition. Therefore the portion of agility training is more often done in the training process. This is reinforced by the results of research findings which state that agility can provide a percentage (36.3%) of the results of pencak silat kicks, the contribution of agility is very instrumental to the success of pencak silat kicks (Ihsan et al., 2022). The ability of arm power also did not go unnoticed, the results of this study were in the "very good" category of (32.6%) which means that the ability of arm power is one of the physical elements that should not be ignored. Weight training is a priority in compiling training programmes, as studies on "tabata" training in martial arts athletes provide a significant increase in arm power (Patah, Jumareng, Setiawan, Aryani, & Gani, 2021).

The results of this study do not mean ignoring other elements of physical condition as stated in the explanation above. Some research results even reveal that anaerobic endurance is needed when performing very fast punches or kicks

(Yulianto, Mulyana, Yudiana, & Hendarsin, 2022). Anaerobic ability in pencak silat sports as a supporting element in supporting technical abilities (Kuswanti, Sugiyanto, & Liskustyawati, 2019). Other research also states that after being tested the anaerobic endurance ability of pecak silat athletes is greater in the "medium" category (Chamid, 2019). It seems that the results of this study go hand in hand with the results of this study where for the physical condition element anaerobic endurance is in the "medium" category with a percentage (53.5%). In the end, the assumptions built based on the results of the study further strengthen that although there are various elements of physical condition, it is necessary to pay attention to the dominant elements of physical condition, so that the training carried out has high effectiveness against the problems that exist in the field. Therefore, the suggestions and recommendations of the results of this study need to consider the dominant physical condition components as a basis for determining the training programme.

CONCLUSION

Based on the results of research and discussion of the physical condition of pencak silat athletes, the author can conclude that there are 5 aspects of the dominant physical condition components in the sport of pencak silat in the sparring category; speed, arm power, leg power, agility and aerobic endurance.

Conflict of Interest

The author (s) declare that they have no conflict of interest.

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