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The effect of conventional exercise and single kick on increasing cardiovascular endurance

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Abstract

The purpose of this study was to determine the effect of training methods and motivation on increasing cardiovascular endurance in pencak silat athletes. The research sample was 40 athletes of pencak silat in East Jakarta. The sampling technique used refers to the procedure stated by Verducci. The method used in this research is an experimental method with a 2x2 Treatment by Level Research Design. The technique used is a two-way analysis of variance with a 2 x 2 factorial design with a significance level of 0.05. In general, the results of the study based on the results of the analysis of variance, obtained a significant Fcount <0.05, a significant level, which means the research hypothesis. Thus, the increase in cardiovascular endurance can be influenced by exercise methods and motivation. For researchers who are interested in this issue, can conduct further research by trying other variables that are quite influential on the cardiovascular endurance of pencak silat athletes, to develop research in the field of sports, especially pencak silat sports

1. INTRODUCTION

Pencak silat is a martial art sport that was born and developed in the Malay community. Along with the times pencak silat has developed into one of the sports achievements and is competed starting from single event championships to enter in multi-events. In the sport of pencak silat, the pencak silat competition consists

of: 1) sparring category, 2) single category, 3) double category, and 4) team category (Setyo Kriswanto, 2015). Pencak silat in the sparring category is a match that features two fighters from different camps and each other. Facing off uses the elements of defense and attack, namely parrying, dodging, striking at the target and knocking down the opponent. To achieve optimal performance, it is necessary to support aspects ranging from physical aspects, technical aspects, tactical aspects, and mental aspects. The physical condition aspect is a basic component needed by every athlete. One component that is indispensable to athletes is cardiovascular endurance.

Endurance is the state or condition of the body that can work or practice for a long time, without experiencing excessive fatigue after completing the work or exercise According to Junusul Hairy, endurance in many activities is limited by the capacity of the circulatory system (heart, blood vessels, and blood) and the respiration system (lungs) to deliver oxygen to these muscles, such activities are categorized as cardiovascular endurance or aerobic endurance (Hairy, 1989). Budiwanto explains that heart and lung endurance or also called cardiovascular is defined as the ability of the lungs, heart, and blood vessels to deliver a certain amount of oxygen and nutrients to cells to meet the needs of physical activity that lasts for a long time (Ilmiyanto & Budiwanto, 2017). When summarized, heart and lung endurance is the ability of the heart and lungs to supply the needs of body cells to make the body able to perform physical activity for a long time.

For a pencak silat athlete who competes with 3 rounds, cardiovascular endurance is needed to support the physical and technical components during training sessions until the match. So, for a coach it is very necessary to anticipate the provision of an appropriate training program. By applying the right training method to martial arts athletes so that their cardiovascular endurance can increase and support to achieve optimal performance.

Among pencak silat trainers in training cardiovascular endurance, the

training methods given are conventional training methods. When viewed from the match system and how to compete in the sport of pencak silat, each fighter attacks and avoids with the movement rules and patterns of pencak silat steps to attack and anticipate attacks from opponents. By applying several different training methods, to provide a variety of training variations and avoid athlete boredom.

Another training method that can be used by pencak silat trainers is the single stance training method Based on previous research conducted by Widiastuti and Renny Mulyani, Pencak Silat's Empty Hand Single Stance can be a model of endurance training (Widiastuti & Mulyani, 2017). Other research conducted by Firmansyah and Firman, there is an effect of pencak silat stance training on increasing cardiovascular endurance (Dahlan & Patawari, 2019). Providing a single stance training method by paying attention to the appropriate intensity, frequency and duration of training in an endurance training program. Can be an option in increasing the cardiovascular endurance of pencak silat athletes in accordance with the form of pencak silat movements in the match.

The training method is a procedure or ways of selecting the type of exercise and its arrangement according to the level of difficulty, complexity and load training. In a broader sense for the benefit of sports Harre states that "Sports training is a scientifically regulated sports improvement process, mainly based educational principles" (Alfin Hariyanto & Irawan Januardi, 2017). This training method is a way in the process of achieving exercise, in terms general the method is a modified stimulation of a reality that is composed of specific elements of a few phenomenon that a person can observe and investigate.

The conventional training method is a common method; it has been commonly done by trainers so far as well as providing endurance training material in the form of fixed running and running with varied speeds and varied distances. In accordance with the opinion of Rushall and Pyke, there are three training

systems that can guarantee an increase in cardiovascular endurance, namely:

Continuous training, fartlek (*playing with speed*), interval *training* (Rushall & Pyke, 1990). Of the three forms of exercise, have different forms of exercise but the resulting goal is the same, namely building the foundation of cardiovascular endurance capabilities. The single stance training method is one form of training developed in the sport of pencak silat to be an innovation in training athletes' endurance abilities. The exercise given is a single move using empty hands consisting of 7 moves. Each move consists of 7 series of movements. In Hidayatullah (Hidayatullah et al., 2020)'s research, endurance training for pencak silat athletes using a single empty hand stance is effective and efficient. There is a significant difference in athletes before and after being given with empty hand single stance training.

In addition to physical aspects, the mental aspect that is very influential on martial arts athletes is motivation. Motivation can be defined as a basic drive that moves a person to act towards a certain goal (Yani, 2015). So, if it is concluded that a person's motivation will arise if he must fulfill a goal. The existence of motivation starting during training makes athletes athlete practice diligently which ultimately materializes in the results of the 's ability. Therefore, every coach strives to generate and maintain stable athlete motivation. So that athletes get the effect of endurance training cardiovascular and the impact will be seen during the match.

Therefore, it is necessary to conduct research using conventional training methods and single-move training methods and their effects on increasing the cardiovascular endurance of martial arts athletes by paying attention to training motivation in athletes.

The objectives of this study include, to determine the effect of cardiovascular endurance between conventional training methods and single stance training methods, to determine the interaction between training methods

and motivation on the results of cardiovascular endurance, to determine the difference for athletes who have high motivation between conventional training methods and single stance training methods on cardiovascular endurance training methods on cardiovascular endurance, to determine the difference for athletes who have low motivation between conventional training methods and single stance.

2. METHOD

The method used in this study is an experimental method with a 2 x 2 Treatment By Level Design Research design. The independent variables are the training method (conventional training method and single-stance Lathan method) and motivation. While the dependent variable is the result of cardiovascular endurance. The subjects in this study were pencak silat athletes East Jakarta aged 13 to 17 years and still actively practicing pencak silat. The sample in this study amounted to 40 athletes. The sampling technique used is the Verducci procedure techniquetechnique to sample with a determine the percentage through division using a ranking system (Alba et al., 2019).

The instruments used to collect data in this study are the Aerobic Test (2400 meter run) and training motivation instruments. In this study, the first thing to do after determining the research sample, the sample that has been selected from the population is tested for cardiovascular endurance. The results of the measurement of the cardiovascular endurance test are then sorted from the highest score to the lowest score, this is done for consideration that the samples used in this study already have the same or almost the same characteristics in other words they are homogeneous.

The exercise motivation measurement test was conducted after the cardiovascular endurance test. After the results of the training motivation test were obtained, the macthing method was carried out to divide into four sample

groups, namely the conventional training method group with high training motivation and the conventional training method with low motivation, the single stance training method group with high training motivation and the single stance training method motivation. After the initial and final test data were collected, the data were then processed and analyzed using the technique two-waywith a 2 x 2 factorial design at a significant level α = 0.05 analysis of variance (anava).

3. RESULTS AND DISCUSSION

First, there was a significant difference between those treated with conventional training method and single stance training method on cardiovascular endurance. The conventional training method ($\bar{X}$= 44.60; SD = 2.35) was better than the single stance training method ($\bar{X}$= 43.14.; SD = 203). This means that cardiovascular endurance training treated with the conventional training method is better than that treated with single stance motion.

Second, there is an interaction between training methods and training motivation on cardiovascular endurance. Thus, the research hypothesis stating that there is an interaction between training methods and training motivation on cardiovascular endurance is correct.

Table 1. Summary of Tuckey's further test results

Pairs of groups being compared	Sig	α level	Conclusion
A1B1 1with $A2B_{()}$	0.017	0.05	Significant
A1B2 with $A22B_{()}$	0.998	0.05	Not Significant

Based on the Tukey Test table above, it can be explained that: Cardiovascular endurance in the conventional training method group that has high training motivation (A_1B_1) is better than in the single stance training method group that has high training motivation (A_2B_1). Furthermore, cardiovascular

endurance in the single stance training method group with low training motivation (A_2B_2) was like that in the conventional training method group with low training motivation (A_1B_2).

Third, conventional and single stance training methods provide significant differences in cardiovascular endurance for groups that have high motivation. This is evident based on the results of further tests whose results obtained a significant number = 0.017 in the conventional training method that has high motivation (group A_1B_1) compared to the single-move training method group that has high motivation (A_2B_1). Thus, the cardiovascular endurance of athletes who have high motivation in the conventional training method group is better than athletes who are given the treatment of the training method single move.

Discussion

Fourth, conventional and single stance training methods do not provide significant differences in cardiovascular endurance for groups that have motivationlow. This is evident based on the results of further tests whose results obtained a significant number = 0.998 in the conventional training method group that is motivated low (A_1B_2) compared to the single-move training method group that is motivation low (A_2B_2). Thus, the cardiovascular endurance of athletes who be motivated low in the conventional training method group is the same as that of athletes who are given the treatment of the single-move training method. At high training motivation, the results of cardiovascular endurance of martial arts athletes who were given the conventional training method treatment were better than the group that was given the single-move training method treatment. At low training motivation, the results of cardiovascular endurance of martial arts athletes who were given the conventional training method treatment were the same as the group that was given the single-move training method treatment.(MG et al., 2019; Munandar et al., 2020; Taufik, 2021) To improve the cardiovascular endurance of martial arts athletes, it is necessary to provide training methods that

are in accordance with the athletes' internal factors such as training motivation and other internal factors.

4. CONCLUSION

Cardiovascular endurance of pencak silat athletes through conventional training methods (A_1) is better than the single-move training method (A_2). there is an interaction between training methods and training motivation on cardiovascular endurance results. For researchers who are interested in this issue, can conduct further research by trying other variables that are quite influential on the cardiovascular endurance of pencak silat athletes, to develop research in the field of sports, especially pencak silat sports.

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