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THE INFLUENCE OF INTERVAL TRAINING METHODS ON INCREASING VO2MAX CAPACITY OF BADMINTON ATHLETES SPORT ACTIVITY UNIT ON THE STATE UNIVERSITY OF PADANG

Muhammad Arnando[1], Nurul Ihsan[2]
State University of Padang
171050@fik.unp.ac.id

Abstract

This study aims to see the effect of the interval training method on increasing VO2Max capacity. There are many methods that can increase a person's VO2Max Capacity, including the interval training method. This type of research is a quasi-experimental conducted on badminton athletes at State University of Padang. The population of this study was badminton athletes who joined the sport activity unit of State University of Padang badminton, totaling 21 people. The sampling technique in this study used purposive sampling. This technique is carried out based on the consideration of the researcher. So the number of samples in this study was 10 people. The data collection technique used is VO2Max, namely the Bleep Test. The data that has been collected is used to test the hypothesis using the t test. before the t-test is carried out, the analysis requirements test is carried out, namely the normality test and homogeneity ui test. The results of hypothesis testing using t-test statistics can be concluded as follows: The interval method significantly affects the increase in VO2Max capacity where it is obtained t_{count} (14.18) > t_{table} (2.26) and the mean difference is 2.41. From the results of the analysis, it can be concluded that there is a significant effect of the interval training method on increasing the VO2Max capacity of badminton athletes in the State University of Padang sports activity unit.

Keywords: Interval Training, Method, VO2Max.

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Correspondence author: Nurul Ihsan, Padang State University, Indonesia. E-Mail: nurul_ihsan@fik.unp.ac.id

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INTRODUCTION

Sport is an activity that is mostly done by the community, its existence is now no longer underestimated but has become part of people's lives. Because today's sport has become a trend in society, both parents, teenagers and children. Because this sport has meaning not only for health, but more than that, namely as a means of education and even achievement. One of the sports that has developed rapidly is badminton. In Indonesia, the development of badminton athlete

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achievements is growing rapidly starting from the era of Rudi Hartono, Susi Susanti, Alan Budi Kusuma, Taufik Hidat until now in the era of Suarsimi Ginting, Muhammad Hasan, Kevin Sanjaya and other badminton athletes. The athlete has brought the nation's name in line with other medal-winning countries such as England, Russia, China and others in sporting achievements, especially badminton.

The badminton game itself has also undergone quite significant changes as a result of advances in coaching science coupled with a touch of technology, such as the lighter the racket which has an impact on the more flexibility for the players to hit at high speed. This has an impact on the style of badminton that used to be, whether it was a singles game or a doubles game, was dominated by long rallies and rebounding strokes.

Judging from the energy system needed in badminton, according to Dhabliya et al., (2014) which is more dominant is aerobic, however badminton requires an anaerobic energy system. This aerobic system will be seen from the length of time to complete the game. Then one of the characteristics of this badminton game is required to move continuously (high mobility)(Phomsoupha & Laffaye, 2015; Seth, 2016). The characteristics of badminton are moving here and there to reach the shuttle so it doesn't fall into the field itself, then positioning the body in the right position so that it prepares the body just at the time to make a shot, and immediately returns to the central position. To be able to do all of that, badminton players are required to have good physical condition with all the elements that play a role in it, speed, strength, endurance, and so on (Wong et al., 2019). And one of the factors that affect the physical condition is the VO2Max capacity.

To get the physical condition well, of course, more effective and efficient training is needed. One of these improvements can be done by choosing the right training method in mastering hitting technique or excellent physical condition. The training method will be seen in the volume of the load, the intensity of the load and the results of the exercise and success will be read in the results of the

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match. According to Bompa & Buzzichelli (2019) says that "all training methods need to include the main factors in the method which include physical conditions, techniques, tactics, psychology and training content / material". This is of course adjusted to the ability conditions that determine the achievement of a sport, then the appropriate motor skills will be developed through appropriate training methods (Subarjah, 2016). Because training methods are ways that are systematically planned and goal-oriented (Majumdar et al., 1997).

The high and low physical condition of a person can also be seen from the high and low levels of VO2Max (maximum oxygen volume) which affect the physical abilities of athletes and non-athletes. VO2Max is the “fastest tempo at which a person can use oxygen during exercise. VO2Max is also called maximal aerobic energy that supports a person in carrying out his physical activities” (Guyton & Hall, 2007). VO2Max has a very big role in determining a person's physical fitness so that VO2Max is an important factor in carrying out daily activities well without experiencing excessive fatigue. The high and low endurance of a person will be influenced by the high and low VO2Max.

In line with that, the level of VO2Max is also influenced by; the lungs as an organ that provides oxygen, the quality of blood (hemoglobin) which will bind oxygen and carry it throughout the body, the heart as an organ that pumps blood throughout the body, blood vessels (circulation) which will distribute blood throughout the body and skeletal muscles as one of the organs. the body will use oxygen for the process of oxidizing food to produce energy. If one of the several components has a low capacity, it will affect the VO2Max level because each of these components supports each other. Therefore, VO2Max is indispensable, especially for sports that demand high endurance, including badminton(Alcock & Cable, 2009).

There are many training methods that can be used to improve physical conditions, especially in increasing VO2Max including the circuit method, interval method, fartlek and so on, because all training methods must be in accordance with the training objectives that we achieve and the principles of

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email jurnal: jurnalhon@univpgri-palembang.ac.id
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exercise that affect, namely, volume, intensity, frequency and rest time. After knowing the level of VO2Max, then can a trainer make an exercise program that aims to increase VO2Max. However, regardless of the form of exercise that will be used, the most important thing to note is that the exercise used must touch the threshold of VO2Max stimulation, namely, do intensive exercise according to a predetermined program, increase hemoglobin levels, decrease resting pulse rate, and reduce body fat levels.

The interval method is a form of exercise method used to improve physical condition, including increasing VO2Max capacity. Because the interval method is a form of exercise in the form of a series of exercises surrounded by a period of time to perform other lighter activities (Ningsi, 2019)This exercise is structured according to the principles of exercise and the components of the exercise (intensity, volume, frequency, and recovery). Therefore, the exercise must be arranged in a planned and systematic manner, carried out repeatedly and in accordance with the goal of increasing VO2Max capacity. This research also refers to previous research, namely research conducted by Brooks and Fahey in there was an increase in VO2Max of about 20% of the research results by providing an endurance training program for two to three months, then this can increase VO2Max or aerobic endurance.

METHOD

The type used in this research is experimental research. According to Arikunto (2013) "experimental research is an investigation designed in such a way that the phenomenon or event can be resolved from other influences". This study looks at the effect of variable X on variable Y. The population of this study is badminton athletes who are members of the badminton sports activity unit, State University of Padang, totaling 21 people. The sampling technique in this study used purporsive sampling. This technique is carried out based on the consideration of the researcher. So the number of samples in this study was 10 people.

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Jendral A. Yani Street Lorong Gotong Royong 9/10 Ulu Palembang South Sumatera
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Data obtained from the measurement of VO2Max capacity using a multistage fitness test (bleep test). The procedure of this research is firstly the initial measurement (Pretest) of VO2Max is then given treatment for 18 meetings and then the final measurement (Posttest) is carried out after the sample is given treatment. After the data is obtained, hypothesis testing is carried out and processed using descriptive and ineferential statistics with the bound sample t test formula.

RESULT

Based on the results of the calculation of the normality test of the eight research design groups above, Ltable 0,258. It was found that the observed price (Lo) obtained was smaller than the L table value at a significance level of 0.05. Thus it can be concluded that all data groups in this study were taken from a normally distributed population so that it can be used for testing research hypotheses. Based on the results of statistical calculations, the largest variance (S2) is 10.82 and the smallest variance is 9.13. The homogeneity index of variance between the two tested groups (Fh) was 1.18, while Ft (0.01 : 9.9) was 3.18, thus Fh < Ft which means that Ho is accepted.

Based on the results of the pre-test and post-test data calculations with the t-test of the circuit training method group, it was obtained t_{count} = 14.18 and t_{table} (α = 0.05) = 2.26 which means t count > t table, then Ho is rejected and Ha accepted, which means that the circuit training method has a significant effect on increasing the VO2Max capacity of Badminton athletes at the State University of Padang on the Sports Activity Unit.

Table 1. Pre-Test And Post-Test

Group		N	t_h	t_t
Interval Exercise Method	*Pre-Test*	10	14,18	2,26
	Post-Test			

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DISCUSSION

The results of hypothesis testing based on the results of pre-test and post-test data calculations using the t-test statistical approach of the interval training group method gave a significant effect on increasing VO2Max capacity. In other words, the proposed research hypothesis is significantly verified.

As stated in previous theoretical studies, the interval method is a form of exercise in the form of a series of exercises surrounded by a period of time to perform other lighter activities (Ningsi, 2019). Because the interval training method is related to the method of stimulation that is given repeatedly as well as varying intensity and planned rest intervals before the athlete recovers fully. And this method refers to the interval principle, namely training according to interval training characterized by variations in the length of loading (length of distance/big series of exercises), variations in load intensity (speed/excessive load), variations in load intervals (rest time), and the form of rest against loading. load components in order to have a directed purpose (Jonath, 1973). This exercise method must pay attention to the length of rest needed to return to training. With this training method, the badminton athletes of the State University of Padang Sports Activity Unit will use more oxygen and the increase in the athlete's VO2Max capacity will increase by itself. So, this interval training method has a significant effect on increasing VO2Max capacity.

CONCLUSION

Based on the results of research and discussion, it can be concluded that significantly the inter training method has an effect on increasing the VO2Max capacity of badminton athletes. It can be seen from the difference in the mean (mean) of the circuit training method obtained from the results of the mean pretest 43.08 and the mean posttest 45,49.

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