

The Effect of Interval Training on Aerobic Endurance of Football Club Players of Payakumbuh

Hafizzuddin Ahmad*, Arsil, Syahrastani
Faculty of Sport Science
Universitas Negeri Padang
Padang, Indonesia
hafizzudinahmad02@gmail.com

Abstract—The purpose of this research is to examine the effect of interval training on increasing aerobic endurance of SSB Muda's Top Footballer of Payakumbuh. The type of this research is quasi-experimental with one group design pre-test and post-test. This study involved 15 players who are given interval training as many as 16 times for training. The technique of collecting data is using by the bleep test instrument. The data analysis uses the t-test formula, which a result is used to test of hypothesis. From the data analysis obtained, t_{count} (8.19) is more significant than t_{table} (1.76), so the hypothesis was accepted. Thus, it can be said that training with an interval training method can improve the aerobic endurance of SSB Muda's Top footballer of Payakumbuh city.

Keyword— interval training, aerobic endurance, football

I. INTRODUCTION

Football is a sport that is played by kicking which aims to put as many balls as possible into the opponent's goal and keep the goal from being broken. But there are many indicators that must be possessed by a soccer player so that the goals of football can be realized well on the field, one of which is an indicator of physical condition. Without a good physical condition, it will affect the appearance of techniques and tactics that have been mastered before so that it is not realized as it should be in the match.

Seeing from the above explanation, physical condition is one important factor that has a major contribution to the achievement of soccer athletes' achievements, without ignoring other factors. Conditions only as elements of the ability of human sports achievement which is determined by the level of mastery of basic motor skills that include power, strength, speed, flexibility, and balance [1]. All elements of these physical conditions have a very important role in the game of soccer so that everything must be mastered by an athlete. If there is one that is not mastered, it will cause gaps that can affect athlete achievement. Such is the case experienced by the Young Soccer School (SSB) Muda's Top Payakumbuh City today.

From the observations the authors made in a number of test matches and the competitions they took part in, it turns out that the problem of fatigue is very obvious which causes athletes to not be able to play well. The decline in

conditions experienced by SSB Muda Top's athletes began to be seen when they entered the second round until the end of the match. According to the authors, the problem shows that the physical condition of the athlete has not been said to be good and it also illustrates that the aerobic strength of athletes is still relatively low for a soccer player.

Aerobic endurance is one component that is needed in physical activity with a relatively long time so that it can maintain the stability of physical and psychological (mental) work well. In this connection, aerobic endurance is the ability of the body's organisms to overcome fatigue due to physical activity or performance in a relatively long time [1]. This ability is determined primarily by the ability of heart function and the circulatory system (*cardiovascular system*) and the ability of lung function (*cardiorespiratory system*) [1].

In soccer game, aerobic endurance is very important that every athlete has it. This interest can be seen in the relatively long football game, in general, one soccer match is played in 2 x 45 minutes [2]. From the description it is clear that one of the efforts needed to improve the aerobic fitness of soccer athletes is to use appropriate training methods. There are several exercise models to improve cardiovascular fitness, including : continuous, circuit, and interval models [3]. aerobic training methods are distinguished in two forms, namely the long-term training method and the interval training method [4].

The interval training method is one of the many training methods that the authors consider appropriate and appropriate to improve the aerobic fitness of soccer athletes. Interval training is a training system interspersed with intervals in the form of periods of rest, such as running - resting - running - resting and so on [5]. Before conducting the interval training method, a training plan or training program must be prepared first. There are several factors that must be planned as thoroughly as possible in the interval training program so that the objectives and results of the exercise can be achieved, including : the duration of the exercise, the load (intensity) of training, sets and repetitions (repetitions) of each set, recovery (resting period), and frequency of exercise in a week. In interval

training, rest time is very important between each repetition of training load one to the next training load to restore athlete's fitness to be able to carry out the next exercise. However, the break referred to here is not a rest such as sitting or sleeping (passive rest), but active rest such as walking, relaxing jogging, and others [6].

By paying attention to some of the factors that have been explained before will greatly determine the success in obtaining the benefits of interval training. This can be seen and measured after doing interval training several times and in this study the author gives exercise as many as 16 meetings. Three times a week training can develop endurance, strength, and flexibility [7]. Meanwhile, doing exercises for 6-8 weeks has had a significant effect for athletes [7]. Based on this opinion, it can be concluded that by giving 16 times (6 weeks) dayatahan training with the interval training method and done three times a week can already have a pretty good effect on aerobic athletes athletes, one of them is soccer athletes.

After that, the test and measurement of athlete aerobic resistance by using an appropriate test instrument, one of which is the bleep test. Bleep test is a test that aims to measure a person's maximum oxygen volume (VO2Max) [8]. This test is carried out twice, namely before and after doing the exercise 16 times. Thus, then we can see the effect of interval training on the aerobics training of SSB Muda's Top soccer player Payakumbuh City.

The explanation above also shows that the purpose of this study is to look at the effect of interval training training methods on the aerobic fitness of SSB Muda's Top football players in Payakumbuh City. Thus it is expected to have a positive impact on the achievements of athletes and teams.

II. RESEARCH METHODS

This type of research used in this research is experimental research. While the types of experiments and research designs used in this study are quasi experimental with one group pre-test and post-test designs [9]. The population of this research is all 46 SSB Muda's Top soccer players in Payakumbuh City. Sampling was carried out using purposive sampling technique [10], so as to get a sample of 15 people who were given treatment intervals of training 16 times. Data collection techniques using the test and measurement of VO2Maks ability with the Bleep test instrument. Test and measurement of VO2Maks ability is done twice, namely pre-test before doing interval training and post-test after doing interval training. The data that has been collected is analyzed using the t-test formula whose results will be used to test the hypothesis, with the following formula:

$$t = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\frac{\sum D^2 \frac{(\sum D)^2}{n}}{n(n-1)}}$$

III. RESEARCH RESULTS AND DISCUSSION.

A. Data Description

After tests and measurements, the data in this study are as follows:

Table 1. Aerobic Data Distribution.

Data	N	\bar{X}	Sd	Min	Maks
Pre-Test	15	38.44	4.66	31.4	45.5
Post-Test	15	42.86	5.84	35.0	51.9

From the above table it can be seen that after the pre-test is carried out on the sample, an average count = 38.44, a standard deviation = 4.66, a minimum value of 31.4 and a maximum value of 45.5 are obtained. Whereas after the post-test was carried out on the sample, it was obtained the average count = 42.86, standard deviation = 5.84, minimum value = 35.0 and maximum value = 51.9.

B. Normality Test

The hypothesis of this study was tested using t-test analysts. Before the t-test analysis is done, the normality test is first performed to find out whether the data comes from populations that are normally distributed or not. The normality test of the initial test distribution and the final test were analyzed using the Lilliefors test, with a significant level that is used as a basis for refusing or accepting the normal or not goodness of a data distribution is $\alpha = 0.05$. After that, compare L_o with L_{table} using the criteria: if L_o is greater than L_{table} ($L_o > L_{table}$) means the population is not normally distributed, conversely if L_o is smaller than L_{table} ($L_o < L_{table}$) means the sample data comes from a population that is normally distributed. The details can be seen as follows:

Table 2. Normality Test of Aerobic Endurance Research Data.

Variabel	N	L_o	L_{table}	Ket
Tes Awal (Pre-Test)	15	0.1222	0.220	Normal
Tes Akhir (Post-Test)	15	0.1549	0.220	Normal

Based on the above table, a summary of the results of the normality test initial test (Pre-Test) is known that $L_o = 0.1222 < L_{table} = 0.220$, while for the final test (Post-Test) it is known $L_o = 0.1549 < L_{table} = 0.220$, it can be concluded that the sample data the Pre-Test and Post-Test obtained are from populations that are normally distributed.

C. Hypothesis Testing

The alternative hypothesis (H_a) proposed is "Training with the interval training method can improve the aerobic endurance of SSB Muda's Top Football players in Payakumbuh significantly". The hypothesis was tested using the t-test formula. The basis for decision making t-test results is: if $t_{count} < t_{table}$ then H_o is accepted, conversely if

$t_{\text{count}} > t_{\text{table}}$ then H_a is accepted. The results of the hypothesis analysis are summarized in the table below.

Table 3. Hypothesis Testing Results Summary Table.

Perlakuan	N	A	Dk	Mean	t_{hitung}	t_{tabel}	Ket.
Pre Test	15	0.05	14	38.44	8.19	1.76	Ha Diterima
Post Test				42.86			

The table above shows the effect of training using the interval training method on the aerobic endurance of SSB Muda's Top Footballer of Payakumbuh City at 8.19 (t_{count}). With a significant level $\alpha = 0.05$ and $dk = n-1 = 14$, and $t_{\text{table}} = 1.76$ is obtained. Based on the above analysis, t_{count} (8.19) $> t_{\text{table}}$ (1.76), then H_a is accepted and H_o is rejected. Thus, it can be said that training with interval training methods can significantly increase the aerobic endurance of SSB Muda's Top footballer of Payakumbuh City.

D. Discussion

In an effort to improve the aerobic endurance of the SSB Muda's Top Football player in the City of Payakumbuh, programmed training was given. In this case, the training method given is the interval training method. From the use of this interval training method, it will be seen whether there is an effect caused by the training given to the increase in aerobic endurance of the SSB Muda Top Football player in Payakumbuh.

In conducting research, the author first provides a pre-test of samples that aims to see the initial capabilities of the sample. After that the sample is given aerobic endurance training with a 16-time interval training method. For each meeting, the sample did interval training together. In the final stage, a post-test is carried out, so it is hoped that this research can produce appropriate conclusions and in accordance with the data obtained.

Looking at the results of the hypothesis test, the actual training with interval training methods can significantly improve the aerobic endurance of SSB Muda's Top soccer players in Payakumbuh City. It can be seen from the results of the t-test obtained, namely, the t_{count} is 8.19 while the t_{table} is 1.76. Thus the t_{count} is greater than the table which causes the alternative hypothesis (H_a) to be accepted. So it can be concluded that training with interval training method can significantly improve the aerobic fitness of SSB Muda's Top soccer player Payakumbuh City significantly. that one of the methods of aerobic training exercises is the method of in-depth training (interval training) [4]. Strength training and speed training, the interval training method can also be used for the development of aerobic endurance [1].

The increase is most likely caused by several factors, including the adaptation of interval training methods given to body organs that support the increase in the ability of body organs. In exercises that use the interval training method, athletes can do repetitive work with active breaks between sessions. The principle of intervals requires a

planned changeover between the loading phase and the recovery phase by using an incomplete or incomplete recovery break [1]. The resting time serves to restore energy before doing further work. In addition, the design of training programs by providing the right loading is also one of the factors that cause training with interval training methods can increase the aerobic endurance of SSB Muda's Top footballer of Payakumbuh City.

However, in doing exercises to improve aerobic endurance can not be separated from the role of the athlete itself. That is, in each atlet training session required discipline in implementing training programs so that training objectives can be obtained optimally. Thus it is expected to support the achievements of each athlete and team performance.

IV. CONCLUSIONS AND SUGGESTIONS

Based on the analysis of the research data and the discussion above, then in this study it can be concluded that training with the interval training method can significantly increase the aerobic endurance of SSB Muda Top Footballer of Payakumbuh City. This can be seen from the results of the t test which states that t_{count} (8.19) is greater than t_{table} (1.76).

Based on the results of the study and the conclusions above, the authors can provide suggestions including, to the trainer in order to be able to use the interval training method in an effort to improve the athlete's aerobic endurance. To athletes who take part in training to get more serious in training so they can get positive results from training sessions conducted. To researchers who want to continue this research in order to make this research as information material for research with a greater scope.

REFERENCES

- [1] Syafruddin. "Ilmu Kepelatihan Olahraga". Padang: UNP Press. 2013, pp. 85.
- [2] D. Mielke. "Dasar-Dasar Sepak Bola (Cara yang Lebih Baik Untuk Mempelajarinya)". Bandung: Pakar Raya. 2007, pp. 35.
- [3] DP. Irianto. "Bugar dan Sehat dengan Berolahraga". Yogyakarta: CV. Andi Offset. 2004, pp. 14.
- [4] H. Irawadi. "Kondisi Fisik dan Pengukurannya". Padang: UNP Press. 2013, pp. 39.
- [5] A. Agus. "Manajemen Kebugaran". Padang: Sukabina Press. 2013, pp. 45.
- [6] B. Indrayana. "Perbedaan Pengaruh Latihan Interval Training dan Fartlek Terhadap Daya Tahan Kardiovaskuler Pada Atlet Junior Putra Taekwondo Wild Club Medan 2006/2007". *Jurnal Cerdas Sifa*. Nomor 1. Hlm. 1-10, 2012.
- [7] Bafirman. "Pembentukan Kondisi Fisik". Malang: Wineka Media. 2010, pp. 56
- [8] Arsil. "Evaluasi Pendidikan Jasmani dan Olahraga". Padang: FIK UNP. 2015, pp. 30-32.
- [9] Sugiyono. "Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)". Bandung: Alfabeta. 2014, pp. 50.