

Speed Endurance Improvement through Long Interval and Short Interval Methods

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Abstract: This study was conducted to reveal the increased endurance speed required in football through the practice of Long Interval and Short Interval by performing the interval run according to the characteristics of each method. It was performed in 16 times. The exercises performed after the initial test and the final test upon the completion of all treatment. The research method in this research is experimental method by using pre-test post-test two treatment design. This treatment was done by 20 U-19 Diklat Persib athletes. The instrument of the study was 150 M running test. The result showed that there is some improvements as the result of the implementation of both methods. From the average score, it was identified that Short Interval method outperformed the long Interval method. However, the paired t test showed that there were no improvements as a result of the implementation of both methods. The result from the paired t test demonstrated that the critical values for Long Interval and Short Interval are 6.357 and 8.524. It clearly showed that the post test score is lower than the pre-test score. This implies that long interval does not significantly affect speed endurance. Based on the results of the data it is concluded that there is no significant improvement between Long Interval and Short Interval training methods.

1 INTRODUCTION

Physical performance plays an important role in modern football, as different studies have reported an increase in distance travelled at high-intensity during matches and have shown that these parameters are related to competition standards (Bangsbo et al., 1991; Mohr, 2016; Bradley et al, 2009). Football is an open-skill interval activity, with intensity of practice that varies from low-intensity runs and runs to an all-out sprint and jump (Tessitore, 2005). The aerobic contribution in football reaches 90%, although the anaerobic contribution also has a very important role (Bangso, 1994). One unique in football is combining aerobic and anaerobic training, speed endurance training is one form of training (Richard, 2017).

One of the exercises that can combine aerobic and anaerobic systems is speed endurance exercise, the exercise is a short duration of 10-30 seconds (Iaia, 2015). Speed endurance is the ability to maintain speed for 10-20 seconds repetitively with high intensity, such as in American football, baseball, basketball, rugby, soccer and ice hockey (Bompa, 2015). High intensity training is very important for competitive football and sports team athletes (Mohr,

2016). All players with any position must have excellent speed and can work with high intensity, every position in football has its own working characteristics most of each position from midfielders and back players working with high intensity (Iaia, 2009). Speed endurance is the ability to maintain the highest speed in the most distant distance (Steinbach, 1999). Speed endurance exercises provides a challenge to an anaerobic energy system that must provide energy to the body by maintaining a high intensity of exercise in some time, and aerobic energy systems aid in its recovery at this high intensity (Richard, 2017)

One of the most applicable training methods for endurance training is the interval training method. One of the advantages of this method is the ability to increase aerobic and anaerobic skill at the same time (Billat, 2001). Interval training is one of the most popular methods used by athletes to improve the physiological and fitness of specific variables (Huang et al., 2016). Impellizzeri et al. (2006) explains interval training and small side games will increase the stamina of football players. Interval training is a method that is done by running - break - run - break Interval training involves repeating exercise attacks

interspersed by the recovery period. Interval training consists of repeated run and rest repetition (Babu and Kumar, (2014). Interval training method is a very heavy training method because the intensity used is high so that the athlete's condition must be fully ready so that the result from the application of this method becomes influential significantly (Sidik, 2011). During individual training interval sessions perform activities at relatively high intensities, within a certain timeframe and for the number of repetitions (Sindiani et al., 2017). The interval method to consider is the distance or time taken, the speed or effort performed, the number of repetitions of the working interval, the distance or the time of recovery and the type of recovery activity. HIT require 90 to 100% working period on VO2 max (VO2max).

Of the many types of interval training methods there are 2 methods that will be the focus of the study; long interval training and short interval training. Long interval training is accompanied by the following characteristics: duration of work: 2-5 minutes, work intensity: 85-90% best performance standard, duration of recovery period: 2-8 minutes, work recovery ratio: 1: 1 to 1: 2, repetition: 3-12. Characteristics of short interval training are: duration of work: 5-30 seconds, work intensity: 95 +% best performance standard, duration of recovery period: 15-150 sec, working recovery ratio: 1: 3 to 1: 5, repetition: 5-20 (Rushall and Pyke, 1990).

Based on the above explanation it can be concluded that the difference between the long interval and short interval methods lies in the setting of the length of the exercise, the intensity, the number of reps performed as well as the difference in the rest. Both methods are basically intended to practice speed endurance.

The objectives of the study are: 1) To find out if Long Interval Training gives significant effect on speed endurance improvement, 2) To find out if short interval training gives significant effect on speed endurance improvement, 3) To reveal the significant differences between Long Interval and Short Interval method on the speed endurance improvement.

2 METHODS

The method used in this study was experimental design. The design relevant to the method was the pre-test post-test two treatment design. The design involved two groups of interval training method. Group 1 used long Interval method and Group 2 used short interval method. Pertest and Post-test were administered to both groups. The sample was 20

Diklat Persib U-19 players. The main instrument for the data collection was 150 meter Speed Endurance Test Sprint.

3 RESULTS

The following table 1 describes the result of 150 M ru test for long interval and short interval group.

Table 1: Long Interval Method Test Result.

		<i>Pretest Long interval</i>	<i>Posttest Long Interval</i>
N	<i>Valid</i>	10	10
	<i>Missing</i>	10	10
<i>Mean</i>		22.5920	21.0020
<i>Std. Deviation</i>		1.09278	.73956
<i>Minimum</i>		20,75	19.46
<i>Maximum</i>		24.73	21.82

Based on the table 2, the mean of pre-test of Long Interval Method is 22.5920 and post-test is 21.0020.

Table 2: Short Interval Method Result.

		<i>Pretest Short Interval</i>	<i>Posttest Short Interval</i>
N	<i>Valid</i>	10	10
	<i>Missing</i>	10	10
<i>Mean</i>		22.5230	20.7380
<i>Std. Deviation</i>		.093388	.74462
<i>Minimum</i>		21.08	19.44
<i>Maximum</i>		23.90	21.93

Based on the table, it was found out that mean of pre-test on Short Interval is 22.5230 and the post test is 20.7380. Hypothesis testing:

- The probability or Sig (2-tailed) is 0,000 is lower than 0,05 (0,000 < 0,05), therefore, it can be concluded that Ho was rejected that implies there is significant difference of mean before and after Long Interval Method implementation;
- The probability or Sig (2-tailed) is 0,000 is lower than 0,05 (0,000 < 0,05), therefore, it can be concluded that Ho was rejected that implies there is significant difference of mean before and after short Interval Method implementation;
- The value for Long Interval is -0.598 and t critical for 95% significance level and df= 9 the observed value is 2.26 The observed value is lower than the critical value (-0.598 < 2.26) and P value (0,557 > 0,05) meaning that Ho was accepted. It means that there is no significant difference between Long Interval and short interval method score.

4 DISCUSSION

Based on the results of the research described above, there is an increase in endurance speed in both training methods. But judging from the average increase, the method of Short Interval is higher compared to Long Interval. There is an increase as many as 20.7380 points in short interval on the post test, on the other hand, in the Long Interval, the increase is only 21.0020.

The result of data processing using SPSS 23 shows that group B using Short Interval practice method is more increased compared to group A using Long Interval method in terms of endurance speed. This is consistent with field experience which shows that in practice using the Short Interval method will force athletes to work with a very high intensity, measurable and structured on duration and recovery as well.

Short interval method is a quick method of training that can be used in a team game context (Rushall and Pyke, 1990). It is consistent with the context of this study using a football team. This exercise is an anaerobic exercise, especially an alactacid energy source whose work is short, anaerobic here is the speed endurance itself (Rushall and Pyke, 1990).

The main exercise of this work is the aerobic system even though at the end of the repetition the anaerobic energy system is also trained in the practice session of this method Long Interval (Rushall and Pyke, 1990). In this type of exercise use two aerobic and anaerobic energy systems with a 2-5 minutes training time (Rushall and Pyke, 1990). in the Long Interval method, the dominant one is the aerobic energy system.

In the training sessions discussed in this study, on the method of Short Interval and Long Interval training distance, intensity and volume of the exercise have been designed in accordance with the characteristics of each method. In this study the researchers apply the principle of individualization that each player has a training program each person in accordance with the ability of players viewed from the initial test results. The coach will all way monitor and instruct the players to practice optimally assisted by 3 other coaches from Diklat Persib U19.

Judging from the improvement of the two methods already mentioned above, the improvement of both methods is not significant. However, the method of Short Interval increase is greater than the Long Interval method. Therefore, there is no significant improvement between Long Interval and Short Interval method on the speed endurance.

5 CONCLUSIONS

Based on the results of data processing that did show that the average method of Short Interval gives more improvement than Long Interval method to the durability of speed, but these two methods do not provide significant improvement, therefore the authors draw the conclusion that there is no significant increase from the Long Interval and Short Interval methods of speed endurance.

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