

## The Effect of Cross Country Running Training on Increasing the VO2Max of Alfalah Futsal Players



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**ABSTRACT:** This study aims to determine the effect of cross-country running training on increasing VO2Max. This research was conducted at the Jambi cross-country from July to August. Sixteen treatments were administered at a frequency of three times per week. In this study, a single group pretest-posttest was employed as the design. The researchers targeted Al-falah futsal players as their population. For a sample of sixteen individuals, inclusion and exclusion criteria were employed. The research instrument used in this study measures VO2max pretest and posttest, namely from the Multi Stage Fitness Test. The data analysis processes of homogeneity, normalcy, and hypothesis testing are carried out using SPSS. The study's normality and homogeneity statistics further demonstrate that the distribution is homogeneous and normal ( $\text{sig.} > 0.05$ ). A significant value of  $0.000 < 0.05$  in the hypothesis testing results indicates that cross-country running training increased the VO2max of Al-Falah futsal players. Based on these findings, the cross-country running training program is an effective training program for increasing VO2max.

**KEYWORDS:** Cross Country, VO2Max, Futsal

### INTRODUCTION

Futsal is a ball game played by two teams, each consisting of five people (1,2). The aim of the game of futsal is to put the ball into the opponent's goal, by manipulating the ball with the feet (3). Futsal is a physically demanding sport that requires players to move continually to attack and defend, which can wear players out. The game of futsal is played with fast movements, meaning the ball continues to roll without stopping. Futsal is a dynamic sport and prioritizes changing positions quickly to find space by running. Therefore, futsal is a high-intensity sport (4). High intensity futsal matches require physical effort, good techniques and tactics (5). According to him (6), As a result futsal is considered an intermittent sport with high intensity activity broken up by brief recovery intervals, physical conditioning is crucial for futsal players.

Aerobic endurance plays a very important role in the sport of futsal, because the game of futsal, which involves running back and forth, really requires excellent stamina over a long period of time (7). Has a good VO2max capacity, Futsal players must have it to support their desired achievements. A good VO2max helps support athlete performance (8). The ultimate aerobic power capacity of an individual is known as their aerobic ability (VO2Max). This is based on the greatest quantity of oxygen (O<sub>2</sub>) that the respiratory, cardiac, and hemohydrolymphatic systems can provide, or the amount of O<sub>2</sub>, CO<sub>2</sub>, and nutrients that are transported every minute (9). In this case VO2max is considered the gold standard for assessing a person's aerobic fitness, the higher the VO2Max capacity of a futsal player, the more oxygen the body can use for metabolism and ensuring sufficient stamina when competing.

The results of observations made by researchers were confirmed by tests and measurements to determine the player's VO2max capacity using a multistage fitness test. The measurement test that took part in 16 Al-Falah futsal team players, the results of the VO2max test were 3 players in the sufficient category, 13 players in the under category. Direct measurement of VO2max is widely considered the gold standard and assessment of fitness level (10). Knowing an athlete's endurance profile is the first step that a coach must know before creating a training program for an athlete (11). Researchers concluded from the results of the tests and measurements carried out that there was a need for a training program to increase players' VO2max. To increase VO2max, players need to be given an appropriate and appropriate training program so that the preparations go well. One of the training programs that researchers implemented was cross-country running training to get the players in good physical condition.

Cross-country running is a form of long-distance running carried out in the open, such as roads, mountains,

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Settlements or forests. Cross country running techniques have the same basics as long distance running techniques (12). Cross country training is a form of outdoor exercise that aims to increase VO2Max, This exercise is generally done outdoors (13).

### MATERIAL ANDMETHODS

#### Participants

This research is experimental research, The design used in this research was One group pretest-posttest. In this design there is a pretest before treatment is given so that the results of the treatment can be known more accurately. because it can be compared with the situation before treatment. The sample for this research was 16 players from the Alfalah futsal team. This research was conducted for two months consisting of 16 sessions. Sessions are held three times a week. The instrument used in this research is the multistage fitness test. Data were analyzed using statistical analysis techniques (SPSS 25).

#### Procedure

Before starting the measurements, the athletes performed a warm-up routine. The research instrument used in the study was measuring VO2max pretest and posttest, namely the instrument from the Multi Stage Fitness Test (MSFT) to monitor the development of maximum oxygen absorption (VO2max) of athletes. This test involves running continuously between two lines 20 meters apart while you hear a pre-recorded "bleep" sound. Test takers are expected to try to get to the opposite end at the same time as the "bleep" sound. every time the "bleep" sound sounds, Test takers must have arrived at one end of the track. If a participant fails to reach the 20 meter mark before the "bleep" sound, he or she will be given a warning and must keep running until he reaches the mark and at the same time increase his speed so as not to be late for the next bleep. If the test taker experiences two failures in a row, then he is considered eliminated from the bleep test and the mark he achieved last time becomes the score of this test. The treatment was carried out in 16 sessions with a frequency of three meetings per week. This test is given to determine the effectiveness of cross-country running training to increase VO2max. In each treatment of the 16 sessions, participants carried out a warm-up as an opening activity and ended with a cool-down activity.

### RESULT

The research results from 16 players are as follows:

Table 1. Pretest and Posttest VO2Max data

No	Pretest	Posttest	Difference	No	Pretest	Posttest	Difference
1	42,6	46,8	4,2	9	42,6	49,3	6,7
2	44,2	48,7	4,5	10	47,7	51,1	3,4
3	39,6	43,6	4	11	52,2	55,7	3,5
4	43,9	47,1	3,2	12	45,5	50,2	4,7
5	45,5	48,7	3,2	13	46,2	49,6	3,4
6	52,5	54	1,5	14	53,1	56	2,9
7	43,9	49	5,1	15	41,8	49,3	7,5
8	43,3	48	4,7	16	46,2	50,5	4,3

Table 2. Description Data

	N	Min	Max	Mean	Std. Deviation
PretestVO2Max	16	39,6	53,1	45,67	3,94
Posttest VO2Max	16	43,6	56,0	49,85	3,21

The results of this descriptive statistical value research, The author used a sample of 16 people to obtain an average initial VO2Max ability test score of 45.67 with a standard deviation of 3.94 and the lowest score was 39.6 and the highest score was 53.1. For the final test, the average VO2max ability score was 49.85 with a standard deviation of 3.21 and the lowest score was 43.6 and the highest score was 56.0. Before testing the hypothesis in research, Perform the homogeneity and normalcy tests as prerequisites first. Table 3

displays the results of the normality test, and Table 4 displays the results of the homogeneity test. Using the Shapiro-Wilk test to examine the sig, the normalcy test in this study determined that decision making  $> 0.05$  was considered normal. The normalcy test yielded the following results:

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Table 3. Normality Test

Shapiro-Wilk				
	Statistic	Df	Sig.	Kesimpulan
Pretest VO2Max	0,902	16	0,086	Normal
Posttest VO2Max	0,928	16	0,228	Normal

In this study, decision making  $> 0.05$  was considered homogeneous, and the homogeneity test employed the Levene Test by examining the sig value. The homogeneity test yielded the following results:

Table 4. Homogeneity Test

	Levene Statistics	Df1	Df2	Sig.
VO2Max	0,688	1	30	0,413

In hypothesis testing, researchers use paired t-tests. The research results can be seen in table 5:

Table 5. Hypothesis Testing

	Df	t-table	Sig.
Pretest-Posttest VO2Max	15	-11,555	0,000

Based on the statistical analysis of the hypothesis test which has been carried out using the paired t-test in table 5 Above, it can be concluded that cross-country running affects VO2Max in Al-Falah futsal players, as seen in the table above. This t-test verification produces a significant value of  $0.000 < 0.05$ , rejecting hypothesis H0 and accepting hypothesis H1.

### DISCUSSION

This study looked at the effect of cross-country running training on increasing the VO2Max of Al-Falah futsal players. The results of the research statistical analysis for the VO2Max level variable for the cross-country running training method had a sample size of 16 people. The minimum pretest score was 39.6 and posttest 43.6, while the maximum pretest score was 53.1 and posttest 56.0. The average (mean) for the pretest was 45.67 and the posttest was 49.85, then the standard deviation for the pretest was 3.94 and the posttest was 3.21. From the results of the data, it was then tested using a hypothesis test, in this test, verification produces a significant value of  $0.000 < 0.05$ , reject hypothesis H0 and accept hypothesis H1. It means, cross-country running training increases the VO2Max capacity of Al-Falah futsal players.

These results are in line with research conducted by (12) that after using the cross-country running method, a person's VO2Max level can improve and make it possible to carry out physical activity for a longer duration. Then research conducted by (14) shows that cross country training can increase a person's VO2Max. Thus, the cross-country running method is good for increasing VO2max. In accordance with this view, Futsal players need technique, tactics and physique to develop well in order to have good physical abilities (15). Thus, cross-country running can serve as a model for contemporary futsal coaches and players. In future research, a larger sample size and alternative activities can be employed to improve and statistically significantly raise VO2Max in futsal players.

### CONCLUSIONS

Based on the results of research conducted over six weeks, it can be concluded that there is a significant influence of the cross country running training method on increasing the VO2Max of Alfalah futsal players.

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