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### Application Of the Passing On The Right Exercise Model To Increase Vo2max Capacity

Akbar Sudirman<sup>1\*</sup>, Ramli<sup>2</sup>, Hezron Alhim Dos Santos<sup>3</sup>

<sup>1,2,3</sup> Departemen Physical Education, Universitas Negeri Makassar, Jl. AP. Pettarani Makassar, Sulawesi Selatan, 90221 Indonesia

\*e-mail: [akbar.sudirman@unm.ac.id](mailto:akbar.sudirman@unm.ac.id)

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#### Abstract

This research aims to determine whether passing on the Right exercise is proven to increase the Vo2max capacity of Futsal Extracurricular Participants at SMKN 10 Makassar with a total sample of 23 male students. In addition, it can be used as reference material in sports coaching that the passing on the Right exercise is a form of exercise that can be used as a form of exercise that can increase the Vo2max capacity of athletes. The method used in this research is the field experiment method. The treatment was given 18 times with a frequency of 3 times a week by the training program that had been prepared. To measure the Vo2max capacity, the researchers used a bleep test with a distance of 20 meters. Pretest data for the VO2Max capacity of futsal extracurricular students at SMKN 10 Makassar with a total score of 841.30 ml/kg/min, an average value of 36.58 ml/kg/min with a standard deviation of 4.32 while the range is 15.10. The final test data (post-test) for the VO2Max capacity of futsal extracurricular students of SMKN 10 Makassar with a total score of 946.70 ml/kg/min, an average value of 41.16 ml/kg/min with a standard deviation of 4.22 while the range is 15.50. It can be seen that there is an increase in the Vo2Max capacity of futsal extracurricular students of SMKN 10 Makassar before and after treatment for 18 meetings with details three times a week, the average pretest value of 36.58 ml/kg/min to 41.16 ml/kg/min there is an increase of 4.58 ml/kg /min.

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✉ Alamat korespondensi: BTP Jln. Kerukunan Selatan VI Blok H Baru No.488 Makassar, Sulawesi selatan.

E-mail: [akbar.sudirman@unm.ac.id](mailto:akbar.sudirman@unm.ac.id)

#### INTRODUCTION

Extracurricular activities are activities outside regular face-to-face hours to support the realization of the curriculum to broaden students' insight, knowledge, and abilities in

living what has been learned in extracurricular activities. In addition, through extracurricular activities, students' talents and interests are developed to develop students' self.

Extracurricular activities increasing among high school students are futsal extracurricular activities in urban areas and remote villages. This can be seen from the high participation of each school in including its school team in several inter-school championships, especially in the city of Makassar. Including futsal extracurricular students at SMKN 10 Makassar, they have often participated in student competitions.

Athletes' achievements are not only equipped with skills training but also need to be equipped with physical development based on sports science and technology and athlete personality development. The exercise program should be well-planned and perfect. The physical condition training program must be planned well and systematically, aiming to increase Vo2max, physical fitness, and functional capacity of the body system to enable athletes to perform better.

In connection with the above description, the physical condition is the most important thing to pay attention to, in addition to technique, tactics, and mentality. The excellent physical condition will support the achievement of other training components. Still, if, on the contrary, the physical condition could be better, it is possible to form better techniques, tactics, and mentality. For this reason, it is necessary to develop a physical condition training program for futsal extracurricular students at SMKN 10 Makassar; this can be seen clearly in the last few matches, two-three students participating in futsal extracurricular at SMKN 10 Makassar given that that that that

less than optimal performances due to unstable physical conditions.

Physical condition training to improve and develop Vo2max capacity is the correct answer to deal with unstable physical conditions. Physical condition training for Vo2max capacity given to students participating in futsal extracurriculars at SMKN 10 Makassar aims to help students improve their physical condition, Vo2max capacity, and general physical fitness and can automatically improve their performance as much as possible because all sports require a high level of Vo2max capacity in undergoing an exercise and competition.

A high level of VO2 max capacity is also required to have a high aerobic endurance capacity. The high and low level of VO2Max capacity is influenced by several supporting components such as heart, lung capacity, blood quality, blood vessels, and skeletal muscle capacity that will consume the oxygen. If one of these components has a low capacity, it will affect the level of VO2Max capacity (Fox et al., 1988).

The training program and training model to increase the capacity of the physical condition of the Vo2max capacity of futsal extracurricular participants at SMKN 10 Makassar is Passed on the right. The model or form of passing on the proper exercise has been widely applied to improve athletes' cardiovascular and pulmonary endurance, but to increase specifically the Vo2max of athletes still needs to be tested for truth. The passing on the proper training model combines jogging and sprints, with the main target being aerobic

and anaerobic endurance; this is considered very suitable to be applied to futsal athletes, with the game's character involving elements of the passing on the proper training model. In addition, this training model has a game element so that athletes will not feel bored doing it. Several studies have shown that increasing VO<sub>2</sub>max capacity can be achieved by exercising at a heart rate of 65% to 85% of the maximum heart rate for 20-60 minutes, a frequency of at least three times a week (Janssen & LeBlanc, 2010; Nieman, 2011) in (Komala et al., 2016).

Based on the description above, the researcher can conclude that one form of the training model suitable for increasing the Vo<sub>2</sub>max capacity level of students participating in futsal extracurricular at SMKN 10 Makassar is to use a model or form of passing on the proper exercise.

## METHODS

The method used in this research is the field experiment method. This field experiment method is quasi-experimental because, in the implementation of the experiment, there will be some fundamental experimental requirements that cannot be met.

The flow of this research begins with giving an initial test (pretest), then giving treatment or application of the model of passing on the proper exercise for 18 meetings, then after that, a final test (post-test) is given in the form of a bleep test running back and forth as far as 20 meters to see how far Where is the Vo<sub>2</sub>max capacity increase for futsal

extracurricular students at SMKN 10 Makassar.

It is necessary to know the research variables, the limits, and the scope of the study so as not to cause different interpretations, so operationally, the research variables are defined as follows:

1. The VO<sub>2</sub> max capacity is the maximum volume or oxygen consumption capacity as an indicator of cardiovascular and respiratory work. To determine the VO<sub>2</sub>Max capacity, a bleep test is used, which is a test that is getting faster and faster according to the number of paths taken. The number of feedbacks and levels determines the capacity of the VO<sub>2</sub>Max capacity.
2. Passing on the right is a form of exercise that combines jogging with sprints. Athletes are made into one group and then jog around the field; the athlete in the back row sprints to the right when they hear the coach's whistle. When the coach blows the whistle again, the runner returns to the initial speed (jogging), at the same time the child in the back row sprints, and so on. This exercise must be carried out by students participating in Futsal extracurriculars at SMKN 10 Makassar continuously for 18 meetings (according to the dose of exercise frequency, intensity, time, type of exercise, sets, and repetitions).

The population and sample in this study were twenty-three (23) male students participating in Futsal extracurriculars at SMKN 10 Makassar. So the sampling

technique used is total sampling. This is done because the population is limited, and the sample size of 23 students is considered to have met the minimum sample size requirements to conduct simple experimental research with a sample size of 10 to 20 people (Sugiyono, 2019).

The data obtained in this study are data on the Vo2max capacity of students participating in Futsal extracurriculars at SMKN 10 Makassar. To test the hypothesis proposed in this study, the data will be processed and analyzed descriptively and statistically (T-test) using computer analysis on the SPSS version 25.00 program.

## FINDINGS AND DISCUSSION

### Findings

Descriptive data analysis regarding the effect of applying the passing on the proper exercise model to futsal extracurricular students at SMKN 10 Makassar to increase VO2Max capacity can be seen through the following results and discussion.

Vo2Max capacity of futsal extracurricular students of SMKN 10

Makassar before being given training, of 23 students, 6 were in the sufficient category, 7 were in a low category, and ten were in the very low category. This shows that the Vo2Max capacity of futsal extracurricular students at SMKN 10 Makassar needs attention. However, after getting a passing on the proper exercise where this exercise combines jogging with sprints, the results can change the previous Vo2Max capacity category; this can be seen from 5 students in the excellent category, 13 students in the sufficient category, four students in the low category, and 1 student in the very low category. In this study, no students were in the excellent and superior categories. However, the researchers were optimistic that if this training model was applied within a specific time, we would be able to get the excellent and superior categories.

Table of the frequency distribution of VO2Max capacity level of futsal extracurricular students at SMKN 10 Makassar:

No	Qualification	Prediction Vo2max	Pretest		Posttest	
			Frequency	Percentage (%)	Frequency	Percentage (%)
1	Very poor	< 35.0	10	43,48 %	1	4,35 %
2	Poor	35.0 – 38.3	7	30,43 %	4	17,39 %
3	Fair	38.4 – 45.1	6	26,09 %	13	56,52 %
4	Good	45.2 – 50.9	-	-	5	21,74 %
5	Excellent	51.0 – 55.9	-	-	-	-
6	Superior	>55.9	-	-	-	-
Amount			23	100 %	23	100 %

Data obtained from the VO2Max capacity of futsal extracurricular students of SMKN 10 Makassar before and after being

given the treatment of passing on the proper training model from 23 samples.

- a. Pretest data for the VO<sub>2</sub>Max capacity of futsal extracurricular students at SMKN 10 Makassar with a total score of 841.30 ml/kg/min, an average value of 36.58 ml/kg/min with a standard deviation of 4.32 while the range of 15.10 is obtained from the difference in data between the minimum values. 29.50 ml/kg/min and a maximum value of 44.60 ml/kg/min.
- b. The final test data (post-test) for the VO<sub>2</sub>Max capacity of futsal extracurricular students at SMKN 10 Makassar with a total score of 946.70 ml/kg/min, an average value of 41.16 ml/kg/min with a standard deviation of 4.22, while a range of 15.50 was obtained from the difference in data between the minimum values. 33.20 ml/kg/min and a maximum value of 48.70 ml/kg/min.

Seen an increase in the Vo<sub>2</sub>Max capacity of futsal extracurricular students at SMKN 10 Makassar before and after treatment for 18 meetings with details three times a week; the average pretest value was 36.58 ml/kg/min to 41.16 ml/kg/min there was an increase of 4.58 ml/kg /min.

### Discussion

After fulfilling the normality test requirements, the t-test was conducted to test a hypothesis. The t-test used in this study is the one-tail test. The significant level used is  $\alpha = 0.05$  with the test criteria is  $H_0$  is accepted if  $t_{\text{count}} \leq t_{\text{table}}$  (sig value  $> \alpha$ ) and  $H_0$  is rejected if  $t_{\text{count}} > t_{\text{table}}$  (sig value  $< \alpha$ ) (Sugiyono, 2013).

The results of the t-test analysis of the Vo<sub>2</sub>Max capacity prediction data for futsal

extracurricular students at SMKN 10 Makassar can be obtained in the value of  $t_{\text{count}} = 25,414 > t_{\text{table}} = 1,717$  (sig. 0.000 value  $\leq 0.05$ ). Then hypothesis  $H_0$  is rejected, and  $H_1$  is accepted. Thus it is concluded that the research hypothesis is accepted, namely that there is a significant influence from the application of the passing on the Right exercise model in increasing the Vo<sub>2</sub>Max capacity of futsal extracurricular students at SMKN 10 Makassar.

Increasing the Vo<sub>2</sub>Max capacity of futsal extracurricular students at SMKN 10 Makassar can be seen in the difference before and after being given passing on the proper training for six weeks or 18 meetings with a frequency of 3 times a week. This increase in the Vo<sub>2</sub>Max capacity of students, apart from the application of the given training model, is also combined with the training program that the trainer has prepared. The time for this research was considered short but sufficient to see whether the given exercise had an effect. That passing on the proper training model is a very suitable training model to be applied, mainly to increase the Vo<sub>2</sub>Max capacity of athletes, especially futsal athletes.

Based on the research results, the lowest category was obtained, namely level 6 feedback one, and the highest category, namely level 10 feedback 6. The average value of the post-test prediction of VO<sub>2</sub>Max through the application of the passing on the suitable training model for futsal extracurricular students at SMKN 10 Makassar was 41.16 ml/kg/ min or according to the norm of the bleep test, namely the average student reaches

level 8 feedback 4. The percentage increase in students' VO2Max predictions after participating in the passing on the proper exercise is 88.87%. In line with this research, the survey results measuring the VO2Max capacity of male futsal players were 47.10 ml/kg/min (Allsabab & Sugito, 2021). This means that through the application of the passing on the suitable training model for futsal extracurricular students at SMKN 10 Makassar, it is close to the average VO2Max prediction of futsal players in general.

## CONCLUSION

Based on the results of data analysis using the t-test, the value of  $t_{\text{count}} = 25,414 > t_{\text{table}} = 1,717$  (sig.  $0.000 < \alpha = 0.05$ ), which indicates that there is a significant effect of implementing the passing on the right exercise model in increasing the vo2max capacity of futsal extracurricular students. Smkn 10 makassar. The average pretest value obtained is 36.58 ml/kg/min while the post-test value is 41.16 ml/kg/min, so it can be said that there is an increase in the vo2max capacity of futsal extracurricular students at smkn 10 makassar before and after passing on the right exercise by 4,58 ml/kg/min.

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5. Students participating in futsal extracurricular at SMKN 10 Makassar are the samples in this study.
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