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Differences in Interval Training and Fartlek Training Methods on Increasing VO2MAX in Pembalang FC Regency Football Players North Luwu

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Abstract

This research aims to increase VO2max in Pembalang FC football players, and this is realized in the form of research using Interval Training (IT) Exercises and Fartlek Exercises to Increase VO2max for Pembalang FC Football Players. Through the theme raised by this research, it is hoped that it can be a solution for the Pembalang FC football team to overcome the problems of the players and the team itself. The research design that the author used in this research was a pre-experimental design. This research will use a total sampling technique by taking the entire population, namely 30 people. Then they will be divided into two training groups, each consisting of 15 people. This research will use a total sampling technique by taking the entire population, namely 30 people. Then they will be divided into two training groups, each consisting of 15 people. 2 on the Independent Sample t test on Interval training and Fartlek training. The basis for decision making to determine the difference is if the sig (2-tailed) value is < 0.05 then there is a significant difference, if the sig (2-tailed) value is > 0.05 then there is no difference. The results obtained in the difference test are sig. (2-tailed) > 0.05 so it can be concluded that there is no difference in the increase in VO2Max between Interval Training and Fartlek training.

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INTRODUCTION

The physical component can be achieved with well-programmed training (Indrayana & Yuliawan, 2019). Of these physical components, the author will only examine increasing VO2max through interval training and fartlek training methods. There are several forms of physical exercise, one of which is based on the use of oxygen and the energy systems needed in physical activity, including aerobic and anaerobic. According to (Novita Sari Harahap & Urat Purnama Pahutar, 2017) Oxygen consumption in individuals who have often done aerobic activities is more efficient, because the body's oxygen use is already at a stable and fast pace compared to those who have not been trained.

Fartlek training provides an increase in BBG futsal players in terms of VO2Max ability. Fartlek training itself has characteristics in its implementation in training by jogging, walking and sprinting, as we know these characteristics are in playing futsal, and in implementing training the Fartlek training method can be carried out in open nature (Pranata, 2020). After using the Fartlek UKM U-16 futsal training method, Rranggo experienced an increase in his VO2Max ability (Iskandar, 2019). Using the Fartlek training method increases the VO2Max capacity of futsal players on the Soedirman VII expedition (Festiawan et al., 2020). Through the structured Fartlek training method, the VO2 Max ability of SMK Negeri 1 Surabaya futsal players increases (Fuadi & Jatmiko, 2020). VO2Max has increased by using the fartlek training method (Syaroni & Kusuma, 2020). Fartlek training can improve VO2Max performance in a futsal player (Aditya et al., 2018). Navigator FC futsal players have improved by using the Fartlek training method through a program prepared (Sulingallo et al., 2022).

Physical activity in sports is divided into two, namely, aerobic and anaerobic. Physical exercise can be divided into various forms. One of these divisions is based on the use of oxygen or the dominant energy system used in an exercise, namely aerobic and anaerobic exercise. Aerobic exercise is exercise that uses energy that comes from burning with oxygen, and requires oxygen without incurring an unpaid oxygen debt. Examples of aerobic exercise are running, walking, treadmill, cycling, swimming. Meanwhile, anaerobic exercise is exercise that uses energy from combustion without oxygen, in this case the exercise creates an oxygen debt or discharge. Examples of anaerobic exercise are short distance sprinting, weight lifting and fast cycling. This means that almost all the energy required for muscle activity is produced by aerobic and anaerobic processes. The effect of aerobic exercise is cardiorespiratory fitness, because exercise can increase oxygen uptake, increase the capacity of the blood to transport oxygen and lower the pulse rate during rest and activity. Other benefits, aerobics can increase the number of microbes, reduce the amount of fat in the blood and increase fat burning enzymes.

In interval training, there is a significant effect produced by interval training which was found on the VO2Max results (Taufik et al., 2021). Extracurricular participants at SMA Negeri 1 Slawi in 2019 experienced an increase in their VO2Max abilities after being given the interval training method (Alkayis & Soedjatmiko, 2019). Using the interval training method, Adrenaline FC Padang futsal players showed an increase in VO2Max ability (Sepriadi et al., 2018). If you look at the increase, the Interval Training method shows good results with an increase in VO2Max capacity (Festiawan et al., 2021).

Assessment of a person's fitness in carrying out activities is by measuring Vo2max. Vo2max is the maximum amount of oxygen in milliliters, which can be used in one minute per kilogram of body weight. People who are in good shape have higher VO2 max values and can perform more vigorous activities than those who are not in good condition. Vo2max is the highest level of oxygen and can be used by an individual's body in carrying out sports activities. With certain exercises, cardiorespiratory endurance can increase. The lung function capacity of trained people, for

example sports athletes, is better than untrained people. The higher a person's physical abilities, the more able they are to cope with the workload given, or in other words, the higher the person's productivity ability. . According to (Boy Indrayana & Ely Yuliawan, 2019) Vo2max is also said to be maximum aerobic capacity which basically illustrates high motor capacity rather than individual aerobic processes.

The process of improving an individual's physical condition requires a programmed and regular training method. There are training methods that researchers want to use in this research, namely interval training and fartlek training. From several components of physical training to increase VO2max, researchers chose interval training and fartlek training. Interval training is the most appropriate method to improve physical quality and prioritizes providing rest time between sets with the main target being energy fitness.

Fartlek practice. is a method of physical training by changing speeds. The implementation of the fartlek method is a variation of jogging, walking and sprinting activities. According to (Ilmiyanto & Budiwanto, 2017) fartlek training has a significant effect on increasing cardiovascular endurance, and fartlek treatment makes more changes to an individual's vo2max. The intensity of fartlek training is formulated as the longer the distance traveled or the longer the time to sprint, the higher the intensity and vice versa. Fartlek is a form of training that is very good for developing endurance in almost all sports that require endurance. This method is more often used as a variation of training so that athletes don't get bored quickly and is carried out during the preparation period.

Surveys conducted by researchers show that players still have a very low vo2max condition. This can be seen when participating in a soccer tournament. Players can only play the game optimally in 20 minutes, meaning that after 20 minutes of match time the players are starting to get tired and are already tired. unable to show good performance which has an impact on the technique and tactics as well as the psychology or mentality of the players. Likewise, when holding exhibition matches or trials with other teams, it is still very difficult for players to show good performance.

The aim of the researcher in taking this theme is because there are several problems in the Pembalang FC football team. Solutions that must be provided include, in accordance with the observations that the researcher has made that there is no appropriate training method for the Pembalang FC players so that the players find it quite difficult to improve their fitness. and physical condition, a well-arranged training program can develop all the skills or potential that exist in each individual, including in terms of physical, tactical, technical, strategic and mental aspects (Hanafi, Brahmana, Utomo, 2019). The new thing that researchers want to know about the blood pressure of players is how high-intensity physical activity affects blood pressure and the benefits given to players regarding blood pressure.

Based on the description above, the author felt compelled to conduct research with the aim of finding out whether there was an increase in VO2max in Pembalang FC soccer players, and this was realized in the form of scientific research entitled "The Difference Between Interval Training (IT) and Fartlek Training Methods Against Increase in VO2max in Pembalang FC Football Players. Through the theme raised by this researcher, it is hoped that in the future it can become a solution for the Pembalang FC football team to overcome the personal problems of each individual or the players and the team itself.

METHODS

This research has two independent variables and two dependent variables, the independent variables are training interval and fartlek, then the dependent variable is vo2max. The research design that the author used in this research is a pre-experimental design. The population that will be used in this research is Pembalang FC soccer players, which has a population of 30 people.

This research uses an experimental method approach. The subjects used in this research were the Pembalang FC football club, North Luwu Regency, with a sample size of 30 players. The place where this research was conducted was located in North Luwu Regency and was conducted on November 1 - December 20. This research was carried out over 16 meetings but before being given practice the samples were given a pre-test and after being given a post-test.

This research instrument uses a test instrument with the test used is the multistage fitness test. The data analysis technique used is the independent sample t test. starting from the preparation of the researcher making observations at the Pembalang FC football club. after getting data that became a problem in terms of vo2max of players at the Pembalang FC football club. carry out planning regarding appropriate training programs to solve and provide solutions to these problems. Researchers divided the players into two training groups, each consisting of 15 people, group (it) and fartlek.

In the implementation, there were 2 training groups consisting of a training group (it) of 15 people and a fartlek group of 15 people carrying out a pretest to take initial data on vo2max and blood pressure for all participants or both training groups. carry out treatment to test participants or each experimental group during 16 meetings held three times a week. After the treatment has been carried out 16 times, a posttest is then carried out, where Vo2max and blood pressure data will be taken. data analysis after obtaining the data through the tests that have been given, then analysis is carried out. After the analysis is carried out, conclusions can be drawn.

RESULTS AND DISCUSSION

In the independent sample t test on Interval Training and Fartlek exercises. The basis for decision making to determine the difference is if the sig (2-tailed) value < 0.05 then there is a significant difference, if the sig (2-tailed) value > 0.05 then there is no difference. The results obtained in the different tests were sig. (2-tailed) > 0.05 so it can be concluded that there is no difference in the increase in VO2Max between Interval Training and Fartlek training.

Table 1. Population Character Test

No	Characteristics	Categories	Amount N	%
1	Age (Years)	15 – 16	23	76.7
		17 - 18	7	23.3
2	Height (M)	154 – 160	5	16.7
		161 – 166	20	66.6
		167 - 172	5	16.7
3	Body Weight (Kg)	43 – 51	8	26.7
		52 – 59	15	50
		60 – 68	7	23.3
4	Body Mas Index (BMI) (Kg/M^2)	18 – 19	5	16.7
		20 – 21	15	50
		22 - 24	10	33.3

In table 1, it can be seen that the characteristics of the population with the highest age are between 19 and 20 years old with a percentage of 76.7%, while those aged 21 to 22 years are 7 with a percentage of 23.3%. Then, for height, the vulnerable 154 to 160 have the highest number of 5 with a percentage of 16.7%, while the vulnerable 161 to 166 number 20 with 66.6% and 167 to 172 have the number 5 with a percentage of 16.7%. Then, the highest number is 15 with a percentage of 50%. Meanwhile, the highest body mass index (BMI) value is between 20 and 21 with a percentage of 50.

Table 2. IT and Fatlek Difference Test

(Mean±SD)	t	Df	Sig.(2-Tailed)			
Interval Training	Pretest Posttest	5.7400±0.4808	46.240	14	0.000	
Fartlek	Pretest Posttest	4.7533±0.7170	25.676	14	0.000	

The results of the research on the difference in the increase in VO2Max in the Fc counter in Interval Training and Fartlek exercises after being added up using the formula post-test – pre-test x 100% to obtain the percentage increase in pre-test and post-test data in both groups aged 19 and 21 years on Interval Training and Fartlek exercises. The 19 to 21 year old age group experienced an increase in VO2Max, for Interval Training by 15% and Fartlek by 13% so it can be concluded that there is a difference in the increase in VO2Max in High Intensity Interval Training and Fartlek training.

One of the most important tasks in training an athlete is to increase the level of aerobic physical fitness so that there is a burden in improving the condition of the heart and lungs. Pay attention to special training that must be given to the development of groups that do the main work in increasing Vo2max (Sulaymanov Qurbanali, 2023). Aerobic exercise (AT) training in athletes by adding RT to CR+AT is well tolerated and results in increased leg strength and leg muscle quality without reducing SM loss or further improving exercise capacity (VO) or quality of life such as increasing oxygen uptake, blood capacity in transporting oxygen (Brubaker et al., 2023).

The results obtained in the third hypothesis test explain that there is no more striking effect on Interval Training and Fartlek training, with the player's age. The two training methods given to the U19 and U21 groups both experienced an increase in the players' VO2Max abilities. In the 19 and 21 year age group, when given Interval Training and Fartlek exercises, both experienced an increase in VO2Max condition. The research results obtained in the third hypothesis test obtained a mean sig of 0.000 and a value of 0.000.

The presentation is 15% Interval Training while the Fartlek value is 13%, which means there is no significant interaction between Interval Training and Fartlek training, with the age of 19 years and 2 years of player increasing the player's VO2Max.

VO2Max is the maximum volume processed by the human body when carrying out intensive activities. This max volume is a level of body capability expressed in liters per minute or milliliters/minute/kg body weight (Wahyuningsih & Raharjo, 2015). In the game of futsal, each player must be required to play with high intensity because in the game of futsal the transfer of the ball from one player to another player must be fast and requires the player to continue to move quickly. Therefore, a futsal player must have a good VO2Max because the player can play and survive for a long time on the field and the main goal is not to get tired easily, in other words, the fatigue time for each athlete is very high. This has been proven through research which states that endurance (VO2Max) has an influence on the game of futsal (Sambora & Ismalasari, 2021). Apart from that, the endurance of the heart and lungs is a tool for supplying oxygen for long muscle work (Arifin et al., 2019). Increasing VO2Max typically utilizes sustained training at moderate intensity, characterized by long duration (30+ minutes) at moderate intensity (~65% VO2Max), repeated several times per week (Willoughby et al., 2016). In other words, if a futsal team wants to achieve a good performance, the physical condition of a player must be good, especially in the endurance component or VO2Max.

CONCLUSION

The Interval Training training model, which in its implementation, both provides an increase in the player's VO2Max. There was a change in Interval Training training of 14.5%, Fartlek training 12%. IntervalTraining and Fartlek exercises both have an influence on VO2Max. The results obtained also stated that there was no significant difference in Interval Training and Fartlek training in increasing VO2Max for Pembalang Fc football school players.

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