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### The Effect of Endurance Training Method and Vo2max Ability on Fatigue Time in Women's Futsal Universitas Teknokrat Indonesia

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#### Abstrak

This study aims to overcome the problems that occur in the puri futsal UKM of the Indonesian Technocrat University which experiences problems in low fatigue time. The purpose of this research is to provide farlek training methods and interval training that are expected to increase the fatigue time of futsal putri SME players. The research method used in this study is an experimental method with a factorial design, there are three groups in this study including the fartlek group, interval training group, and control group with a total of 30 samples and a total of 16 training meetings. This study focuses on the time of fatigue. From the results of this study, it was found that the interval training method had a better influence than fartlek and control classes.

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## INTRODUCTION

Futsal is a sport similar to football, except that the field is smaller than football (Amelia et al., 2022). The futsal game is played between two teams, (Matias et al., 2022). The exercise process and method must be carried out during the exercise by the trainer (Asmara et al., 2023). futsal is one of the big ball games taught in physical education, sports and health subjects (Sofyan et al., 2022). Futsal is a sport played by two teams, each team consisting of 5 players, one of which is a goalkeeper (Hamzah et al., 2018)

Futsal is growing rapidly among the community, both in education, offices and the general public. Futsal games are not only used as a recreational sport, but have become a sport of achievement that is competed in various regional, national and international events (Kharisma & Mubarok, 2020). The game of futsal is currently loved by many people, especially young people both men and women (Hidayati et al., 1896).

Because we know that every sport has a different ciiri (Raharjo, 2012). The physical condition component of futsal games has differences with other sports. The main factor needed is the level of physical condition so that you are able to do futsal game activities without experiencing excessive fatigue because you have good fitness.

Heart and lung endurance is a respiratory and circulatory system in the body that is used to supply oxygen during activities (Rizqi & Putra, 2020). In addition, the endurance of the heart and lungs is a tool in supplying oxygen for

long muscle work (Arifin et al., 2019). This tenunya is connected with endurance.

One of the characteristics of futsal is that it requires endurance for a relatively long time (Kharisma & Mubarok, 2020). Cardiorespiratory fitness is assessed with maximal oxygen (VO<sub>2</sub>Max) (Toulouse et al., 2021). Maximal aerobic power (VO<sub>2</sub>Max) is a well-established determinant of endurance performance (Parmar et al., 2021). Standard measure of aerobic strength with VO<sub>2</sub>Max assessment (Esco et al., 2014)

A study says fatigue can affect decision making (Ferdiansyah et al., 2020). In addition, when tired, SMEs may also lack motivation to produce efforts that are not optimal for competitive goals (Halsen, 2014). The time of fatigue is a problem experienced by women's futsal SMEs of the Indonesian Technocratic University.

The problem of fatigue time where the fatigue time owned by women's futsal UKM is quite low, shown by field observation using the results of the Bleep Test or 20 meters back and forth, where the fatigue time is adjusted to the level of each return in the Bleep Test by getting an average fatigue time value of 4.47 minutes, with the smallest fatigue time is 3.37 minutes and the largest fatigue time is 5.6 minutes. Of course, with low fatigue time can have an impact on the performance of futsal SMEs.

Interval training is a form of exercise that has intervals in the form of rest periods in it (Salahudin, 2017). The implementation of the exercise itself is to run – rest- run- rest and so on repeatedly (Randani & Wahyudi, 2021). Interval training is a very important exercise to

be given in a comprehensive training program (Randani & Wahyudi, 2021)

Fartlek exercises can be used in increasing VO<sub>2</sub>Max and improving physical condition in the form of jogging, walking, and sprint exercises (Festiawan et al., 2020). Fartlek himself someone can set the desired running speed when doing fartlek training according to physical conditions and desires (Festiawan et al., 2020). Fartlek itself has a goal to restore, build, and maintain individual physical condition, so it is very positive for all sports to prioritize dominant endurance (Almy & Sukadiyanto, 2014).

Interval training carried out programmatically can show an increase in VO<sub>2</sub>Max. The impact given can increase VO<sub>2</sub>Max futsal players, so to increase VO<sub>2</sub>Max in futsal players interval training methods can be recommended (Radif et al., 2019). Interval training can increase aerobic and anaerobic strength in female futsal players after six weeks, this is an effective way exercise to improve heart performance (Saeedy et al., 2016). Fartlek training provides improvements to BBG futsal players in terms of VO<sub>2</sub>Max ability, Fartlek training itself has characteristics in its implementation in training with jogging, walking, and sprints, as we know these characteristics are in playing futsal, as well as in the implementation of Fartlek training methods that can be done in the open (Pranata, 2020).

Previous studies will be the initial guidelines and foundations for researchers to carry out further research related to the above variables. The novelty in this study is the

fatigue time variable that has not been found in previous studies. Therefore, according to the description above regarding the problems experienced by Women's Futsal UKM, thus the author in this study aims to provide Fartlek and Interval Training training methods at the Women's Futsal UKM of the Indonesian Technocratic University to find out how influential the Fartlek and Interval Training Training Methods are Against Time Fatigue at Women's Futsal UKM Indonesian Technocrat University Bandar Lampung, Lampung.

## METHODS

This study is an experimental study with a factorial design with the population used is the women's futsal UKM of the Indonesian Technocrat University of 30 people with the use of a total sampling of 30 people.

The preparation phase begins with field observation carried out directly at the women's futsal UKM who watch live training and matches. After getting problems with SMEs, girls in terms of time are exhausted. Then plan a suitable exercise method to solve the problem based on previous research. Before going to the research stage, researchers divided the sample into three groups consisting of two experimental groups and one control group. Each group had 10 samples, a fartlek group of 10, an interval group of 10, and a control group of 10

The research phase consisted of three groups consisting of experimental group one using the fartlek method, experimental group two using the interval training method, and the control group was only given exercise

supervision. Pretest will be conducted to take data Fatigue Time will be taken given to all each experimental group and control group to find out the initial data of the sample. Treatment will be given to each experimental and control group for 16 meetings. Posttest will be given after 16 treatment appointments. Where the Fatigue Time data will be retrieved.

The data analysis stage with after the data is obtained from the tests carried out, the data will be analyzed. The analysis that will be used in this study is a two-track ANAVA. After the analysis is carried out, conclusions will be drawn.

**FINDINGS AND DISCUSSION**

The results of research on fartlek and interval training and VO2Max exercises to increase fatigue time in women's futsal UKM

Universitas Teknokrat Indonesia in Bandar Lampung, Lampung. This research has been carried out from January 23, 2023 to February 27, 2023 which was carried out at the Sports Center of the Indonesian Technocratic University.

**Findings**

The population used in this study was female futsal UKM players of the Indonesian Technocrat University, with a sample of 30 people who were given training each 10 with fartlek training, 10 with interval training, and 10 was a control group with the aim of increasing the fatigue time of female futsal UKM players. The following are the results of the characteristics of population data that have been obtained are as follows.

Table 1 recapetulation of population data

<i>N = 30</i>		
<b>NO</b>	<b>Category</b>	<b>Mean ± Std. Deviation</b>
1 .	Age (Years)	19 ± .99
2 .	Height (M)	160 ± 5.12
3 .	Weight (kg)	56 ± 6.37
4 .	Body Mas Index (BMI) (kg/m <sup>2</sup> )	21.7 ± 1.80

Testing of research hypotheses is carried out based on the results of data analysis and interpretation of two-way ANAVA analysis or two-way ANAVA. The order of hypothesis testing results is adjusted to the hypothesis that has been formulated.

The two-way ANAVA test was carried out using the SPSS version 25 for windows program. The following are the results of research and discussion.

Table 2 Data Descriptive Statistics Fatigue Time

<b>Exercise</b>	<b>VO2Max</b>	<b>N</b>	<b>Mean ± Std. Deviation</b>
<i>Fartlek's exercise</i>	Tall	5	9.82 ± 1.6
	Low	5	6.81 ± .48
	Total	10	8.32 ± 1.9
<i>Interval Trainng</i>	Tall	5	10:00 ± 1.3
	Low	5	7.00 ± .48

Control Group	Total	10	8.50 ± 1.8
	Tall	5	7.32 ± .62
	Low	5	7.08 ± .72
Total	Total	10	7.20 ± .65
	Tall	15	9.05 ± 1.7
	Low	15	6.96 ± .54
	Total	30	8.01 ± 1.6

After the ANAVA test, the results in table 4.6 showed that the F value was 5.446 and the significant p value was  $.011 < 0.05$ , in other words, the results obtained could be accepted. There are differences in influence. Based on the

results of the analysis that has been carried out, the average results in fartlek training were 8.3, then the training interval was 8.5, and the control group was 7.2

Table 3 ANAVA Test Results

<i>Source</i>	<i>Df</i>	<i>F</i>	<i>Sig.</i>
Exercise	2	5.446	.011

Of the three groups, the interval training method has a higher average post test score. hereby states that there is a difference between the *fartlek* training method, *interval training*, and control group against the fatigue time of women's futsal UKM Indonesian Technocratic University, there is a difference.

### Discussion

Based on the results of the hypothesis test showed that between the three research groups had a different influence on fatigue time, in the farlek training method group and the interval training method had a better influence than the control group, but when narrowed back the interval training method has a better influence on the clergy time where it can be seen from the value obtained through the results of the existing post-test.

Previous researchers showed that futsal players were able to improve using Fartlek's training method through a compiled program (Sulingallo et al., 2022). Increased VO2Max ability after being given the interval training method (Alkayis & Soedjatmiko, 2019). Interval Training and Endurance training have a good effect on increasing VO2max capacity, but Interval Training is more efficient, effective, and attractive (Syamsudin et al., 2021). After that, interval training can increase aerobic and anaerobic strength in female futsal players is an effective way to improve heart performance (Saeedy et al., 2016).

A study says fatigue can affect decision making (Ferdiansyah et al., 2020). In addition, when tired, SMEs may also lack motivation to produce efforts that are not optimal for competitive goals (Halsen, 2014). The main factor needed is the level of physical condition

so that it is able to carry out futsal game activities without experiencing excessive fatigue due to having good fitness (Kharisma & Mubarak, 2020).

## CONCLUSION

After this study, it was found that there was a difference in influence with the *farlek* training method and the interval training method had a better influence than the control group, but if narrowed back the interval training method had a better influence on fatigue time in women's futsal smes of the indonesian technocrat university bandar lampung.

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