

The Effect of Partlect Exercise and Circuit Training on VO₂Max of Basketball Extracurricular Students at SMA Negeri 1 Lahat

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Abstract: This research is quantitative with the type of experimental design. This study aims to determine 1) the effect of fartlek training on increasing the vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat, 2) the effect of circuit training on increasing the vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat, 3) differences in the effect of fartlek and circuit training on increasing the vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat. The sample in this study were 30 students who took part in basketball extracurricular activities at SMA Negeri 1 Lahat. The data analysis technique used the T test. The prerequisite test for data analysis used the normality test with the Lilliefors test with $\alpha = 0.05$ and the homogeneity test of variance with the Barlet test $\alpha = 0.05$. The results of the study 1. There is a significant effect of Fartlek training on the vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat, 2. There is a significant effect of Circuit Training on the vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat, 3. There is a significant difference in Fartlek training and circuit training exercises.

Keywords: Circuit Training, Fartlek Training, VO₂Max

A. Introduction

Basketball game is a group sports game using a large ball consisting of two teams. Each team consists of five people who compete with each other and try to score points by putting the ball into the opponent's basket. This sport is usually played in a small room and is relatively easy to learn because of the large shape of the ball, so it doesn't make it difficult for players to reflect or throw the ball (Susanto, 2016). The aim of the game of basketball is to make as much value as possible by putting the ball into the opponent's basket and preventing opposing players from scoring (Randi, 2015).

The game of basketball is a unique sport because it was created accidentally by a sports teacher. The origin of this basketball game is Dr. James Naismith, a sports teacher from Canada in 1891 who taught in college for professional students at the YMCA (a Christian youth organization) in Springfield, Massachusetts, made a game in a closed room whose purpose this game was to fill the students' time. on winter break in New England. Basketball is a term spoken by one of his students. Until now,

basketball is very popular, including in Indonesia and has become one of the favourite extracurricular activities favoured by students in both junior high schools (SMP) and high schools (SMA).

Extracurricular activities are very positive activities to be developed in the education unit. Based on the Regulation of the Minister of Education and Culture No. 62 of 2014 concerning Elementary and Secondary Education Extracurriculars that extracurricular activities are curricular activities carried out by students outside of study hours intra-curricular activities and co-curricular activities, under the guidance and supervision of educational units, aiming to develop potential, talents, interests, abilities, personality, cooperation, and student independence optimally to support the achievement of educational goals (Regulation of the Minister of Education and Culture No. 62 of 2014).

Basketball sports extracurricular activities include types of extracurricular activities for aptitude training and interest training which are of course expected to develop students' potential, talents, interests, abilities, personality, cooperation, and independence optimally. At SMA Negeri 1 Lahat there are lots of extracurricular activities that students can choose from, one of which is basketball extracurricular. The basketball extracurricular at SMA Negeri 1 Lahat is one of the most popular extracurricular activities for students. Based on the results of observations in the last 3 years, this can be seen from every year the students who take part in this extracurricular are on average 20 students who take an active part in the training. The school also supports this basketball extracurricular activity by providing adequate facilities and infrastructure such as a good basketball court, sufficient number of balls, and other training equipment.

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Ideally, the target of developing extra-curricular sports for any sport in schools is more appropriate to fill empty time and provide additional time for students to get to know and be involved in positive activities at school. Not having an achievement target in this case in the sport of basketball. However, explicitly sports achievement targets are often expected by teachers, school principals and parents of students. In the end, attacking achievement becomes a necessity for students, who of course hope to achieve with conditions full of problems and limitations. So that the stages of coaching basketball in schools have the same stages as basketball training in professional basketball academies. This means that a training process is needed that must be planned in a systematic and structured manner over a long period of time. According to Langga & Supriyadi, (2016) to obtain maximum sports performance requires

systematic and structured planned training to improve movement abilities both physically, technically, tactically, and mentally (Langga & Supriyadi, 2016).

There are several factors that influence athlete performance, namely technical mastery, physical, psychological conditions, and tactics or strategies in competing (Wahyuni & Donie, 2020). According to Mahfud et al., Physical condition is one of the main elements in fostering sports achievement, one part of the physical condition training process, namely aerobic endurance (vo2max) (Mahfud, et al., 2020).

VO₂max is the maximum volume of oxygen or a level of body ability expressed in liters per minutes or millilitres/minute/kg body weight (Nirwandi, 2018). VO₂max can also be interpreted as a person's maximum ability to consume oxygen during physical activity at an altitude equivalent to sea level. VO₂max reflects pulmonary, cardiovascular, and haematological conditions in oxygen delivery, as well as the oxidative mechanism of the muscles that perform the activity (Uliyandari, 2009).

Every sport certainly requires VO₂max to support in the match. Someone who has high VO₂max is not only able to perform endurance activities well but more than that, they will be able to restore their physical condition with faster than people who have a low VO₂max. So that the athlete's ability to carry out the next activity faster and be able to last for a long amount of time (Busyairi & Ray, 2018).

Fartlek is a form of exercise for increase VO₂Max. Fartlek training is an endurance system for build, develop, or maintain the body condition of an athlete (Sukadiyanto, 2011). Meanwhile, according to Lutan, (2001) fartlek training has a very good effect on development of technical skills, strength, endurance and mental fitness (Lutan, 2001). The fartlek training method is a rather scientific combination of intervals and exercises sustainable (Lubis, 2013). Fartlek combines continuous training and interval training in a non-stop format structured. As the name suggests, this method combines continuous running exercises, at varying speeds with a predetermined duration (Greene & Pate, 2015).

In addition to fartlek training methods that can be used to increase vo₂max, namely circuit training. Circuit training is a form of training design that is arranged based on benchmarks where each stake performs a predetermined type of exercise. One round of the circuit is said to be over if someone has completed the practice at each station with the number that has been given (Trisandy, et. al., 2019). Circuit training can be interpreted as a program or training stages consisting of several stations or points where at each point the athlete must perform a type or pattern of exercise with predetermined movements (Fahrizqi, et. al., 2021).

Circuit training is said to be complete if the athlete has followed and completed the movements at all points according to predetermined doses or conditions and is carried

out repeatedly, which means that each movement must be trained in stages and carried out repeatedly. Circuit training is a form of exercise to improve physical fitness that does not require a lot of facilities and costs and is not boring because there are variations in the exercises (Afdinda, et. al., 2021).

As a result of the saturation experienced can cause not optimal in exercise and even avoid exercise. In order to reduce boredom during exercise, trainers can vary indoor exercises with the aim of increasing students' aerobic endurance. There needs to be a modification of the aerobic endurance training model that is tailored to the needs.

B. Methods

This research was conducted at SMA Negeri 1 Lahat. The research method used is quantitative research. This type of research is a two-group pre-test and post-test experiment (Alam, 2019; Conceição et al, 2017). There were two groups given different treatment. Experimental research has treatment, whereas in naturalistic research there is no treatment. This study also compared the differences in the effect between samples given the fartlek training treatment and samples given the circuit training treatment on maximum work capacity (VO₂ Max).

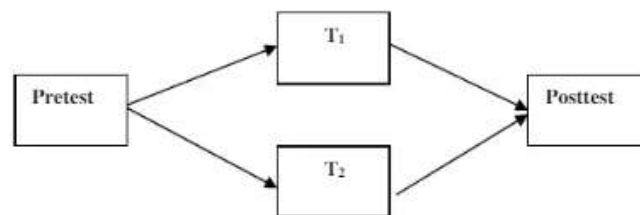


Figure 1. Pre-test Post-test Group Design
Source: (Sugiyono, 2019)

The population in this study were all male basketball extracurricular students at SMA Negeri 1 Lahat, totalling 30 people. While the samples were 30 students. The sampling technique uses total sampling. Total sampling is a sampling technique where the number of samples is the same as the population, so the sample is the entire number of basketball extracurricular students at SMA Negeri 1 Lahat, totalling 30 people. The data collection technique is by carrying out tests on the sample. The test used is a test to measure vo₂max, namely the bleep test. Furthermore, the data is tested with the prerequisites for normality with Lilliefors test and hypothesis testing with the t test (parametric statistical test with the Paired T-Test).

C. Results and Discussion

This experimental research involved two types of variables, namely the dependent variable and the treatment variable. The dependent variable is the maximum work

capacity (VO₂max) obtained by students after experiencing the training process. The treatment variables are Fartlek training and circuit training. From the results of the bleep test which is an indicator for the level of maximum working capacity (VO₂ max) it can be seen from the pre-test and post-test of the two groups.

Table 1. Pre-test and Post-test

Statistics	Pre-test Fartlek	Post-test Fartlek	Pre-test Circuit Training	Post-test Circuit Training
N	30	30	30	30
Mean	33,49333	39,1833	34,006667	37,16667
St. Deviation	6,116452281	6,293734	5,574197535	5,353911
Maximum	42,5	48,2	42,5	46,2
Minimum	25,3	32,8	26,4	30,2
Sum	1004,8	1175,5	1020,2	1115

Table 2. Normality Test

Statistics		L-count	L-table	Normalities
Fartlek	Pre-test	0,144384026	0,161	Normal
	Post-test	0,1544444	0,161	Normal
Circuit Training	Pre-test	0,159364	0,161	Normal
	Post-test	0,144168	0,161	Normal

Table 3. Hypothesis Test

Statistics	P(T<=t) two-tail	Note
Fartlek	0,0000	< 0,05 significant effect
Circuit Training	0,0000	< 0,05 significant effect

From the table above it can be seen that the data is normally distributed and the results of the hypothesis test show 1) there is a significant effect of fartlek training on the VO₂max ability level of basketball extracurricular students at SMA Negeri 1 Lahat; 2) there is a significant effect of circuit training on the VO₂max ability level of basketball extracurricular students SMA Negeri 1 Lahat; and 3) there are differences in the effect of fartlek training and circuit training on the level of vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat (Ardiansah, & Sugiyanto, 2018; Wisnuaji, et al, 2017).

D. Conclusion

From the results of the research that has been done about the effect of fartlek training and circuit training on the vo₂max ability of Basketball Extracurricular Students at SMA Negeri 1 Lahat, it can be concluded that 1) there is a significant effect of fartlek training on the level of vo₂max ability of basketball extracurricular students at SMA Negeri 1 Lahat; 2) there is a significant effect of circuit training on the vo₂max ability

level of the basketball extracurricular students at SMA Negeri 1 Lahat; and 3) there are differences in the effect of fartlek training and circuit training on the level of vo2max ability of basketball extracurricular students at SMA Negeri 1 Lahat. Fartlek training has a significantly more effect than circuit training training on vo2max abilities of Basketball Extracurricular Students at SMA Negeri 1 Lahat.

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