JUARA: Jurnal Olahraga

E-ISSN 2655-1896 ISSN 2443-1117

https://doi.org/10.33222/juara.v8i2.3136

The Effect of Circuit Training Exercise on The Physical Conditions of Football Athletes Universitas Muhammadiyah Gorontalo

Giofandi Samin[1*], Gilang Ramadan[2]

[1,2]DepartementSport Science, Universitas Muhammadiyah Gorontalo, Jl. Prof. Dr. H. Mansoer Pateda, Gorontalo District, Gorontalo Province 96181, Indonesia

*e-mail: giofandy.samin@gmail.com

Info Artikel

Article History:

Received 30 March 2023

Approved 11 June 2023

Published 12 June 2023

Keywords:

Circuit Training, physical condition, VO2Max

Abstract

This study aims to find out information about the effect of circuit training on physical conditions. This research is a pre-experimental study conducted using a one-group pre-test-post test design. Experimental research is a way to look for a causal relationship (causal relationship) between two factors intentionally caused by researchers by reducing other disturbing factors. The number of samples is 17 people obtained from the total sampling technique. The study was conducted for 6 weeks, with 3 meetings each week. The instrument used to measure physical condition was the VO2Max (Bleep) test. The results of data analysis using the t-test showed a significant increase in the ability of physical conditions due to the influence of circuit training exercises with (t-count 18.59 > t-table 1.74). Based on the data analysis, it is known that t-count> t-table, it can be concluded that circuit training exercises affect the ability of physical conditions.

✉ Alamat korespondensi: Jl. Prof. Dr. H. Mansoer Pateda, Gorontalo

E-mail : giofandy.samin@gmail.com

INTRODUCTION

The development of sports today, experiencing many changes, ranging from regular coaching, and a tiered competition system, causes various kinds of training methods carried out by each sport, one of which is football (Tribinuka, 2016). Football is a team game that each has tasks such as beck, midfielder, attacker, and goalkeeper, in football there are also physical, tactical, technical, and mental elements, which then football become very interesting to be discussed (Muhammad, 2018)

Basic soccer skills are indeed very complex; besides having good tactics and techniques, players must also have good physical abilities (Ridwan, 2018). Without a good physique, it will be very difficult for players to progress in training or during matches, so no matter how good the form of tactics and techniques, if not equipped and balanced with excellent physical condition, it will be difficult to win (Weda, 2021). The improvement in physical condition has led to various physical training methods by many clubs and special football coaches in Gorontalo province.

Physical condition is one important element to achieve achievement in sports, in addition to mastering technique, tactics, and mental (Lufisanto, 2015). How important and influential it is to achieve a sporting achievement depends largely on the needs and guidance of each sport. On the other hand, many sports require physical conditions (Ridwan, 2018). Meanwhile, there are sports whose achievements are determined by mastery of physical condition, technique, and mental, such as in the game of football, volleyball, basketball, and so on. Therefore, to know the components of physical condition needed and how much physical condition is needed, and how to improve it through exercise, there needs to be a thorough understanding of the physical condition.

Many players experienced various obstacles during the match, usually suddenly experiencing fatigue and often experiencing injuries (Bafirman &; Asep et al., 2018). This is the basis that coaches do not understand physical training properly and correctly, even though, as a physical trainer, they are required to understand and know specifically the needs of movement in football so that then players can easily master the training material provided (Samin et al., 2022) currently many of the coaches train only based on experience and intuitiveness, They perform exercises incidentally, imitating successful trainers and trying training models of unknown form. As a result, many athletes have injuries and fatigue, not even a few who experience *overtraining*. This kind of symptom is often experienced by many clubs in Gorontalo. The increased ability to exercise is inseparable from the appropriate exercise method. This is reinforced by (Adhi et al., 2017), bringing the process carried out scientifically by providing treatment programmatically to improve athletes' talents athletes skills and improve athletes ' physical condition.

This improvement in the physical condition causes various kinds of training

methods carried out by Muhammadiyah University soccer athletes. Since the establishment of the University of Muhammadiyah Gorontal football team, it still needs to be optimal in handling the training methods carried out. For this reason, there needs to be an approach, variation, or modification in the game or practice by using circuit training exercises.

Circuit training is an exercise system that can simultaneously improve the body's overall fitness, namely elements of power, endurance, strength, agility, speed, and other components of physical condition (Budi & Sugiharto, 2015). The circuit training method is one solution to increase a person's maximum oxygen volume (VO2Max).

From various points of view of coaches and sports coaches in recent years, the physical quality of UMGO soccer athletes has decreased; it can be seen that players often experience fatigue, such as running out of energy to block opponents and play the ball. In addition, athletes often lose important matches in various tournaments. This is what causes that physical condition to be very influential in football.

Based on the various descriptions above, researchers intend to conduct experiments to determine the effect of circuit training on improving the physical condition of soccer athletes at the University of Muhammadiyah Gorontalo. From this background, researchers tried to direct this study titled "The Effect of Circuit Training Training on Improving the Physical Condition of Football Athletes, University of Muhammadiyah Gorontalo."

METHODS

This research design uses Pre-Experimental research. This study used experimental methods. The goal is to look for the effect of certain treatments on others under controlled conditions.

This experimental design uses one group pre-test-posttest design. It is called Pre-experimental because this design believes that external variables affect the formation of dependent variables due to the absence of control variables. (Sugiyono, 2015) The authors used a one-group pretest-posttest research model design for a more specific experimental research design.

Research variables are attributes, traits, or values of people, objects, or activities that have certain variations determined by researchers to be studied and then draw conclusions. This study has two variables, namely independent variables (X) and bound variables (Y); the independent variable (X) referred to in this study is Circuit Training. While the dependent variable (Y) is Physical Condition.

By the problems to be studied in this study, the population is 28 football athletes from the University of Muhammadiyah Gorontalo. Given the limited population in this study, the entire number of samples in this study was 17 people. The samples in this study were taken using purposive sampling

techniques, which are sampling techniques with certain considerations.

According to the place of implementation of this study, the data obtained was sourced from the University of Muhammadiyah Gorontalo football team athletes. The instrument used in this study is the VO2Max test (bleep test). According to (Bafirman &; Asep et al., 2018), VO2 max is the maximum amount of oxygen delivered from the lungs to the muscles in milliliters or minutes per kilogram of body weight.

To answer the formulation of the research problem, researchers use data analysis techniques that aim to group data based on variables and types of respondents by testing research hypotheses using static t-test techniques.

The interpretation of the results of the t-test is carried out with t calculation results ($_{count}$) with the value of t list table (t $_{table}$) at a significant level of 0.05% and dk (degrees of freedom) = N-1. If the count is greater than the table, then $_{H0}$ is rejected, and H1 is accepted; this means there is a significant difference between the final test results of physical condition and the results before doing circuit training.

FINDINGS AND DISCUSSION

Study results of pre-experimental research conducted with 18 meetings. The results of data processing, both initial tests (pre-test) and final tests (post-test), then obtained data on the physical condition of athletes described in Table 1, as follows:

Table 1. Data Description of the Physical Condition of the Athlete

Description	Mean	Min	Max	Std. Deviation
Pre-test	12.17	8	16	2,12
Post-test	19.05	16	23	2,01

The description of the research data in Table 1 above shows the physical condition of athletes consisting of 17 samples; pre-test results were obtained with an average value of 12.17; The lowest score is 8, and the highest score is 16, with a standard deviation of 2.12. While the description of the data in the study showed the physical condition of athletes consisting of 17 samples, post-test results were obtained with an average value of 19.05; The lowest score was 16, and the highest score was 23, with a standard deviation of 2.01. Based on the treatment of the research results, it can be concluded that there is an influence of circuit training on the physical condition of football athletes at the University of Muhammadiyah Gorontalo.

Based on the results of descriptive analysis of initial test data and final tests in Table 2, it can be known the average results of athletes' physical condition using circuit training methods at the University of Muhammadiyah Gorontalo, soccer athletes, namely the average initial test (pre-test) 12.17

and the average final test (post-test) 19.05. Before conducting a hypothesis test analysis, testing the analysis's prerequisites is carried out. The analysis requirement testing is carried out with a normality test to determine whether the data in the study is normal. The Chi-squared formula performs the normality test. Based on calculations found (pre-test) = 0.0961 L_{hitung} and (post-test) = 0.0485 L_{hitung}; further known at α 0.05; L_{tabel}n = 17 is 0.206. So L_{hitung} for pre-test = 14.9489 and post-test = 8.6490 smaller than = L_{tabel} 0.206, the distribution of statistical data of the 17 soccer athletes can be declared normal.

From the results of the F test analysis in Table 5 above, a value of 1.11 was obtained, and at α 0.05 dk denominator n-1 (17 - 1 = 16 $F_{hitung}F_{tabel}$) and dk numerator n-1 (17 - 1 = 16), a price of 2.33 was found. So ≤ (= $F_{hitung}F_{tabel}F_{hitung}1.11 \leq F_{tabel}$ = 2.33). Based on the test criteria states if ≤, then accepted and rejected. Thus it can be concluded that the above data comes from a homogeneous population.$F_{hitung}F_{tabel}H_0H_a$

The influence test in this study was conducted to determine the effect of circuit training methods on the physical condition of soccer athletes at the University of Muhammadiyah Gorontalo. Influence testing in this study used t-tests. Based on the results of data calculations carried out with t-tests can be seen in Table 2 as follows:

Table 2. t-Test Results

Description	Average	T_{count}	d.k	T_{able}	Significant Level
Pre-test	12,17	18,59	17	1,740	0,05
Post-test	19,05				

From the results of the data in Table 5, the price = 18.59 and α = 0.05; $t_{-hitung} > t_{-tabel}$ *dk* = n-1 (17 – 1 = 16) found a price of 1.746 thus greater than (= 18.59 > = 1.740). Based on the test criteria, reject if > and accept. Thus, it can be stated that *circuit* training methods influence the physical condition of football athletes at the University of Muhammadiyah Gorontalo**.**

CONCLUSION

After the results of the discussion data analysis that has been described in the previous chapter, it can be concluded that the hypothesis that reads There is an influence of *the circuit* training model on improving the physical condition of football athletes at the University of Muhammadiyah Gorontalo. *Circuit training* methods can contribute to improving the physical condition of soccer athletes. This is influenced by the results carried out after the experiment to be able to say that this *circuit training* method can have a good influence on the results of improving the physical condition of athletes of the University of Muhammadiyah Gorontalo football team

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