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The efforts to improve physical condition throughout the circuit training for U-15

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Abstract

The purpose of this study is to assess the physical condition of U-15 football players from SSB Kumbang Jaya Kediri after using the circuit training approach. In this study, 16 training sessions were held over a period of 1.5 months, with three meetings per week and two meetings for pre- and post-testing. The approach employed is a one-group pretest-posttest design. Boring sampling was utilised in this study, which was carried out by taking all members of the population as the research sample, namely 20 U-15 SSB Kumbang Jaya football athletes. Technical tests and measurements were used in this study's instruments. The tests used are physical condition tests including muscular endurance (sit up test and push up test); explosive power (vertical jump test); speed (sprint running test); agility (shuttle run test). The analysis technique used is t-test analysis. The results of this study indicate that there is a significant increase in the physical condition of the players after the circuit training method is applied. Based on the table of test statistical results on the paired sample t-test it is known that the significance value (Sig.) of 0,000 is smaller than α (0,05) so that it reject H0. This shows that the physical condition of the SSB Kumbang Jaya U-15 football players improved when the circuit training approach was used.
Keywords: *Circuit Training; Power; Endurance; Football*

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INTRODUCTION

Football is a sport that may be played by anybody and ignores distinctions. Football is a very sophisticated sport that combines physical and technical components to make a game that is organized and capable of achieving its aims (Bahtra, 2022). In general, an athlete's physical condition serves as the foundation for achieving success. This is because a person's physical state will influence his or her technique, tactics, and psyche. Physical, mental, and emotional readiness, psychological maturity, and excitement for learning and practicing will be accomplished if the physical state is in top condition, allowing the intended learning outcomes to be achieved (Wirnantika et al., 2017). In the game of football, a player must have good physical condition. To determine the physical condition of a player, it is necessary to measure through various tests. This is in accordance with the opinion expressed by (Heryanto & Sudijandoko, 2019), that measurements are needed to know how much physical condition is in carrying out daily activities. This is done solely to realize intelligence and independence in increasing physical growth and development.

According to a survey, everyone's physical health is deplorable. Aside from that, it is mentioned that there are variances in physical conditions between female and male athletes (Wijaya & Kanca, 2019). The circuit training approach is one technique for determining an

athlete's physical state. Circuit training is a sort of exercise that uses specific posts to create and increase body endurance (Julianto, 2016). Circuit training, according to Kusuma (Ardiansyah & Kartiko, 2021), is included in activities that operate as exercises that can hone muscle endurance, flexibility, muscle strength, agility, and train balance, as well as being beneficial for heart and lung endurance.

Several researchers explain that the benefits of training with a circuit training model are as follows: 1) improving various components of physical condition simultaneously in a relatively short time; 2) each athlete can train according to their own level of progress; 3) each athlete can know and evaluate each other's progress; 4) the training process is easy to monitor; and 5) saves time because it can accommodate a large number of athletes in a relatively short time (Putra, 2019). Aside from that, a study found that circuit training has an impact on improving physical condition, particularly in male students (Hartati et al., 2020; Yuriansyah et al., 2017).

The goal of circuit training is to execute appropriate physical condition training, and a circuit is considered complete when the athlete has completed all forms of training at each predetermined post (Mutaqin, 2018; Saputra, 2022). Aside from that, the purpose of this exercise is to improve biomotor qualities such as strength, endurance, speed, flexibility, and coordination. This would make it easier for football players to develop competing methods and tactics in official education as well as football academies like SSB.

SSB (Soccer School) is an institution that aims to form young football athletes (Bahtiar, 2022). SSB Kumbang Jaya Kediri is one of the SSBs that has students that are competent in the field of football, which is a true form of developing early childhood football players (children aged 13-15 years). According to views and observations in the field, the physical condition of the pupils at SSB is not optimal. This is evident from each student's performance throughout competition. Some of the issues that are frequently observed are players who are already out of breath at the start of the contest and a lack of talent on the pitch. This suggests that the football players of SSB Kumbang Jaya need improvement. Apart from that, several other components of physical condition are less than optimal even though the components of good condition are necessary for football players to support performance on the field.

We know that the hurdles listed above are created by several causes, one of which is the lack of a structured, planned, and systematic training programmed, as well as the absence of regular physical condition checks for each player. Apart from that, the circuit training method

must be used to determine how much influence training has on improving the players' physical condition. As a result, to acquire information regarding physical conditions and efforts to enhance them through circuit training, researchers conducted research with 15-year-old pupils at SSB Kumbang Jaya in Kediri Regency.

METHOD

In quantitative research, this study employs a quasi-experimental design (quasi experiment). The physical condition of the football players was assessed in this study. Researchers employed the Group of Pre-Test-Post-Test Design analysis method as the research design to determine the accuracy of the data (Aditya & Faruk, 2019). The initial test, treatment, and final test are all given to the same group in this design. This study was conducted twice, once for the pre-test (initial stage test) and once for the post-test (final stage test) to evaluate differences in the influence of treatment.

The samples will be given treatment by researchers with appropriate training programs and loads. The sampling technique used in this research was boring sampling which was carried out by taking all members of the population as research samples, namely 20 U-15 SSB Kumbang Jaya football athletes. The instrument in this research uses test and measurement techniques. The tests used are physical condition tests including Muscle Endurance (Sit Up Test and Push Up Test); Explosive Power (Vertical Jump Test); Speed (Sprint test); Agility (Shuttle Run test).

The data collection techniques used are tests and measurements. Before the data collection process, each athlete will take part in a warm-up first to avoid injury when carrying out tests and measurements. Then the athlete will be given an explanation about the form of the test that will be carried out. In the initial stage, a pre-test was carried out and after that the respondents who were used as experiments were given treatment in the form of circuit training with an intensity/frequency of around 2 times a week for 16 meetings. Each athlete must carry out the assigned tasks in each position consisting of 6 positions and in accordance with the specified intensity. After that, a post-experimental test was carried out for 12 sessions, so that a comparison was obtained between the pre-test and post-test. The data collected in this research is pre-test data before the sample is given any treatment and post-test data after the sample undergoes treatment in the form of circuit training. After obtaining the pre-test and post-test results, the results were compared and then analyzed using the t-test.

RESULTS

The research findings were based on pre- and post-test data on the physical condition of U-15 SSB Kumbang Jaya Kediri football athletes, which included several training programme assessments such as Vertical Jump, Sit Up, Push Up, Shuttle Run, and 40 m running (Sprint Running). This study was done from June 15 to July 29, 2023. Based on the results of the physical condition test, each athlete was given the option to try two times, and the athlete with the highest number of attempts at each training programme was chosen. After carrying out the pretest, athletes will be given treatment for 16 meetings in the form of a circuit training method, then a post test will be carried out to determine the difference between the circuit training carried out on the physical condition of football athletes. The data is described as follows.

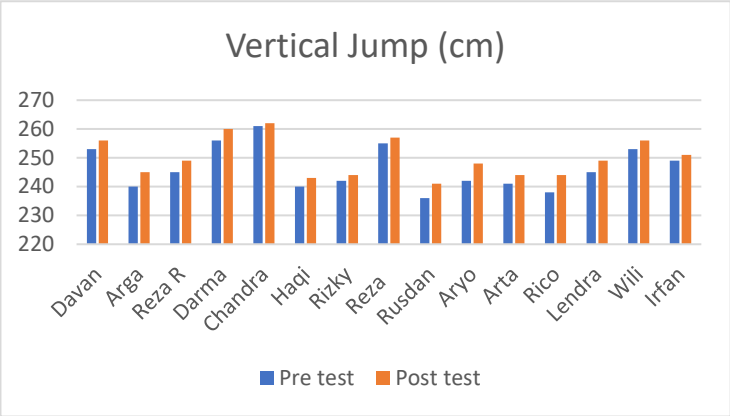

Figure 1. Comparison of the results of the pretest and post-test vertical jump

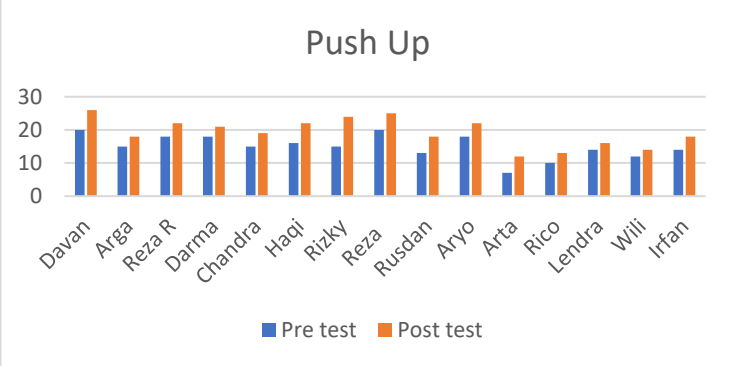

Figure 2. Comparison of pretest and post-test push up results.

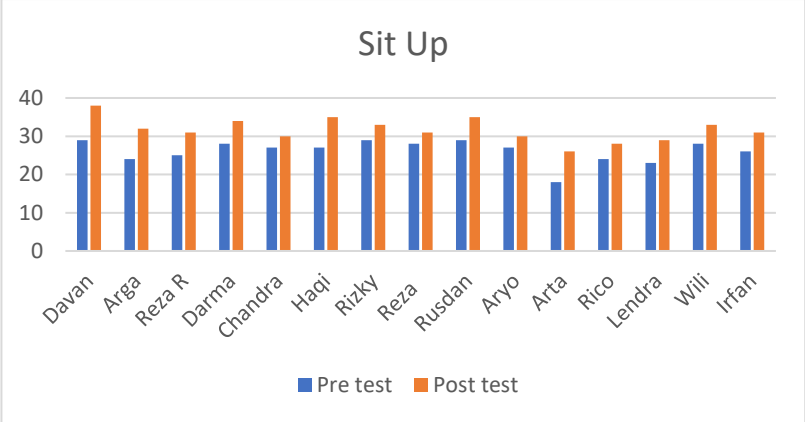

Figure 3. Comparison of the results of the pretest and post-test sit-up

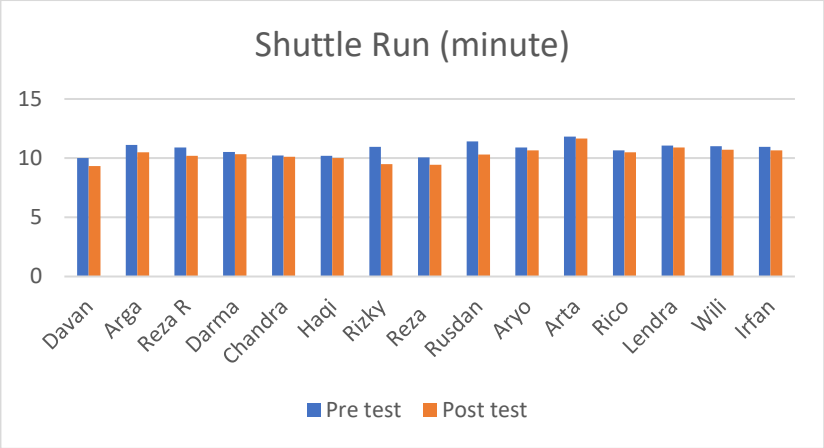

Figure 4. Comparison of pretest and post-test shuttle run results

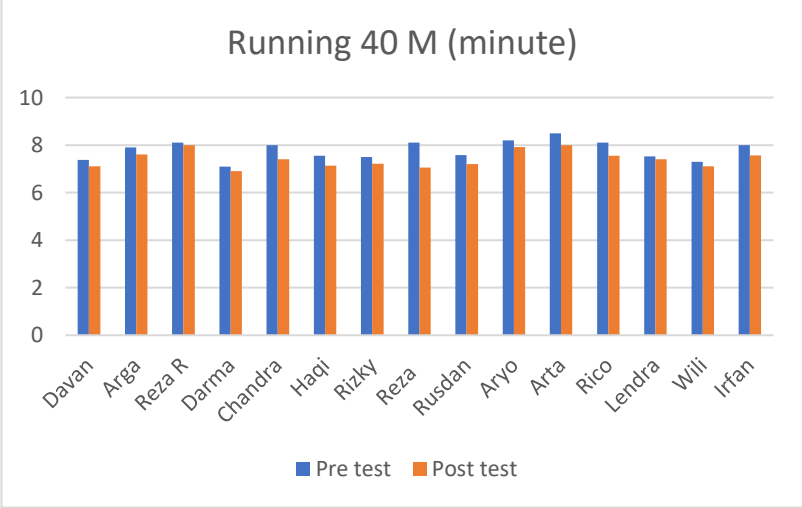

Figure 5. Comparison of pretest and post test results for 40 m running

There are some prerequisites that must be met before doing a t-test, such as the data being analyses having a normal distribution, thus a normality and homogeneity test must be performed.

Table 1. Normality Test Results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest vertical jump	0.253	15	0.011	0.867	15	0.473
Posttest vertical jump	0.245	15	0.016	0.924	15	0.214
Pretest push-up	0.131	15	0.200*	0.951	15	0.539
Posttest push-up	0.131	15	0.200*	0.958	15	0.657
Pretest sit-up	0.215	15	0.061	0.846	15	0.051
Posttest sit-up	0.128	15	0.200*	0.987	15	0.997
Pretest shuttle run	0.186	15	0.171	0.945	15	0.446
Posttest shuttle run	0.132	15	0.200*	0.951	15	0.548
Pretest running 40m	0.168	15	0.200*	0.952	15	0.549
Posttest Running 40m	0.172	15	0.200*	0.916	15	0.167

Based on Table 1, it can be seen in the results of the normality test, the sig value in the table is > 0.050, so it can be stated that all data groups are normally distributed.

Table 2. Homogeneity Test Results

	Levene Statistic	df1	df2	Sig.
Pretest vertical jump	0.030	1	13	0.865
Posttest vertical jump	0.506	1	13	0.489
Pretest push-up	0.727	1	13	0.250
Posttest push-up	0.458	1	13	0.072
Pretest sit-up	1.894	1	13	0.192
Posttest sit-up	0.271	1	13	0.611
Pretest shuttle run	0.244	1	13	0.630
Posttest shuttle run	0.599	1	13	0.453
Pretest running 40m	0.549	1	13	0.486
Posttest Running 40m	3.667	1	13	0.078

Based on Table 2, it can be seen in the homogeneity test results that the sig value in the results table for all data groups is > 0.050, so that the data states that all data groups have homogeneous variance.

Table 3. Paired Samples Test Results

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pretest – Postest vertical jump	-3.53	1.50	.389	-4.36	-2.70	-9.08	14	0.000
Pretest-Posttest push-up	-4.33	1.79	.465	-5.33	-3.33	-9.32	14	0.000
Pretest-Posttest Sit-up	-5.60	1.99	.515	-6.70	-4.49	-10.88	14	0.000

Pretest-Posttest Shuttle run	0.46	0.39	0.101	0.24	.68	4.59	14	0.000
Pretest-Posttest 40m run	0.37	0.23	0.061	0.24	.51	6.20	14	0.000

Based on **Table 3,** the statistical results of the test in the paired sample t-test show that the significance value (Sig) of 0.000 is smaller than α (0.05) so reject H_0. This means that there is an influence of circuit training exercises on improving the physical condition of the U15 SSB beetle Jaya Kediri district players.

DISCUSSION

The purpose of this study is to see if doing circuit training activities improves one's physical condition. According to the data above, the U-15 SSB Kumbang Jaya football players in Kediri district who participated in circuit training improved significantly. This physical improvement was the consequence of six weeks of treatment. The U-15 SSB Kumbang Jaya football players participated in 16 training sessions, with two of them, the first test (pretest) and the final exam (posttest), showing gradual growth during the training time.

According to Mohamad Sajoto, one of the conditions required in attempts to improve athlete performance is physical condition, which can also be said to be the foundation of a landscape that serves as a benchmark for achievement (Rohim et al., 2020). Physical circumstances are a whole unit of inseparable components; hence these components must be produced. Training must begin as soon as possible, continue indefinitely, and be properly led by the basic principles of the training itself to achieve peak physical condition. According to Muhajir, circuit training involves sequential training with one sort of activity at each post from post four to post twelve (Satria, 2018). Athletes must be able to participate in a physical conditioning training programmed on a regular and frequent basis for roughly six weeks.

CONCLUSION

According to the findings of the research and data processing described above, there are changes in pre-test and post-test results, with the data indicating that the physical condition ratings of the players improved following treatment. As a result, it can be inferred that Circuit Training activities have a substantial influence on enhancing the physical condition of the U-15 SSB Kumbang Jaya players in Kediri district.

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