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# The Effect of Circuit Games on Physical Fitness in Upper Class Students at SDN Tanggungan Gudo Jombang

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Authors' contribution: A) Conception and design of the study; B) Acquisition of data; C) Analysis and interpretation of data; D) Manuscript preparation; E) Obtaining funding

## ABSTRACT

Circuit game is a form of game that is carried out in one round through several posts, at each post students perform various forms of games that are varied and carried out repeatedly. The purpose of this study was to determine the effect of circuit games on physical fitness of students at SDN Gudo Jombang. This type of research used is quantitative research. The experimental research design used was pretest and posttest data. The population in this study consisted of 80 upper class students at Tanggungan Gudo Jombang Elementary School. The data analysis technique used in the research uses the T test. In data analysis, the steps that must be started are data description, then normality test, homogeneity test and hypothesis testing are carried out. Based on the results of the hypothesis test that  $t_{count} > 26.107 > 2.045$ , it can be concluded that  $H_0$  is accepted, meaning that there is an effect of circuit games on physical fitness. Based on the results of this study, it can be concluded that there is an effect of circuit games on physical fitness of students at SDN Gudo Jombang.

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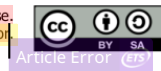
## KEYWORDS

Circuit Games;  
Physical Fitness;  
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## INTRODUCTION

Physical, sports and health education taught in elementary schools has an important role, namely providing opportunities for students to be directly involved in various learning experiences through physical, sports and health activities that are carried out systematically. According to Mulyana (2014) that physical education, basic movement, basic physical abilities and perceptual movement abilities. Such learning experiences are directed at fostering better physical growth and psychological development, as well as establishing a healthy and fit lifestyle. In addition, physical education is also a very



important tool to stimulate growth and development, especially the growth and development of human movement, namely the movement that humans need in their daily activities.

Physical fitness is very important for the academic community in supporting the learning process for schools, especially for students, because many things affect the development and level of children's physical fitness in their teens. According to Rahmawati (2017). A person's ability to carry out daily activities efficiently, without experiencing excessive fatigue, and still have energy reserves that can be used to enjoy free time. Therefore physical fitness is very important to support one's daily activities, a good level of physical fitness will make a student able to work effectively and efficiently, not be susceptible to disease, learn more enthusiastically and enthusiastically, and be able to optimally and be able to face challenges in life both at school and in society.

There are many factors that influence physical fitness, including age, gender, health, sleep and rest, body shape, nutritional intake, weight and physical activity. The following is an explanation of these factors. Astrianto (2011). The importance of the level of physical fitness in increasing the physical movement of students can be stimulated in several ways so that children are more active in moving.

Stimulating physical movement in learning activities can be done in several ways, one of which is a game. There are several game modes including traditional games and circuit games. Circuit game is a game model consisting of several games in several stations arranged in one circle so that each group runs sequentially from one station to the next station (Kasih, 2018). In simple terms circuit games can be formulated, namely all efforts and efforts to improve overall physical condition with a systematic and repetitive process with increasing amount of load, time or intensity. Someone does the exercise because it is a form of effort to achieve a goal. Circuit game is a form of game that consists of several kinds of items that are carried out continuously without any breaks or rest periods.

This circuit game is very effective because it is very easy for elementary school students to do. According to Harsono (2015) Circuit games are a systematic process of practicing or working which is done repeatedly, with increasing number of exercises or work day by day. The circuit game model is expected to improve the physical fitness of students, so that with good fitness students can carry out activities at school well too. Students don't get sick easily because they have good body resistance, so a conducive learning atmosphere is obtained.

## MATERIALS AND METHODS

The research used in this research is quantitative research using experimental methods. Experimental research is research that is strictly conducted to determine the causal relationship between the variables infallible, (2012). One of the main characteristics of experimental research is the treatment that is imposed on the subject or object of research. The design used in this study is "one group pretest-posttest design" Arikunto

(2010). In this study, it consists of two variables, namely the independent variable circuit game while the dependent variable is physical fitness.

The population in this study were all students at SDN dependents while the sample used was 80 students. In this study the instrument used the Indonesian Physical Fitness Test (TKJI) for adolescents aged 10-12 years, as follows: Run 40 meters, hang your elbows, sit up, jump straight up, run 600 meters Hamid (2013). Data analysis in the study used data description, then normality test, homogeneity test and hypothesis test were carried out.

## RESULTS AND DISCUSSION

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### Result

In the description of the data results from the pretest and posttest resulting from the circuit game model on physical fitness will be presented in the table below which includes the minimum value, maximum value, average value and standard deviation.

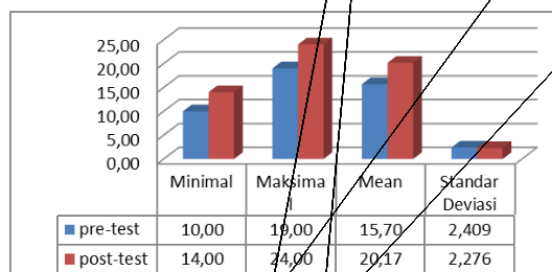
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**Table 1.** Data description

Variable	Test	N	Minimum Value	Maximum Value	Average	Standard Devision
Physical fitness	Pretest	80	10	19	15,70	2,409
	Posttest	80	14	24	20,17	2,276

Based on the table data above, it can be seen from the results of the circuit game model on physical fitness, the results from the pretest for a minimum score of 10, a maximum score of 19, an average of 15.70 and a standard deviation of 2.409 while the data results from the posttest for a minimum value of 14, a maximum value of 24, the average is 20.17 and the standard deviation is 2.276.

From the results of the data can be seen in the form of a bar chart as follows:



**Figure 1.** Result pretes and posttest

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### Terms of hypothesis testing

After getting the results from the description of the data, the next step is testing the hypothesis at this stage, what needs to be known is the normality test and also the homogeneity test. In the normality test, what needs to be seen is whether the data obtained from the population has a normal distribution or not. If you want to know the

data obtained is normally distributed, you can see it with the Kolmogorov Smirnov. To analyze whether the data is normally distributed, if the significance value obtained is greater than 0.05, then the data can be said to be normally distributed. From the normality test results can be seen in the table below:

**Table 2. Normality test**

Variable	Tes	Sig	Conclusion
Physical fitness	Pretest	0,455	Normal
	Posttest	0,382	Normal

From the table above in the normality test it can be seen for a significant level of  $\alpha = 0.05$  compared to the Asymp. Sig. (2-tailed). That is, if the Asymp. Sig. (2-tailed)  $> 0.05$ , it can be concluded that the data is normally distributed. From the data above for the sig pretest value of 0.455 and the sig posttest value of 0.382 which is greater than 0.05, it can be concluded that the above data is normally distributed, it can be concluded that  $H_0$  is accepted.

The homogeneity test needs to be seen whether the data comes from the same population, to test whether the data obtained from the same population requires the following hypothesis: 1)  $H_0$  : Data with the same variance population; 2)  $H_1$  : Data with population is not the same variance.

To find out that the data obtained is homogeneous, what needs to be compared is the significance level  $\alpha = 0.05$  with the significance value in the Based on Mean statistic, that is, if the significance value is  $> 0.05$ , it can be said that the sample is homogeneous. Data from the homogeneity test can be seen in the table below.

**Table 3. Test of Homogeneity of Variances**

Levene Statistic	Df	Sig.
.616	80	.715

Based on the table above, it can be seen that the pretest and posttest significance values on physical fitness data show a value of  $0.715 > 0.05$ . It can be interpreted that the data has the same or homogeneous variance with the conclusion that  $H_0$  is accepted. So it can be concluded that the results of the data are feasible to use for further analysis.

To find out the difference in the level of physical fitness between physical fitness before being given the circuit game treatment and physical fitness after being given the circuit game treatment, a two-sample t-test is used or the Paired samplet-test. The t-test results are shown in the following table.

**Table 4. T-test results**

Group	t count	t table df (N-1) =	Sig. (2-tailed)	Significance Level (a)	Information
Circuit game	26.107	79	0,00	0,05	$H_0$ rejected

The results of the t-test obtained a calculated t value of 26.107 while a t table value of 2.045 with a significance level of 0.000. Because the calculated t value is greater than t table ( $26.107 > 2.045$ ) then  $H_0$  is rejected. It can be concluded that there is a significant difference in the physical fitness of upper-class students at SD Negeri Penangan before and after being given treatment.

### Discussion

Based on the explanation above, it shows that circuit games are very important in increasing physical fitness with models of circuit games which are a way of training physical conditions that aim to develop heart, respiratory and vascular functions through adding repetition with certain loads and trying to reduce the amount of time used for do a series of exercises. Using the circuit training model is one way to increase and improve the body functions of an athlete which includes basic biomotor components (Lutan, 2000: 78). Meanwhile, according to Sukadiyanto (2005: 28), circuit training is one measure of success in completing several different training models. Can be interpreted in a series of circuit training consisting of various training models that must be completed in one circuit. In one circuit practice it is declared complete, if it has completed training at each station in accordance with predetermined rules and according to the implementation SOP.

Physical fitness is a physical condition related to ability and ability to function optimally and efficiently at work. Providing circuit games to upper-class students at SD Negeri Mandiri was used to find out whether the exercise had an effect on increasing the physical fitness of the students or not. Physical fitness can be interpreted as a person's ability to carry out daily activities efficiently, without experiencing excessive fatigue, and still have energy reserves that can be used to enjoy free time. Therefore physical fitness is very important to support one's daily activities, Sukarno (2013). The condition of a person's body can adapt and work optimally when a person's physical fitness is good in carrying out physical activities the body will not easily experience fatigue and still has energy reserves.

From the process of giving circuit games, it has increased the physical fitness of upper-class students at SD Negeri Penangan which is quite large because the purpose of circuit games is to improve the work of the heart, breathing and blood vessels, so by giving circuit heating a person's physical fitness will increase.

### CONCLUSION

Based on the results of data analysis, hypothesis testing and discussion that has been put forward in the previous chapter, it can be concluded in this study that there is an effect of increasing the physical fitness of upper class students at SD Negeri Penangan Gudo Jombang after being given a circuit game.

## **ACKNOWLEDGEMENT**

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## **CONFLICT OF INTEREST**

In this study states that there is no conflict of interest

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