INDONESIAN JOURNAL OF SPORT MANAGEMENT
Department of Physical Education, Universitas Majalengka, Indonesia
ISSN 2776-706X.

The Effect of Active Arcade Games on Physical Fitness and Concentration of Eighth Grade Students at State Junior High School 6 Manggar

Rhio Shuhendra[1A-E*], Yudanto[2B-D], Claudio Fadia Akbar[3C]

[1-3]Faculty of Health Sports Science, Universitas Negeri Yogyakarta, Yogyakarta Special Region, Indonesia

ABSTRACT

Background: Physical fitness and concentration are two important factors that influence student learning success. Unfortunately, many junior high school students experience a decline in fitness and concentration due to sedentary lifestyles and excessive use of electronic devices. Interactive technology-based games such as Active Arcade offer a new approach that combines physical activity with engaging game elements. These games are designed to improve physical fitness while training students' focus and mental responsiveness. At State Junior High School 6 Manggar, physical education methods remain conventional and have not fully accommodated the need for enjoyable and stimulating activities. Results: The results of data analysis on the fitness test obtained a sig. value of 0.000, indicating that the Active Arcade game has a significant effect on the physical fitness of eighth-grade students at State Junior High School 6 Manggar. Furthermore, the results of data analysis on the concentration test obtained a sig. value of 0.000, indicating that the Active Arcade game has a significant effect on the concentration of eighth-grade students at State Junior High School 6 Manggar. Furthermore, it appears that the average post-test score on the TKSI for the experimental group is higher (13.80) than the average post-test score for the control group (12.80). Similarly, the results of the Grid Concentration Test also show that the average post-test score for the experimental group is higher (9.10) than the average post-test score for the control group (7.85). Conclusion: There is a difference in the effect of using Active Arcade games between the group that was given Active Arcade treatment and the group that was not given treatment on children's fitness, where the use of Active Arcade games was able to improve the physical fitness and concentration of eighth grade students at State Junior High School 6 Manggar.

Keywords: Active Arcade, Concentration. Physical Fitness

Corresponding author:
*Rhio Shuhendra, Faculty of Health Sports Science, Universitas Negeri Yogyakarta, Jl. Colombo No.1, Karang Malang, Caturtunggal, Depok District, Sleman Regency, Yogyakarta Special Region 55281. Email: Rhioshuhendra.2023@student.uny.ac.id

Article History:
Submitted: June, 2025
Accepted: August, 2025
Published: August, 2025

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.

Cite this article:
Shuhendra, R., Yudanto, & Akbar, C. F. (2025). The Effect of Active Arcade Games on Physical Fitness and Concentration of Eighth Grade Students at State Junior High School 6 Manggar. *Indonesian Journal of Sport Management, Vol.* 5(3), 788-799. https://doi.org/10.31949/ijsm.v5i3.15561

INTRODUCTION

Physical fitness is the body's ability to perform daily activities without experiencing excessive fatigue and still having energy reserves for other activities. Concentration, on the other hand, is an individual's ability to focus fully on an object or activity for a certain period of time (Sugiarto et al., 2023). In the context of education, these two aspects are very important because they directly affect the effectiveness of the learning process and the academic achievement of students. (Rasyid Ridho et al., 2024) Educational technology-based games like Active Arcade are increasingly being used as an alternative form of learning that is both enjoyable and interactive. Active Arcade is a motion-based game application that combines physical activity with cognitive challenges, thereby stimulating

The Author(s). 2025 **Open Access** This article is licensed under a ***Creative Commons Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)***, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit: https://creativecommons.org/licenses/by-sa/4.0/

both physical fitness and concentration simultaneously. With its enjoyable and technology-driven approach, this game has the potential to become an innovative solution for enhancing the quality of learning in schools.

Previous research has shown that physical activity-based games can improve students' physical fitness and cognitive abilities. For example, a study by (Winda Amalia et al., 2024) found that an 8-week active game intervention improved the endurance and learning focus of elementary school students. Another study by (Yoga et al., 2023) stated that structured physical activity has a positive correlation with executive function, including concentration and working memory. In Indonesia, several studies have also examined the impact of educational games on students psychological and physical aspects; however, these studies are limited to conventional or outdoor-based games. Few studies have specifically examined the effects of technology-based games like Active Arcade on the physical fitness and concentration of middle school students (Natal, 2022)

The problem that has emerged is the low level of physical fitness and concentration among junior high school students, which has led to a decline in active participation in learning and academic performance (Rusdiyanto & Arief, 2023). Many students experience physical fatigue, lack of focus during lessons, and show signs of low motivation to learn. This is exacerbated by daily activity patterns that tend to be passive, such as excessive use of electronic devices and a lack of structured physical activity. Therefore, an approach is needed that can integrate physical activity with cognitive stimulation in a fun and adaptive way that keeps up with the times (Yuddy Pramudyanto et al., 2023)

At State Junior High School 6 Manggar, this phenomenon was also observed in initial observations, which showed that most eighth-grade students had low physical fitness levels and difficulty maintaining concentration during the learning process. Physical education teachers reported that students' interest in conventional sports is declining, while their interest in technology and digital games is increasing. This presents an opportunity to integrate technology-based games such as Active Arcade as an alternative learning medium that can simultaneously improve students' physical fitness and concentration (Jasmani et al., 2020)

The purpose of this study was to determine the effect of Active Arcade games on the physical fitness and concentration of eighth-grade students at State Junior High School 6 Manggar. This study is expected to contribute to the development of innovative and technology-based learning methods and serve as a basis for policy-making in improving the quality of physical education and learning in general at the junior high school level.

METHOD

This type of research is quantitative research with a quasi-experimental approach using a pre-test and post-test control group design. Jack R. Fraenkel (in Mustaqim, 2021) states that quasi-experiments are studies intended to determine whether there is an effect or influence of something imposed on the sample subjects. This method is used to determine the effect of Active Arcade games on students' fitness and concentration. The research design used is a Pre-test and Post-test Control Group Design, which will use one control group and one experimental group. Both groups will be given different treatments, and pre-tests and post-tests will be conducted on both groups. The experimental group will be given treatment using a modern method, namely activities through the Active Arcade Game, which consists of three categories of games, namely Box Attack, Cone Knock Out, and Reaction Flow. Meanwhile, the control group will only be given activities using the old

method, namely SKJ 2021 gymnastics or Anak Indonesia Hebat (AIH) 2024 gymnastics. The independent variable in this study is the Game Active Arcade, while the dependent variables are the students' physical fitness levels and concentration

The type of research

This type of research is quantitative research with a quasi-experimental approach using a pre-test and post-test control group design. Jack R. Fraenkel (in Mustaqim, 2021) states that quasi-experiments are studies intended to determine whether there is an effect or influence of something imposed on the sample subjects. This method is used to determine the effect of Active Arcade games on students' fitness and concentration. The research design used is a Pre-test and Post-test Control Group Design, which will involve one control group and one experimental group.

The time and location

This study was conducted at State Junior High School 6 Manggar Jl Tengah, Kelubi Village, East Belitung Regency. The author chose State Junior High School 6 Manggar as the location for this study because that was where the researcher found the problem. This study was conducted during the second semester of the 2024/2025 academic year over a period of 4 weeks with a frequency of 3 sessions per week. Each session lasted between 50–60 minutes (including warm-up activities). As recommended by the World Health Organization (WHO), participants should engage in 150–300 minutes of moderate-to-vigorous physical activity per week, or 30 minutes to 1 hour per day. The study was conducted in the afternoon or after school hours to avoid interfering with regular classes. Due to the researchers' limitations, the total number of experimental sessions was set at 12, plus 1 session for the pre-test and 1 session for the post-test, making a total of 14 sessions. Sarwono & Ismaryanti (in Mustaqim, 2021) state that "the optimal frequency of practice sessions is 5–6 sessions or 2–4 times per week." This can be categorized as follows: a) 5 sessions x 2 times per week = 10 meetings (minimum) b) 5 sessions x 3 times per week = 15 meetings (medium) c) 5 sessions x 4 times per week = 20 meetings (maximum) For further clarification, the following table illustrates the research implementation schedule.

Table 1. Research Implementation Schedule

Schedule	Experimental Group	Control Group	Duration
Meeting 1	Pre-Test	Pre-Test	Adjusting
Meeting 2	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 3	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 4	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 5	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 6	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 7	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 8	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 9	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 10	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 11	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 12	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 13	Game Active Arcade	SKJ Student 2021/ SAIH 2024	50–60 minutes
Meeting 14	Post-test	Post-Test	Adjusting

The goals or target

The population used in this study were eighth grade students at State Junior High School 6 Manggar. The sampling technique used in this study was saturated sampling, according to Sugiyono (2014), "saturated sampling is a technique for determining a sample when all members of the population are used as samples." Based on this opinion, the sample in this study was the entire population consisting of 40 students divided into group A (experimental group) and group B (control group). To divide the sample groups from the population, lottery tickets were used.

Instruments

In this study, the instrument used to measure students' physical fitness levels is the TKSI Fase-D (Indonesian Student Fitness Test Phase-D for junior high school students) observation test. The TKSI Fase-D instrument

Data collection techniques

The data collection technique in this study used tests to measure students' fitness and concentration levels. To measure students' physical fitness, the TKSI (Indonesian Student Fitness Test) Phase-D instrument was used, which can be accessed online from the Ministry of Education and Culture website. Then, to measure students' concentration levels, the Grid Concentration Test (GCT) was used. The Grid Concentration Test has a validity of 0.912 and reliability of 0.803, while the validity and reliability of the TKSI instrument can be observed in the following table.

Table 2. the validity and reliability of the TKSI instrument

TKSI	Validity	Reliability
Hand and Eye Coordination	0.706	0.701
Sit-Up	0.740	0.698
Standing Broad Jump Test	0.766	0.695
T-Test	0.795	0.692
Beep Test	0.744	0.697

To determine the effect of treatment on the experimental group and control group on students' physical fitness and concentration, a Paired Sample T-test was used for each group with a significance level of 5% (0.05). This hypothesis testing was conducted using SPSS 23 for Windows.

Data analysis techniques

Hypothesis testing using parametric statistics. To determine the effect of treatment on the experimental group and control group on students' physical fitness and concentration, a Paired Sample T-test was used for each group with a significance level of 5% (0.05). The experimental group implemented the Active Arcade game, while the control group implemented SKJ 2021 exercises and AIH 2024 exercises. The pre-test and post-test data will then be analyzed using SPSS 23 for Windows. The explanation of the data test analysis will be described as follows.

RESULTS AND DISCUSSION

Results

The results of the students' fitness tests will be described through pre-test and post-test results using TKSI. The pre-test is the TKSI result for the 67 experimental group and

the control group before both groups were given treatment to determine the students' initial fitness level. Meanwhile, the post-test is the TKSI result for the experimental group and the control group after both groups were given treatment. The results of the TKSI using the Active Arcade game can be seen in the table below.

Table 3. Summary of TKSI Results Data

	Pre-Test		Post-Test	
	Experiment	Control	Experiment	Control
Maximum Score	19	17	20	17
Minimum Score	9	8	10	9
Amount	244	244	276	256
Average	12,2	12.2	13,8	12,8

Looking at the results of the pre-test and post-test TKSI above, it can be concluded that before the treatment was given, the initial TKSI scores between the experimental group and the control group were relatively the same, whereas after the treatment in the form of Active Arcade games was given, there was an increase in the TKSI scores in the 68 experimental groups. In the control group, there was also an increase, but not in significant numbers. This was because the control group did not receive the Active Arcade game treatment and was only given regular activities such as SKJ exercises or SAIH exercises. Furthermore, based on observations conducted by the researcher, children who were given physical activities using technology and games became more enthusiastic about moving.

The description of the research results obtained by the researcher is data derived from the pre-test and post-test results. A summary of the TKSI results for the experimental group and the control group can be seen in the following table.

Table 4. Results of TKSI in the experimental group and control group

Categories	Experiment		Control	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Verry Less (Skor 1-5)	0	0	0	0
Less (Score 6-10)	8	2	7	5
Currently (Score 11-15	10	12	11	12
Good (Score 16-20)	2	6	2	3
Verry Good (Score 21-25	0	0	0	0

If we look closely at the summary of the TKSI results, the experimental group achieved better results than the control group. This is shown by the experimental group in the "poor" category, which initially had 8 people and now has 2 people, while the control group initially had 7 people and now has 5 people. Furthermore, the experimental group showed an improvement in the "moderate" category, which decreased from 10 to 12, while the control group remained at 11. Additionally, the experimental group experienced an improvement in the "good" category, increasing from 2 to 6, while the control group remained at 3. After discussing the fitness test results through the TKSI, the next section will explain the concentration test results, which will be described through the pre-test and post-test results on the Grid Concentration Test. For further clarification, the summary of the Grid Concentration Test results for the experimental group and the control group can be seen in the following table.

Table 5. Summary of Grid Concentration Test Results

	Pre-Test		Post-Test	
	Experiment	Control	Experiment	Control
Maximum Score	9	9	13	11
Minimum Score	4	4	7	5
Amount	136	138	182	157
Average	6,78	6,89	9,05	7,72

Based on the summary table of the Grid Concentration Test data, the pre-test results for the experimental group were a maximum score of 9 and a minimum score of 4, with a total score of 136 and an average score of 6.78. Meanwhile, the pre-test results for the control group were a maximum score of 9 and a minimum score of 4, with a total score of 138 and an average score of 6.89. The post-test results of the Grid Concentration Test obtained by the experimental group were a maximum score of 13 and a minimum score of 7, with a total score of 182 and an average score of 9.05. Meanwhile, the post-test results of the control group obtained a maximum score of 11 and a minimum score of 5, with a total score of 157 and an average score of 7.72.

Looking at the pre-test and post-test results of the Grid Concentration Test above, it can be concluded that before the treatment was given, the initial Grid Concentration Test scores between the experimental group and the control group were relatively the same, while after the treatment in the form of the Active Arcade game was given, there was an increase in the Grid Concentration Test scores in the experimental group. In the control group, there was also an increase, but not in large numbers. This was because the control group was not given the Active Arcade game treatment and was only given regular physical fitness activities such as SKJ or SAIH exercises (Destriana et al., 2022). Furthermore, based on observations made by the researcher, children who were given physical activities using technology and games would try to optimize their concentration in receiving movement commands from the game application (Tirtana & Yuli Hartati, 2022).

Table 6. Results of the Grid Concentration Test in the experimental group and control group

Categories	Experiment		Control	
	Pre-Test	Post-Test	Pre-Test	Pre-Test
Verry Less (Skor 1-5)	4	0	3	1
Less (Score 6-10)	16	15	17	18
Currently (Score 11-15	0	5	0	1
Good (Score 16-20)	0	0	0	0
Verry Good (Score 21-25	0	0	0	0

If we look closely at the summary of the Grid Concentration Test results, the experimental group obtained better results than the control group. This is shown by the experimental group in the "very poor" category, which initially had 4 people and now has none, while the control group initially had 3 people and now has 1 person. Furthermore, the experimental group showed an improvement in the "moderate" category, which decreased from 16 to 15, while the control group increased from 17 to 18. Additionally, the experimental group showed an increase in the "moderate" category, which initially had no students and now has 5 students, while the control group, which initially had no students, now has 1 student. For the 'good' and "very good" categories, no students from either the experimental or control groups achieved these categories.

Data analysis to test this hypothesis used the Paired Sample T-test. The following are the results of the Paired Sample T-test from the concentration test of the experimental class.

Table 7. Results of Paired Sample T-test on TKSI (Experimental Class)

Source	Std. Deviation	Mean		t	df	Sig. (2-tailed)
		Pre-Test	Post-Test			
Paired Sample Test	.503	12.20	13.80	14.236	19	.000

Data analysis to test this hypothesis used the Paired Sample T-test. The following are the results of the Paired Sample T-test from the concentration test data of the control class.

Table 8. Results of Paired Sample T-test on TKSI (Control Class)

Source	Std. Deviation	Mean		t	df	Sig. (2-tailed)
		Pre-Test	Post-Test			
Paired Sample Test	.503	12.20	12.80	-5.339	19	.000

To determine whether there was a difference in the effect of treatment on the two groups, analysis of covariance (ANCOVA) was used. The following are the results of the analysis of covariance test from the fitness test data.

Table 2. Results of ANCOVA Test of Indonesian Student Fitness Test (TKSI)

Source	Type III Sum of Squares	Mean (Post-Test)		df	Mean Square	F	Sig
		Experiment	Control				
ANCOVA	10.000	13.80	12.80	1	10.000	38.564	.000

Based on the ANCOVA test results table above, in the "treatment" row, a significance value of 0.000 was obtained. Because the significance value is far below 0.05, Ho is rejected and H1 is accepted. Thus, it can be concluded that there is a difference in the effect between the group given the Active Arcade game treatment and the group not given the Active Arcade game treatment. Furthermore, when examining the post-test average scores, it is evident that the post-test average score of the experimental group (13.80) is higher than that of the control group (12.80). From these post-test average scores, it can be concluded that there is a difference in the effect of Active Arcade games and fitness exercises on children's fitness levels, where the use of Active Arcade games is more effective in improving the fitness of eighth-grade students at State Junior High School 6 Manggar.

Discussion

Social This study aims to determine whether there is an effect of Active Arcade games on the fitness and concentration of eighth-grade students at State Junior High School 6 Manggar. In this study, the researcher conducted an experiment using Active Arcade games applied to students using smartphones. This is expected to make children interested and enthusiastic about moving while playing to improve their physical fitness levels. As stated by (Lisvianto et al., 2024) in his research, he used the development of a multimedia interactive fitness learning media product based on speed using Autoplay media. In this application development product, there are eight forms of speed-based physical fitness games packaged in the form of games. The results of the study indicate that this product is suitable for use in the learning process and can serve as an educational tool to enhance students abilities (Sumantri et al., 2024)

Additionally, (Arifah et al., 2025) in the journal Interactive Learning Environments also discussed research on improving students' physical fitness and physical development

through the use of digital applications. The results showed that digital technology has proven effective in increasing students' motivation to participate in physical education. (Yanuarius Ricardus Natal et al., 2023) also argues that to encourage student engagement and greater interest in learning content as well as motivation to move, the application of digital technology can be utilized. With the availability of devices such as smartphones and the implementation of the Active Arcade game, children today will be more interested in moving while playing, thereby making them healthier. In addition, activities that make children fitter can also have a positive impact on their concentration/focus abilities. As stated by (Fadhlan et al., 2025), physical fitness is one of the systems of the body that supports brain performance, enabling it to concentrate well. Therefore, we understand the importance of engaging in regular physical activity, which offers numerous positive benefits for the body, including cognitive abilities such as concentration. (Sidik et al., 2024) emphasizes that physical activity can improve important bodily functions, such as concentration, memory, and intellectual abilities.

Adding to this, research conducted by (Aqhla, 2023) also explains that regular physical activity will increase the number of capillaries in the brain, which allows for the transport of oxygen in the blood. The amount of oxygen in the blood has an impact on a person's cognitive abilities. Therefore, engaging in physical activity through games like Active Arcade can make children today more interested in moving while playing, thereby improving their concentration and cognitive abilities. As stated by (Pratama & Winarno, 2022) one of the positive effects of playing games is improving concentration, as some games require players to focus, which can help enhance a person's concentration skills. The use of SKJ or SAIH exercises can also improve fitness and concentration, but when compared to Active Arcade games, it turns out that games using smartphones are more effective in improving fitness and concentration. This may be because children are more interested and enthusiastic about engaging in activities while playing on a smartphone compared to traditional activities like exercise (Krissanthy et al., 2020). The implementation of Active Arcade games has been found to encourage students to move actively without realizing that they are engaging in physical activities that can improve their fitness and concentration abilities (Widohardhono et al., 2024)

Based on the above explanation, Active Arcade games can support fitness and concentration levels. This shows that Active Arcade games have an effect on children's fitness and concentration abilities. Applying this, the treatment results in this study were obtained. The sig. value was 0.000 in the TKSI results and 0.000 in the Grid Concentration Test results. If the significance value is far below 0.05, H0 is rejected and H1 is accepted. Thus, in this study, it can be concluded that there is an effect of Active Arcade games on the fitness and concentration of eighth-grade students at State Junior High School 6 Manggar (Lature, 2024)

Furthermore, the provision of physical activities such as fitness exercises (SKJ 2021 and SAIH 2024) to the control group may also influence students fitness levels and concentration. In the analysis of the control group data, the significance values obtained were sig. 0.000 in the TKSI results and sig. 0.000 in the Grid Concentration Test results, indicating that fitness exercises (SKJ 2021 and SAIH 2024) also have an effect on the fitness and concentration of eighth-grade students at State Junior High School 6 Manggar. However, when examining the Effect Size calculations for both groups, it can be seen that the Effect Size for the experimental group in the fitness test was 3.183, which is larger than that of the control group, which was 1.194. Similarly, the Effect Size calculation for the

experimental group in the concentration test was 2.35, which was also larger than that of the control group, which was 1.251. Thus, the experimental group had a greater influence compared to the control group. By implementing the Active Arcade game, the experimental group had a positive influence on the fitness level of the students. Based on the researcher's observations, this occurred because children who engaged in physical activities using the Active Arcade game were more enthusiastic, enabling them to optimize their abilities. (Hezron Alhim Dos Santos, 2020)

Furthermore, to see the improvement in the achievement categories in the fitness test results (TKSI), it can be seen in the table of student achievement categories in the TKSI results, where the experimental group obtained better results than the control group. This is shown by the experimental group in the "poor" category, which initially consisted of 8 people and decreased to 2 people, while the control group initially consisted of 7 people and decreased to 5 people. Furthermore, the experimental group experienced an increase in the "moderate" category, which initially consisted of 10 students and increased to 12 students, while the control group remained at 11 students. Additionally, the experimental group also showed an increase in the "good" category, which initially consisted of 2 students and increased to 6 students, while the control group remained at 3 students.

To see the improvement in category achievement in the concentration test results, refer to the table of student achievement categories in the Grid Concentration Test results, which shows that the experimental group achieved better results than the control group. This is indicated by the experimental group in the "very poor" category, which decreased from 4 to 0, while the control group decreased from 3 to 1. Furthermore, the experimental group experienced an increase in the "poor" category, which decreased from 16 students to 15 students, while the control group increased from 17 students to 18 students. Additionally, the experimental group showed an improvement in the "moderate" category, which increased from none to 5 students, while the control group, which had none, increased to 1 student. For the 'good' and "very good" categories, no students from either the experimental or control groups achieved these categories.

Then, when examining the average scores of the children's post-test results, it appears that the average score in the experimental group's post-test is higher than the average score in the control group's post-test. In the fitness test (TKSI), the average post-test score of the experimental group of children reached 13.80, higher than the average post-test score of the control group, which only reached 12.80. Meanwhile, in terms of concentration ability, the average post-test score of the experimental group of children reached 9.10, higher than the average post-test score of the control group, which only reached 7.85. Based on the average scores obtained from the post-test, the conclusion that can be drawn is that there is a difference in the effect between the group that received the Active Arcade game treatment and the group that did not receive the Active Arcade game treatment in terms of improving the physical fitness and concentration of eighth-grade students at STATE JUNIOR HIGH SCHOOL 6 Manggar.

Based on the explanation of the theory and results of the Active Arcade game treatment, it can be concluded that this study supports the theories that physical activity using the Active Arcade game on smartphones can stimulate children to improve their fitness and concentration (Zainudin et al., 2019). Based on the research findings, it is concluded that the Active Arcade game has a positive impact on the physical fitness and concentration of eighth-grade students at State Junior High School 6 Manggar. This is a good innovation to support the development of physical education in the future, as it is

hoped that this idea will not only be applied at home but also in classroom learning contexts, such as incorporating Active Arcade games into lessons to make children more interested and enthusiastic about engaging in physical activities while playing, thereby improving their physical fitness and concentration skills (Aprianti, 2020). Therefore, in terms of training and maintaining fitness levels and concentration, this can be achieved by regularly using Active Arcade games, as these games are very easy to play for both students and the general public, and can be done anywhere and anytime (Repiansyah et al., 2016).

CONCLUSION

There is an influence of Active Arcade games on the physical fitness of eighth-grade students at State Junior High School 6 Manggar. This was proven by the results of data analysis, which showed a sig. value of 0.000. If the significance value is below 0.05, H0 is rejected and H1 is accepted. Therefore, it can be concluded that there is an influence of the Active Arcade game on the physical fitness of eighth-grade students at State Junior High School 6 Manggar. From these post-test average scores, it can be concluded that there is a difference in the effect of using the Active Arcade game between the group that received the Active Arcade game treatment and the group that did not receive the treatment on the physical fitness of students, where the use of the Active Arcade game was able to improve the physical fitness of eighth-grade students at State Junior High School 6 Manggar.

Then, there is an influence of Active Arcade games on the concentration of eighth-grade students at State Junior High School 6 Manggar. This was proven by the results of data analysis, which obtained a sig. value of 0.000. If the significance value is below 0.05, H0 is rejected and H1 is accepted. Therefore, it can be concluded that there is an influence of the Active Arcade game on the concentration of eighth-grade students at State Junior High School 6 Manggar. Additionally, the average post-test score of the experimental group (9.10) was higher than that of the control group (7.85). From these post-test average scores, it can be concluded that there is a difference in the effect of using the Active Arcade game between the group that received the Active Arcade game treatment and the group that did not receive the treatment on students' concentration ability, where the use of the Active Arcade game was able to improve the concentration of eighth-grade students at State Junior High School 6 Manggar.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

REFERENCES

Aprianti, D. (2020). Pengaruh Model Pembelajaran dan Status Berat terhadap Keterampilan Bermain dan Kebugaran Jasmani. *Jurnal Penelitian Pendidikan*, *20*(2), 213–224. https://doi.org/10.17509/jpp.v20i2.19127

Aqhla, F. H. (2023). Meningkatkan Kesegaran Jasmani dengan Metoden Bermainn dalam Pendidikan Jasmani. *JPKO Jurnal Pendidikan Dan Kepelatihan Olahraga*, *1*(1), 21–29. https://journal.sabajayapublisher.com/index.php/jpko/article/view/53

Arifah, N. H. A., Muhyi, M. M., Utomo, P. U., Jatmiko, O. F. D. J., Muhadi, Z. I. M., Jafar, R. A. J., Novia Ramadhani, & Asih, S. W. A. (2025). Peningkatan minat belajar dan kebugaran jasmani melalui pendekatan CRT berbasis permainan tradisional. *Bravo's:*

Journal of Physical Education and Sport Science, *13*(2), 450–459. https://doi.org/10.32682/bravos.v13i2/134

Destriana, D., Elrosa, D., & Syamsuramel, S. (2022). Kebugaran Jasmani Dan Hasil Belajar Siswa. *Jambura Health and Sport Journal*, *4*(2), 69–77. https://doi.org/10.37311/jhsj.v4i2.14490

Fadhlan, A. R., Subroto, D. E., Lucky, T., Iman, T., Firdaus, A., Sumbayak, G. T., Fikri, A., Bangsa, U. B., Bangsa, U. B., Bangsa, U. B., Bangsa, U. B., Bangsa, U. B., Bangsa, U. B., & Bangsa, U. B. (2025). Hubungan Penggunaan Gadget Dengan Kebugaran Fisik Siswa Sma. *Jurnal Padamu Negeri*, *2*(2), 76–81.

Hezron Alhim Dos Santos, A. H. (2020). Jurnal Olahraga & Kesehatan Indonesia available online at https://jurnal.stokbinaguna.ac.id/index.php/jok Efektifitas Model Pembelajaran Berbasis Permainan Untuk Pengembangan Kebugaran Jasmani Universitas Negeri Makassar , Sulawesi Selatan , Indonesia , 9. *Jurnal Olahraga Dan Kesehatan*, *1*, 46–52.

Jasmani, S.-P., Rekreasi, K., & Olahraga, F. I. (2020). *SURVEI TINGKAT KEBUGARAN JASMANI SISWA SMP NEGERI DI MADIUN Nur Ayu Oktaviani *, Sapto Wibowo*. 7–18.

Krissanthy, A., Kurniawan, F., & Resita, C. (2020). Hubungan Kebugaran Jasmani dengan Tingkat Konsentrasi Siswa di SMA 9 Bekasi Correlation between Physical Fitness and Student's Concentration Level of SMA Negeri 9 Bekasi. *Jurnal Literasi Olahraga*, *1*(1), 77–81. https://journal.unsika.ac.id/index.php/JLO

Lature, K. K. (2024). Dampak Kecanduan Game Online Terhadap Aktivitas Belajar Siswa. *IVIV SOCIETY RESEARCH and EDUCATION: Jurnal Pendidikan Pancasila Dan Kewarganegaraan*, *5*(1), 81–94. Heldyanaa98@gmail.com

Lisvianto, J. D., Wijaya, A., & Alifia, E. (2024). Upaya Peningkatan Kebugaran Jasmani Melalui Metode Permainan Aktif Dadu Lempar Pada Siswa Kelas II SDN Sidoklumpuk Sidoarjo Jodie. *Jumper: Jurnal Mahasiswa Pendidikan Olahraga*, *4*(3), 509–517. http://stokbinaguna.ac.id/jurnal/index.php/JUMPER/article/view/1107%0Ahttp://stokbinaguna.ac.id/jurnal/index.php/JUMPER/article/download/1107/1179

Natal, Y. R. (2022). Profil Tingkat Kebugaran Jasmani Peserta Didik SMP di Masa Pandemi. *Jurnal Penjakora*, *9*(1), 62–70. https://doi.org/10.23887/penjakora.v9i1.46546

Pratama, D. A., & Winarno, M. E. (2022). Hubungan Status Gizi dan Kebugaran Jasmani Terhadap Hasil Belajar Penjas Siswa SMA: Literature Review. *Sport Science and Health*, *4*(3), 238–249. https://doi.org/10.17977/um062v4i32022p238-249

Rasyid Ridho, M., Anggara, N., & Perdianto. (2024). analisis Tingkat kebugaran jasmani pada Peserta Didik Ekstrakurikuler Bola Voli Di SMA Negeri 1 Belawang. *Jurnal Ilmiah STOK Bina Guna Medan*, *12*(1), 75–85.

Repiansyah, M., Taufan Bayu, A., & Pudjiastuti, R. (2016). Pengaruh Permainan Kid's Athletic terhadap Tingkat Kebugaran Siswa. *Stkipkusumanegara.Ac.Id*, *2012*, 38–43.

Rusdiyanto, M. R., & Arief, N. A. (2023). Analisis Tingkat Kebugaran Jasmani Peserta Didik Ekstrakurikuler Bulu Tangkis Madrasah Ibtidaiyah. *Jambura Journal of Sports Coaching*, *5*(2), 126–133. https://doi.org/10.37311/jjsc.v5i2.20932

Sidik, F. H., Nurwansyah, R., & Purbangkara, T. (2024). Hubungan Tingkat Kebugaran

Jasmani dengan Konsentrasi Pembelajaran Pendidikan Jasmani pada Peserta Didik. *Jurnal Porkes*, *7*(2), 1074–1083. https://doi.org/10.29408/porkes.v7i2.27255

Sugiarto, R. W., Purwanto, S., & Utama, B. (2023). Hubungan Kebugaran Jasmani dengan Tingkat Konsentrasi Peserta Didik Sekolah Menengah Pertama. *Jurnal Dunia Pendidikan*, *3*(November), 67–78. http://jurnal.stokbinaguna.ac.id/index.php/JURDIP/article/view/2083

Sumantri, R. J., Azizah, A. R., Syarif, A., Irawan, Y. F., Widodo, P., Parmadi, M., Burhaein, E., Santoso, R., & Wijaya, F. (2024). Kebugaran Jasmani melalui Permainan Tradisional sebagai Jati Diri Bangsa. *Abdibaraya: Jurnal Pengabdian Masyarakat*, *3*(02), 69–81. https://doi.org/10.53863/abdibaraya.v3i02.1292

Tirtana, E. Y., & Yuli Hartati, S. C. (2022). PENGARUH PENERAPAN PERMAINAN KECIL DALAM PEMANASAN TERHADAP KESIAPAN SISWA DALAM PEMBELAJARAN PJOK di SMPN 1 TUBAN. *Riyadhoh : Jurnal Pendidikan Olahraga*, *5*(2), 55. https://doi.org/10.31602/rjpo.v5i2.7817

Widohardhono, R., Rachman, N., & Jannah, M. (2024). Dampak Aktivitas Olahraga Terhadap Stres Akademik Pada Peserta Didik. *PSIKOSAINS (Jurnal Penelitian Dan Pemikiran Psikologi)*, *19*(1), 93. https://doi.org/10.30587/psikosains.v19i1.7416

Winda Amalia, Dian Budiana, & Gano Sumarno. (2024). Pengaruh Pembelajaran Kids Athletics Terhadap Tingkat Kebugaran Jasmani Siswa Sekolah Dasar. *Jumper: Jurnal Mahasiswa Pendidikan Olahraga /*, *5*(1), 165–180. https://jurnal.stokbinaguna.ac.id/index.php/JUMPER/article/view/2776

Yanuarius Ricardus Natal, Bernabas Wani, Fridolin Narti Mau, & Fabianus Rolando Fole. (2023). Pendampingan Pembelajaran Penjas Menyenangkan Melalui Permainan Tradisional Sagu Alu Di SD CITRA BAKTI. *Media Abdimas*, *2*(3), 70–75. https://doi.org/10.37817/mediaabdimas.v2i3.3506

Yoga, D., Purbodjati, P., & Kumaat, N. A. (2023). Pengaruh Aktivitas Fisik terhadap Keterampilan Motorik dan Kebugaran Jasmani Peserta Didik. *Bravo's : Jurnal Program Studi Pendidikan Jasmani Dan Kesehatan*, *11*(2), 240. https://doi.org/10.32682/bravos.v11i2.3083

Yuddy Pramudyanto, Advendi Kristiyandaru, & Nur Ahmad Arief. (2023). Pengaruh Permainan Tradisional Terhadap Kebugaran Jasmani Dan Kecerdasan Emosional Siswa. *Jurnal Kejaora (Kesehatan Jasmani Dan Olah Raga)*, *8*(1), 55–64. https://doi.org/10.36526/kejaora.v8i1.2607

Zainudin, N. I., Athar, A., & Kahri, M. (2019). Analisis Komponen Kebugaran Jasmani Peserta Didik Sekolah Dasar Negeri Di Lihat Dari Sarana Dan Prasarana Pendidikan Jasmani Kelas V Usia 10 – 12 Tahun Kota Banjarbaru. *Multilateral Jurnal Pendidikan Jasmani Dan Olahraga*, *18*(1), 63–69. https://doi.org/10.20527/multilateral.v18i1.6570