

The Effect of Fortress Games on Improving Physical Fitness of Fourth Grade Students at Annisa Bilingual Islamic Elementary School Semarang

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ABSTRACT

This study aims to analyze the effect of the traditional game Bentengan on the level of physical fitness of elementary school students. The background of this study departs from the phenomenon of decreasing children's physical activity due to the development of digital technology, which causes reduced interaction with traditional games. The method used is an experiment with a one-group pretest-posttest design. The research subjects consisted of a population of 44 sixth-grade students of Annisa Bilingual Islamic Elementary School, Semarang. The research instrument used a test with an existing instrument, namely the Indonesian Physical Fitness Test (TKJI) for ages 10-12 years. Data were analyzed using a paired sample t-test with a significance level of 0.05. The results showed that before playing Bentengan, 38 students (86.4%) were in the poor category and 6 students (13.6%) were in the very poor category. After playing Bentengan, there was a change where 42 students (95.5%) were in the moderate category and 2 students (4.5%) were in the good category. The results of the statistical test showed a significance value of 0.000, which is smaller than 0.05, indicating that there is an effect of the Bentengan game on students' physical fitness. This finding

confirms that the traditional Bentengan game is effective in improving most aspects of elementary school students' physical fitness and is relevant to be implemented as a culture-based and fun physical education learning strategy.

Keywords: Fort Games, Physical Fitness

INTRODUCTION

Education is a crucial factor in determining the quality of human resources and the progress of a nation. The educational process generates many innovative and creative ideas, adapting to current developments. School education is conducted by providing role models, fostering the will and developing students' creativity in the learning process (Martaida et al., 2017). The most important function of education is to cultivate individuals with self-confidence, curiosity, creativity, and the ability to understand differences and problems (Ersoy & Başer, 2014). Physical education is one of the educational contents within schools.

According physical education is a systematic approach to various physical activities aimed at developing physical abilities and skills, fostering growth, intelligence, and character development. Essentially, physical education is an educational process that utilizes physical

activity. Menurut physical education is a physical activity that significantly contributes to improving children's health and well-being. Therefore, Physical Education, Sports, and Health (PJOK) learning is also used in schools to positively influence students' academic achievement and physical activity, as well as to improve children's health and well-being.

Physical education plays a crucial role in developing healthy, dynamic, and well-mannered individuals. Through physical activity, physical education not only prioritizes improving motor skills but also instills values such as discipline, responsibility, and sportsmanship (Febriana Pratiwi, Sarman Sibua, 2024). In its learning process, physical education emphasizes the development of the individual as a whole. In addition to that, physical education is not directed at mastering sports but rather prioritizes the process of moral development of students. In elementary schools themselves, the material in PJOK learning is quite diverse; there are big ball games, small ball games, athletics, and many others. Games and sports learning activities need additional touches of traditional games.

Indonesia is renowned for its rich cultural diversity, encompassing various ethnicities, languages, and local traditions passed down from generation to generation (Anugrah Prasetio & Kripsiyadi Paramdana, 2020). One manifestation of this culture is traditional games, which serve not only as a means of entertainment but also as a medium for teaching social, moral, and physical health values (Cahyani et al., 2023). Traditional games are play activities that grow and develop in certain regions, are imbued with cultural values and social norms, and are passed down from one generation to the next. Folk games are formed from activities passed down from one generation to the next and are continuously carried out by most people (Euis Kurniati, 2016). Traditional games are play activities that grow and develop in certain regions, are imbued with cultural values and social norms, and are passed

down from one generation to the next. Folk games are formed from activities passed down from one generation to the next and are continuously carried out by most people (Fatmawati, 2021).

One of the games favored by students is the fortification game. This game requires players to build a stronghold, defend their own fort, and rescue team members from hostage situations (Euis Kurniati, 2016). The traditional fortification game is very useful for sports because it trains speed, agility, endurance, and strength, as well as fostering cooperation between groups. This game can be integrated into physical education with an emphasis on athletics, allowing students to learn while having fun (Carolin et al., 2024). Games that require team collaboration and tactics, such as building forts, produce more satisfying results than games that rely more on individual skills (Rijal et al., 2025). The Fortification game requires dexterity and ingenuity in devising strategies. Two groups play Fortification, with each group consisting of four to six people. Each group chooses a location as its center of operations. In the Fortification game, a pole or pillar generally serves as the fort. The goal is to attack and capture the enemy fort by touching the pole or pillar while shouting "Benten!" (Adhariah, 2018). According to Aulia et al., (2022) Traditional games in the context of physical education are one source that can be used as an alternative in physical education and sports learning in schools. This choice can improve students' physical health, meaning that physical fitness is the ability and capability to carry out activities or work, increasing work capacity without experiencing excessive fatigue. Irianto, (2004) explains that physical fitness is the ability of humans to carry out activities in daily life and still have reserve energy to carry out additional activities. Physical fitness is a functional condition of the body characterized by the body's ability to tolerate physical exercise loads. Examples of physical exercise loads can be exemplified by the simplest things, namely

walking, running, or even lifting weights of tens of kilograms.

MATERIALS & METHODS

This type of research is quantitative research; the research design is quasi-experimental. The subjects of this study were fourth-grade students of Annisa Bilingual Islamic Elementary School Semarang, with a population of 44 students. The paired sampling technique used was Random Sample, which is a method that selects individuals from the population without considering strata (Sugiyono, 2018). By giving a pretest and posttest to each class to see the differences before and after being given treatment. Data collection uses tests, with existing instruments, namely the Indonesian Physical Fitness Test (TKJI) for ages years, years includes: 1) 40-meter run, 2) hanging body lift, 3) lying sit, 4) verjump, and jump, 5) 600-meter medium distance run. Furthermore, for the data taken, namely data from fourth-grade students of Annisa Bilingual Islamic Elementary School Semarang, the data collection is in the form of a pretest and posttest given to students, while the data

analysis technique used is the Paired sample t-test.

RESULT and DISCUSSION

This study aims to determine the effect of the traditional game of fortification on the physical fitness levels of elementary school students. Data were obtained through two stages of measurement: a pretest (before treatment) and a posttest (after the fortification game treatment). Data processing included a normality test and a t-test.

Description of Physical Fitness Level

Pretest Results

The pretest was conducted to obtain baseline data on the physical fitness levels of fourth-grade students before treatment. The purpose of the pretest was to objectively assess students' physical fitness levels, thus providing a baseline for assessing changes after treatment. Based on the pretest data processing, it was found that most students scored low on almost all components of the physical fitness test. This indicates that students' physical abilities, including speed, muscle strength, endurance, and explosive power, are still suboptimal.

Table 1. Results of the Physical Fitness Level Pretest

Category	Number of Students	Percentage
Excellent	0	0%
Good	0	0%
Average	0	0%
Poor	38	86,4%
Very Poor	6	13,6%
Total	44	100%

Based on the table above, it can be seen that the pre-test results obtained were in the categories of very good 0 (0%), good 0

(0%), moderate 0 (0%), less than 38 (86.4%) and very less than 6 (13.6%).

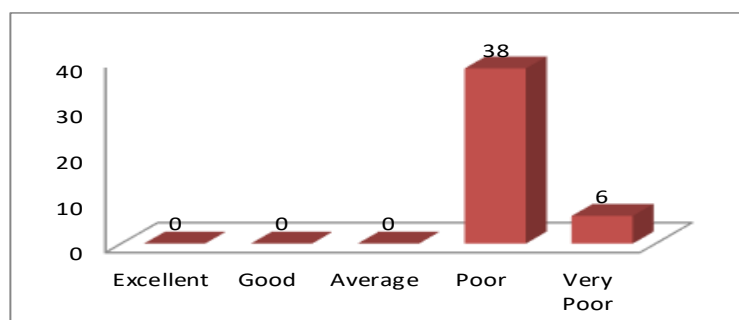


Figure 1. Pretest value diagram

Based on the diagram above, it can be seen that no students were in the good or average category, while all students were in the poor or very poor categories. This indicates that the physical fitness level of fourth-grade students before the treatment was in the poor category.

Description of Physical Fitness Level Posttest Results

The posttest was conducted after students participated in a more active and systematic

physical education (PJOK) lesson. The PJOK lesson in this study emphasized increasing students' physical activity through exercises tailored to the characteristics and abilities of elementary school students, including the traditional game of "fortan." The posttest aimed to determine changes in students' physical fitness levels after the treatment. Based on the posttest results, it was found that most students experienced an increase in physical fitness scores on almost all test components.

Table 2. Posttest Results of Physical Fitness Level

Category	Number of Students	Percentage
Excellent	0	0%
Good	2	4,5%
Average	42	95,5%
Poor	0	0%
Very Poor	0	0%
Total	44	100%

Based on the table above, it can be seen that the posttest results obtained were values in the categories of very good 0 (0%), good 2

(4.5%), moderate 42 (95.5%), less than 0 (0%), and very less than 0 (0%).

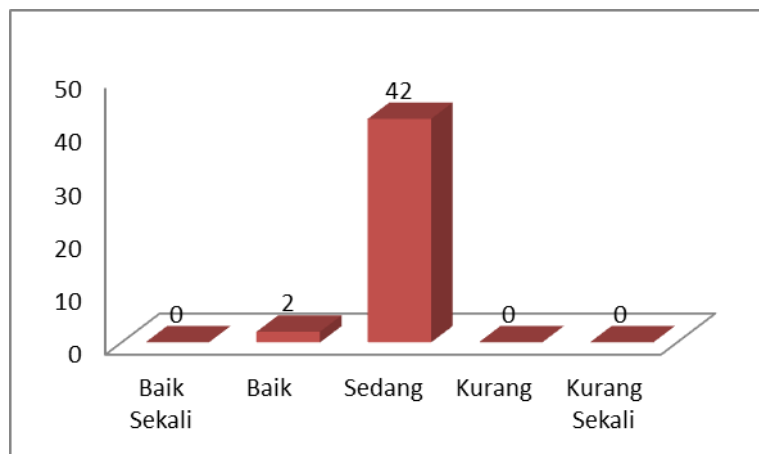


Figure 2. Posttest value diagram

Based on the diagram above, it can be seen that all students experienced an increase in their physical fitness levels, as indicated by the absence of any students in the poor or very poor categories. Most students were in the moderate category, with a small number in the good category. The posttest results indicate that the implementation of the Physical Education (PJOK) learning program had a positive impact on students' physical fitness levels.

Results of the Normality Test for Pretest and Posttest Data

A normality test was conducted to determine whether the pretest and posttest data were normally distributed. The normality test aims to determine the type of statistical analysis to be used in the next stage. If the data are normally distributed, parametric statistics are used for statistical analysis.

Decision-Making Criteria for the Normality Test

- If the significance value is >0.05 , the data are normally distributed.
- If the significance value is <0.05 , the data are not normally distributed.

Based on the results of the Shapiro-Wilk normality test, the significance value for the pretest data was 0.091 and for the posttest data was 0.040. Both significance values are above the 0.05 limit, so it can be concluded that the pretest and posttest data are normally distributed.

Test for Differences in Pretest and Posttest Means

After determining that the pretest and posttest data were normally distributed, the difference in means was analyzed using a paired sample t-test. This test aims to determine whether there is a significant difference between students' physical fitness levels before and after participating in PJOK learning.

Table 3. Results of Paired Sample T-Test Pretest and Posttest

Statistik	Value
Mean Pretest	10,77
Mean Posttest	15,68
t hitung	24,99
Sig. (2-tailed)	0,000

Based on Table 3, a significance value (2-tailed) of 0.000 was obtained. In accordance with the testing criteria, if the significance value is <0.05 , there is a significant difference between the pretest and posttest results. Therefore, it can be concluded that there is a significant difference between students' physical fitness levels before and after being given PJOK learning. Thus, PJOK learning has a significant impact on improving the physical fitness levels of fourth-grade elementary school students. Traditional games significantly influence students' physical fitness, including fourth-grade students of Annisa Bilingual Islamic Elementary School, Semarang, who have played fort games for four meetings, as evidenced by the results of the average

physical fitness test results of fourth-grade students of Annisa Bilingual Islamic Elementary School, Semarang, before and after playing the game, which were 10.77 before playing the game and 15.68 after playing the game. This shows a significant increase of 4.91. Traditional games are a physical activity that can affect a person's physical fitness. As explained again by Kurniawan, (2019)), traditional games are physical activities that contain specific elements such as physical skills, speed of thinking, and implementation of a person's social values.

Traditional games are not just entertainment but also an important component of our culture that needs to be preserved (Yudiwinata & Handoyo, 2014). Traditional games such as forfeitures, jump rope, and gobak sodor are increasingly being marginalized by modern games like PlayStation and online games. Traditional games have positive effects compared to modern games, especially those with sophisticated-looking devices, but they can have a negative impact on children. One factor contributing to the negative impact of modern games is the playing environment. The playing environment can influence children's language and behavior. Children can exhibit deviant language behavior in virtual spaces filled with inappropriate conversations, taunts, threats, and other disrespectful actions toward other players, deliberately intended to provoke opponents and friends, resulting in verbal bullying (Handayani & Munastiwi, 2022). Wurdiana Shinta (2021) states that traditional games have several advantages compared to modern games. Traditional games can instill a love for the nation's cultural heritage; they can also maintain and strengthen that love, in line with the values they contain. This is supported by Aqobah et al., (2020) in that traditional games can function as a means of communication, especially when played in groups.

CONCLUSION

The results of the study showed that students' physical fitness before playing fortifications was still less than satisfactory, with 86.4% in the very poor category, 86.4% in the poor category, and 13.6% in the very poor category. However, after playing fortifications, there was an increase in students' physical fitness, with 95.5% of respondents in the moderate category, 20% in the good category, and 4.5% in the good category. Furthermore, the results of statistical tests showed that fortifications had a significant effect on students' physical fitness, with a significance value of 0.000, which is smaller than 0.05.

Declaration by Authors

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