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Effect of a play approach and a conventional approach on the physical fitness and social development of elementary school students

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Abstract: This study aims to analyze the effect of a play approach compared to a conventional approach in physical education learning on the physical fitness and social development of elementary school students. The research method used a quasi-experimental design with a pretest-posttest control group design. The research sample was taken by purposive sampling from two public elementary schools with similar characteristics, with a total of 5th grade students as respondents. The instruments used included a Physical Fitness Test that had been adapted for elementary school-aged children and a social skills questionnaire. Data analysis was carried out using an independent t-test and a paired sample t-test at a significance level of 0.05. The results showed that the play approach had a significant effect on students' physical fitness and social development, while the conventional approach did not have a significant effect on both variables. This study emphasizes the importance of implementing game-based learning in physical education to achieve holistic learning objectives.

Keywords: physical education, play approach, physical fitness, social development, elementary school.

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Introduction

Education is a conscious effort carried out systematically to guide individuals towards independence, both personally and socially. This process requires a long, continuous time, and dedication from all parties involved. Within the framework of human resource development, physical education, sports, and health (PJOK) has a strategic role in realizing an optimal quality of life which includes physical, spiritual, and social well-being (Gusril, et al., 2022).

The emergence of various obstacles in achieving physical education goals is caused by teachers' lack of understanding regarding the growth and development of students as learners, resulting in the low physical fitness of students as the goal of the learning process. Another factor that also causes low fitness is the large number of students while facilities and infrastructure are limited, making student participation suboptimal. Besides that, the learning process so far has not sufficiently considered the overall characteristics of students, such as the lack of utilization of

the play aspect. The same thing was explained by Bailey et al. (2009); there is strong evidence that adolescents involved in sports show better academic results than those who are not. It is important to research social development because it is an accompanying impact of physical activity in physical education, especially in game activities.

Nationally, the 2023 National SDI Report issued by the Ministry of Youth and Sports shows that 77.12% of children aged 10-15 years, which can be considered the age of elementary school students, are in the 'poor' or 'very poor' physical fitness category. For children aged 16-30 years in the age range of junior high and high school students, it is even higher, reaching 83.55%. These findings show a worrying, systemic picture and indicate the need for strategic policy interventions to improve student fitness throughout Indonesia.

Malm, Jakobsson & Isaksson A (2019) explained that PJOK learning can contribute to improving physical fitness and health. It improves the mastery of rich physical skills, as well as increases students' understanding of movement principles and how to apply them in practice. From these problems, the role of the teacher in PJOK learning is very important, one of which is how to choose a suitable learning model to arouse the participation and learning enthusiasm of students. Through planned PJOK learning, students are expected to be able to develop physical fitness, motor skills, critical thinking skills, social skills, emotional stability, morality, healthy lifestyles, and environmental awareness (Kuspratiwi, F.W., Subagyo & Nevitaningrum, 2024).

Despite having comprehensive goals, the realization of PJOK learning in schools has not been fully optimal. Various national reports show the low level of physical fitness among Indonesian students (Ritanza, Lismana & Ferdiansyah, 2024). The characteristic of elementary school students who tend to learn through play activities is a potential that has not been fully optimized in physical education learning (Zhang, et al., 2001). The play approach is not only relevant to the child's developmental stage, but also allows the integration of physical, cognitive, social, and emotional aspects in a fun learning experience.

Social skills are an important aspect that students need to have because they can shape an independent, more mature attitude, and the ability to solve problems faced by themselves or by others in everyday life. However, if social skills do not develop optimally, behaviors will emerge that are not in line with the overall educational goals. Johnson, Leedom and Muhtadie (2012) state that this can be seen from several tendencies, such as feelings of inferiority, the desire to dominate others, selfishness, the tendency to isolate oneself, lack of empathy, and low concern for behavioral norms.

The integration of structured physical activities with play elements opens opportunities for creating PJOK learning that encourages an increase in physical fitness as well as social development (Ahmed & Salim, 2024). Values such as cooperation, discipline, empathy, and

communication skills can be built through game activities designed with effective learning management (Martin-rodriguez, et al., 2024). A learning environment that provides opportunities for positive social development will facilitate children's social maturity and shape the ability to interact healthily, mutually respect, and adapt to the environment (Harris & Visconti, 2022). In addition, good physical fitness contributes to higher learning concentration and academic performance (Latino & Tafuri, 2023).

Thus, applying the play approach in PJOK learning has the potential to become a relevant strategy to answer the challenge of low physical fitness while simultaneously strengthening students' social development. Through enjoyable, meaningful learning experiences that align with the developmental characteristics of elementary school children, the gap between the ideal goals of physical education and reality in the field can be effectively bridged

Materials and Methods

This study uses an experimental method designed to identify the cause-and-effect relationship between the treatment given and the changes that occur in the research subjects. The experimental method was chosen because it allows for controlling relevant variables, manipulating specific treatments, and observing their impact systematically, logically, and carefully.

The research was carried out for approximately two months, with a frequency of three meetings per week. Each treatment session lasted for 70 minutes, allowing the experimental series to be completed according to plan. The research design used is the pre-test and post-test design, allowing researchers to compare the initial and final conditions in both the experimental group and the control group. This approach provides a more accurate picture of the changes occurring due to the intervention.

The research population consisted of all students from SDN Brawijaya and SDN Sriwidari in the Gunung Puyuh District, Sukabumi City, with a total of 850 students. From this population, the research sample was taken purposively by considering the suitability of the subjects' characteristics to the research objectives. The experimental group was determined as class VB students of SDN Brawijaya totaling 35 people (male and female), while the control group consisted of class VB students of SDN Sriwidari with an age range of 10–12 years. The sample characteristics are heterogeneous and are not separated by gender, in line with the view stating that up to the age of around 14 years, the biological development of boys and girls is relatively equal.

The research was conducted in two closely located sites: SDN Brawijaya as the experimental group location and SDN Sriwidari as the control group location. The site selection was based on

considerations of ease of coordination, access, and understanding of the students' learning environment. Research activities took place from January to February 2025, with a meeting schedule every Monday, Wednesday, and Saturday.

The variables observed in this study encompass physical fitness and social development. Physical fitness is defined as the alignment of physical conditions with the demands of the task at hand, determined by anatomical and physiological factors. Social development is defined as achieving maturity in social relationships, including the ability to adapt to group norms, values, and traditions, as well as the skills to cooperate and communicate.

The treatment given to the experimental group utilized a play approach model, which is an adaptation of the Teaching Games for Understanding (TGfU) concept and is known in several countries as the Games Concept Approach. Measurement of physical fitness was carried out using the Physical Fitness Test instrument adapted for elementary school-aged children (Bailey, 2006), while students' social development was measured via a questionnaire developed based on indicators of social skills for school-aged children (Gallahue & Ozmun, 2012).

The data collection instrument for physical fitness was a 600-meter run test that measures students' aerobic capacity. This test was chosen because it reflects the general fitness level in the elementary school-aged population. Meanwhile, social development was measured using a Likert Scale-based questionnaire covering four aspects: discipline, cooperation, responsibility, and empathy. These aspects refer to literature asserting that physical education has the potential to foster positive social behavior through students' active involvement in structured physical activities

Results and Discussion

Results

The presentation of these research results focuses on analyzing the influence of two learning models the play based approach and the conventional approach on students' physical fitness and social development variables. Data were obtained through a series of experiments conducted over two months, with a frequency of three sessions per week.

The statistical analysis was carried out in two main stages:

1. Paired Sample t-test: Used to determine the significance of changes within each group by comparing pre-test and post-test scores.
2. Significance Testing: Conducted at a significance level of alpha = 0.05 to determine whether the intervention had a statistically significant impact.

Specifically, the data processing results reveal a contrast in effectiveness between the two approaches. The play-based approach consistently showed significant improvements in both

observed variables, whereas the conventional approach tended to show no meaningful change. The detailed statistical analysis for the physical fitness variable can be seen in the following table

Table 1. Paired Sample t-test for Physical Fitness

		Rata-rata	Std. Deviasi	t	dk	Sig. (2-tailed)
Pend. Bermain	Pre & Post-test Keb. Jasmani	16,72	19,81	5,477	33	0,000
Pend. Tradisional	Pre & Post-test Keb. Jasmani	5,84	29,79	0,877	31	0,527

In addition to physical fitness, this study also measures the impact of the intervention on students' social development. This measurement encompasses four primary indicators: discipline, cooperation, responsibility, and empathy. The gathered data were processed to observe the differences in students' social maturity before and after the treatment.

The results of the data analysis indicate that the group receiving the play-based approach experienced a much more pronounced improvement in social skills compared to the control group using the conventional approach. This suggests that active interaction within games provides a space for students to practice social values directly. The following is a summary of the Paired Sample t-test results for the social development variable:

Table 2. Paired Sample t-test for Social Development

		Rata-rata	Std. Deviasi	t	dk	Sig. (2-tailed)
Pend. Bermain	Pre & Post-test Perk. Sosial	30,73	45,88	4,743	33	0,000
Pend. Tradisional	Pre & Post-test Perk. Sosial	2,93	39,78	0,371	31	0,923

Discussion

The findings of this study show that the application of a play approach in physical education learning has a significant effect on improving the physical fitness and social development of elementary school students. These results indicate that a learning strategy emphasizing game-based physical activity can create a learning atmosphere that is more enjoyable, challenging, and actively involves students, thereby encouraging an increase in physical capacity as well as social skills (Adipat, et al., 2021).

Conversely, physical education learning with a conventional approach did not show a significant effect on these two aspects, which indicates the limitations of traditional methods in stimulating active participation and the development of students' social competencies (Chu et al., 2022). These findings align with the views of Bunker and Thorpe, who argued that Teaching Games for Understanding (TGfU) and its derivatives, such as the Games Concept Approach, are effective in improving physical fitness while fostering cooperation, discipline, and responsibility (Dimmick, 2022).

Research by Rodriguez Macias et al. (2021) also asserts that game-based learning models can facilitate tactical learning, motor skills, and positive social interactions among students. Similarly, research by Willadi Rasyid, et al. (2024) stated that play-based approaches are more effective than conventional approaches in improving basic motor skills in children aged 9-10 years. Thus, the results of this study reinforce the theory that enjoyable and contextual learning experiences are more effective than conventional methods that tend to focus on direct instruction and isolated drills.

A prominent aspect of these findings is the significant difference between the play approach and the conventional approach in both the dimensions of physical fitness and social development. This indicates that the success of physical education is not only measured by mere physical achievements, but also by its contribution to shaping students' social character. Given that physical education at the elementary school level aims to build a foundation of active living habits and sustainable social skills, the play approach can be viewed as a relevant and adaptive strategy to the developmental needs of school-aged children (Harens, Cardon & Bourdeaudhuji, 2011).

Physical education (PE) contributes significantly to physical fitness and student character development. PE effectively instills values such as discipline, teamwork, sportsmanship, and resilience (S. Salahudin et al., 2025). The impact of this research is practical and theoretical; practically, physical education teachers can integrate game-based learning models to improve student participation, motivation, and overall learning outcomes. Theoretically, this study adds empirical evidence supporting the effectiveness of the play approach model as an alternative to conventional learning.

However, this study has limitations in the number of samples and the relatively narrow age range, namely elementary school students in two schools within a specific region. Varied environmental factors, facilities, and student backgrounds in other locations may influence the effectiveness of implementing the play approach. Therefore, further research with a broader sample scope and additional variables, such as intrinsic motivation or tactical skills, is needed to enrich the understanding of this learning model's effectiveness.

Conclusion

The results of the analysis show that the play approach in physical education learning has a significant effect on the physical fitness and social development of elementary school students. Conversely, the conventional approach in physical education learning does not show a significant effect on these two variables. This affirms the limitations of traditional methods that are too oriented towards technique and direct instruction, thus failing to create a participative learning situation. The play approach, on the other hand, provides a contextual and enjoyable learning experience, encouraging students to move actively and interact positively during learning.The implication of these results is the importance for physical education teachers to integrate game-based learning models to achieve learning goals holistically, covering both physical and social dimensions. However, this study has limitations in sample size and location coverage, so generalizing the results must be done carefully. Further studies covering a wider population, variations in student backgrounds, and additional variables like intrinsic motivation or tactical skills will enrich the understanding of the play approach's effectiveness.

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