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The Effectiveness of Tactical Game Approach Through Handball Games on Decision Making and Manipulative Movement Skills of Elementary School Students

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Abstract

This study aims to determine the effectiveness of the application of the Tactical Game Approach (TGA) through handball games on improving decision-making abilities and manipulative motor skills of elementary school students. The background of this study is because PE learning in elementary schools is still dominated by conventional approaches, making students less active and less involved in the game. This study used an experimental method with a one-group pretest-posttest design and involved 30 elementary school students selected through a purposive sampling technique. Data were collected using the Game Performance Assessment Instrument (GPAI) to measure decision-making abilities and the Test of Gross Motor Development-3 (TGMD-3) to measure manipulative motor skills during the pretest and posttest. The data obtained were analyzed using the non-parametric Shapiro-Wilk test to test normality and the Wilcoxon Signed-Rank Test to test differences in pretest and posttest results. The results showed an increase in the average score in both aspects studied. Based on the Wilcoxon test results, a significance value of 0.000 ($p < 0.05$) was obtained, which means there is a significant difference between the pretest and posttest results. The application of the Tactical Game Approach through handball games is effective in improving decision-making abilities and manipulative motor skills of elementary school students. Further research is recommended to use an experimental design involving a control group or compare the effectiveness of TGA with other learning models.

How to Cite

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INTRODUCTION

Education is an effort carried out in various ways so that students can develop themselves actively, including reasoning skills, intelligence in the field of science, mental and spiritual strengthening, and other skills (Sanga and Wangdra, 2023, p. 84 a). Education can also be understood as an educator's effort to instill values and share knowledge that lives in society with students (Rosala, 2016). Thus, education focuses not only on knowledge but also encompasses students' physical and character development. One form of comprehensive education implementation is through the subject of Physical Education, Sports, and Health (PE).

Physical education plays an important role in developing students' physical abilities, motor skills, physical fitness, as well as critical and social thinking skills (Dwi Saputro et al., 2017; Pratiwi & Oktaviani, 2018). Through physical activity, students not only gain physical benefits but also develop affective and cognitive aspects. Therefore, physical education (PE) learning needs to be designed to be active, creative, enjoyable, and appropriate to students' developmental needs (Sesfa, 2018)In this context, the learning approach used by teachers plays an important role in determining the effectiveness of the learning process.

The learning approach can be understood as a philosophical perspective that directs the teaching and learning process (Djalal, 2017). There are two main approaches to learning, namely the conventional teacher-centered approach and the student-oriented approach (Fadhlina & Suriana, 2022). Conventional approaches often leave students passive because the learning process is dominated by the teacher. In contrast, a student-centered approach places students at the center of learning activities and encourages critical thinking and active participation. One student-centered learning approach relevant to the context of Physical Education and Health is the Tactical Game Approach (TGA).

Tactical Game Approachis a game-based learning approach that combines technical skills practice with an understanding of game tactics (Risjanna et al., 2019; Shintiya & Basiran, 2019). This approach places students at the center of learning, where they learn to understand game strategies and tactics through playing activities (Andria et al., 2018). (Mitchell et al., 2020) emphasizes that the implementation of TGA in elementary and secondary schools encourages students to actively organize, execute, and reflect on game situations independently. Thus, students not only master technical skills but also develop tactical thinking and decision-making abilities within the game context.

The tactical approach in physical education learning is oriented towards students' interests and playing experiences (Rokhayati et al., 2016). Through a game-based learning environment, students are more motivated, enthusiastic, and easily grasp the basic skills they are learning. Furthermore, learning becomes more enjoyable and meaningful. The TGA approach also trains critical thinking, problem-solving, and quick decision-making skills while playing (Sucipto, 2023). This is in line with the objectives of PE, which emphasize not only physical aspects but also the development of students' cognitive and social abilities.

In the context of handball, the application of the TGA approach has strong relevance. Handball is a team game that requires coordination, cooperation, and manipulative motor skills such as dribbling, passing, throwing, and catching (Chen et al., 2021; Setiawan et al., 2018). Furthermore, this game requires players to make quick and accurate decisions in dynamic situations on the field. Therefore, a learning approach that integrates tactical understanding with manipulative movement skills is crucial for elementary schools.

Manipulative movement itself is part of basic movement skills which involve the ability to control objects using hands, feet or other body parts (Oktaria & Andika, 2022). Through handball, students can practice their manipulative skills while enhancing their tactical intelligence. Thus, handball is an effective medium for developing two important aspects of Physical Education (PE): decision-making and manipulative motor skills.

Previous research shows that the application of the Tactical Game Approach is effective in improving students' decision-making abilities and gaming performance (Dorak et al., 2018; Elvio et al., 2019). However, most of this research has been conducted at the secondary and university levels, while studies on elementary school students, particularly in the context of handball in Indonesia, are still limited. Observations at one elementary school revealed that physical education (PE) instruction still largely uses conventional approaches, leading to student disengagement and rapid boredom. Therefore, a more innovative and contextual approach is needed to increase student engagement and tactical skills.

Based on this background, this study aims

to analyze the effectiveness of implementing the Tactical Game Approach through handball games on the decision-making and manipulative movement skills of elementary school students. This research is expected to contribute to the development of a more engaging, meaningful, and student-oriented Physical Education (PE) learning model, as well as serve as a scientific reference in the application of the tactical approach to game learning in elementary schools.

METHODS

This study used an experimental method with a quantitative approach. The design used was a pre-experimental one-group pretest-posttest design. This design involved one group being given a pretest, treatment, and posttest to determine the difference in results before and after the treatment (Fraenkel et al., 2023).

The treatment given was in the form of learning using the Tactical Game Approach through handball games. The study was conducted at Public Elementary School 247 Sukapura, Bandung City with a population of 65 fourth-grade students. The research sample consisted of 30 students consisting of 16 girls and 14 boys, determined by purposive sampling technique based on certain criteria, namely fourth-grade students aged around 10 years, in good health, and willing to participate in the entire series of research (Rizal et al., 2024; Rukinah, 2019; Sugiyono, 2023).

The research instruments consisted of the Game Performance Assessment Instrument (GPAI) to measure decision-making and the Test of Gross Motor Development-3 (TGMD-3) to measure manipulative motor skills. The GPAI assessed aspects of decision-making and support during gameplay (Sucipto, 2023), while the TGMD-3 is used to assess skills such as throwing, catching, dribbling, and kicking the ball.(Ulrich, 2019).

RESULTS AND DISCUSSION

Table 1. Descriptive data of GPAI and TGMD-3 instruments

Variables	Label	N	Min	Max	Mean	Standard Deviation	Gain
Decision-making	pretest	30	6	11	8	1.38	1
	posttest	30	8	12	9	1.31	
Manipulative	Pretest	30	28	52	39	5.71	4
	posts	30	32	53	43	5.35	

Table 1 presents descriptive data on the results of measuring decision-making ability (GPAI) and manipulative motor skills (TGMD-3) in 30 students. An increase in scores from pretest to posttest on both instruments is evident.

The minimum GPAI score increased from 6 to 8, while the TGMD-3 score increased from 28 to 32. The maximum GPAI score increased from 11 to 12, and the TGMD-3 score from 52 to 53. The average GPAI score increased from 8 to 9, while the TGMD-3 score increased from 39 to 43. The standard deviations on both instruments decreased (GPAI from 1.38 to 1.31 and TGMD-3 from 5.71 to 5.35), indicating more homogeneous posttest results.

Overall, there was an increase in learning outcomes after the implementation of the Tactical Game Approach, with a gain of 1 point on GPAI and 4 points on TGMD-3, which indicates an increase in students' decision-making abilities and manipulative motor skills after the treatment.

Table 2. GPAI Frequency Distribution

Interval	Category	GPAI Frequency	
		Pre-test	Post-test
6-7	Low	20	0
8-10	Currently	7	24
11-12	Tall	3	6

The number of research samples involving 30 students, can be seen in **Table 2** that the frequency distribution of playing skills measured using GPAI during the pretest shows that most students are in the low category, namely 20 students, then 7 students are in the medium category, and only 3 students are in the high category, in the posttest results there is a shift in categories, where there are no students in the low category, while the number of students in the medium category increases to 24 students, and the number of students in the high category also increases to 6 students.

Table 3. Frequency Distribution of TGMD-3

Pretest			Posttest		
Score	Descriptive Terms	frequency	Score	Descriptive Terms	frequency
48-54	Very superior	2	48-54	Very superior	6
40-47	Superior	7	40-47	Superior	16
32-39	Above average	19	32-39	Above average	8
24-31	Average	2	24-31	Average	0

16-23	Below average	0	16-23	Below average	0
8-15	Low	0	8-15	Low	0
0-7	Very low	0	0-7	Very low	0
Amount		30	amount		30

The number of research samples involving 30 students, can be seen in **Table 3** that the frequency distribution of manipulative skills measured using TGMD-3 during the pretest there were 2 students in the average category, then above average, namely 19 students, 7 students in the superior category, and 2 students in the very superior category. After being given treatment, the posttest results shifted. The number of students in the above average category decreased to 8 students, the superior category increased to 16 students, the very superior category increased to 6 students.

The results of the normality test using Shapiro-Wilk presented in Table 4, obtained a significance value (Sig.) on the pretest data of 0.000 and on the posttest data of 0.00. Both values are smaller than the significance level of 0.05, so it can be concluded that the pretest and posttest data are not normally distributed. Thus, this research data does not meet the assumption of normality so that further hypothesis analysis was carried out using a non-parametric test, namely the Wilcoxon Signed Rank Test.

The results of the normality test on the TGMD-3 instrument shown in Table 5 show that the significance value (Sig.) for the pretest data is 0.010 and for the posttest data is 0.029. Both values are also smaller than the significance level of 0.05, so it can be concluded that the TGMD-3 pretest and posttest data are not normally distributed.

The results of the hypothesis test shown in Table 6 obtained a Z value of -4.972 with Asymp. Sig. (2-tailed) = 0.000. Because the significance value is less than 0.05 ($p < 0.05$), it can be concluded that there is a difference between the pretest and posttest results.

The results of the hypothesis test shown in Table 7 obtained a Z value of -4.852 with Asymp. Sig. (2-tailed) = 0.000. Because the significance value is less than 0.05 ($p < 0.05$), it can be concluded that there is a difference between the pretest and posttest results of students' manipulative skills.

The results of the research that has been conducted, can be presented a discussion regarding the effectiveness of the application of the Tactical Game Approach (TGA) through handball games to improve the decision-making abilities of elementary school students. The results of this study indicate that the Tactical Game Approach is proven to be effective in improving the decision-making abilities of elementary school students, seen from the increase in the average score on the Game Performance Assessment Instrument (GPAI) research instrument. The average score of students increased from 8 at the time of the pretest to 9 at the time of the posttest, this change indicates an increase. For elementary school students, this development is very significant because in a relatively short learning time, they have been able to show an increase in better decision-making abilities.

The initial conditions (pretest) indicated that students' decision-making abilities were still relatively low. The majority of students experienced difficulty in making the right decisions during the game, such as choosing when to pass, dribble, or shoot the ball. This similarity in initial conditions confirmed that the improvement was due to the learning intervention through the Tactical Game Approach. After being given treatment, the posttest results showed significant changes. Students were able to make more precise, faster, and contextually appropriate decisions in game situations. The Wilcoxon test results confirmed this finding with a significance value of 0.000 ($p < 0.05$), thus concluding that there was a difference between the pretest and posttest results in the decision-making aspect.

Student skill development is inseparable from the characteristics of the Tactical Game Approach, which places them in real-life game situations. This approach requires students to think critically, actively participate in the game, and collaborate with teammates. Challenges remain when using the Tactical Game Approach, particularly in understanding strategy for students accustomed to engineering learning. The results of this study indicate that these weaknesses can be overcome through the application of the Tactical Game Approach adapted to the characteristics and abilities of elementary school students, through simplifying the form of the game, providing gradual explanations of tactics, and modifying game situations, students are able to adapt well and understand game strategies more effectively. The increase in GPAI scores shows that although initially students had difficulty in understanding strategies, with appropriate treatment through the Tactical Game Approach, they were able to show significant improvements in their abilities.

This research is in line with the theory and findingsPrabowo (2020, p. 101 A) explains that the tactical approach is a teaching method that allows students to learn basic skills and game strategies simultaneously. Learning is modeled after a real game, only simplified for easy comprehension.Budi, Hidayat and Febriani, (2019, p. 138a) states that the tactical approach encourages students to be active and think critically in solving handball game problems. The application of the Tactical Game Approach is very effective in improving decision-making skills in soccer among students of the Physical Education Study Program at Pamulang University (Putra, Nurhidayat and Retnawati 2025, p. 135-18). StudyGunşand YIlmaz (2019, p. 328)showed statistically significant differences in post-test results for decision-making, skills, support, participation, and game performance of students trained using the Tactical Game Approach (TGA). This approach has been shown to be effective in improving overall game performance components.

The similarities between the research findings above reinforce the main principle of the Tactical Game Approach: placing students in realistic game situations that require tactical understanding and quick decision-making. Applying the Tactical Game Approach can foster social skills such as cooperation, communication, and active participation in game activities.

The results of the research that has been conducted also show that the application of the Tactical Game Approach (TGA) through handball games is effective in improving the manipulative skills of elementary school students. The results of measurements using the Test of Gross Motor Development-3 (TGMD-3) instrument, obtained an increase in the average score of students from 39 at the time of the pretest to 43 at the time of the posttest, this increase indicates the development of students' manipulative motor skills, including the skills of throwing, catching, dribbling, and shooting the ball.

The initial condition (pretest) showed that students' abilities were in the fairly good category, but not yet optimal in controlling the ball consistently. After being given treatment through the application of the Tactical Game Approach, the posttest results showed an improvement. Students were able to control the ball better, both in throwing, catching, dribbling, and shooting the ball towards the target. The Wilcoxon test results showed a significance value of 0.000 ($p < 0.05$), these results showed a significant difference between the pretest and posttest results in students' manipulative motor skills. This proves that learning interventions using the Tactical Game Approach have a positive impact on improving elementary school students' manipulative motor skills.

Manipulative movement is a crucial aspect of elementary school children's motor development. However, many students still struggle with mastering manipulative movement. A common weakness is inaccuracy in controlling objects like balls. This is often caused by instruction that focuses on isolated techniques without a playful context, as well as monotonous activities for students.

Difficulties in mastering manipulative movement can be overcome through the application of the Tactical Game Approach (TGA), which emphasizes skill learning through game situations. Through the Tactical Game Approach, students not only practice basic skills like throwing, catching, and dribbling but also learn to apply them directly in a game context. Fun activities increase students' motivation to move.

The results of this study are in line with the findingsYunardi, Rijaluddin and Temmassonge (2025, p. 125) emphasized that the tactical game approach has been proven to be effective in improving manipulative skills as part of motor skills, while developing students' strategic and collaborative aspects. Mawarti (2005)He proposed a tactical games approach in volleyball learning. Volleyball learning involves activities such as serving, passing, and smashing, which train students to control, hit, and direct the ball. Involvement in the game can improve manipulative skills.

The research results and discussion above conclude that the application of the Tactical Game Approach (TGA) through handball is effective in improving elementary school students' manipulative skills. This approach provides learning experiences through real-life game activities, enabling students to better master the skills of throwing, catching, dribbling, and shooting the ball.

CONCLUSION

Research shows that implementing the Tactical Game Approach (TGA) through handball effectively improves elementary school students' decision-making and manipulative motor skills. This approach simultaneously develops cognitive and psychomotor skills, enabling students to think tactically, make quick and accurate decisions, and master manipulative skills such as throwing, catching, and dribbling. Furthermore,

TGA also strengthens students' social skills, including cooperation, communication, and sportsmanship during learning.

The implementation of TGA has important implications for physical education instruction in elementary schools. This approach fosters strategic and critical thinking skills, enriches active and enjoyable learning experiences, and strengthens mastery of fundamental skills that form the foundation for sports at subsequent levels.

Physical education teachers are advised to implement TGA as an alternative game-based learning method to improve students' tactical and manipulative skills. Future researchers can expand this study to other sports and educational levels with a broader experimental design. Students are expected to be more active, confident, and willing to try new strategies to develop not only game skills but also thinking, collaboration, and communication skills.

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