

The Application of Tactical Games Approach to Improve Decision-Making Skills in Soccer Among Physical Education Students at Pamulang University

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ABSTRACT

Decision-making ability is a critical cognitive skill in soccer. However, conventional technique-based instruction has not been optimal in developing this aspect among Physical Education students. This study aims to analyze the effectiveness of the Tactical Games Approach (TGA) in enhancing decision-making skills among Physical Education students at Pamulang University. Method: This research employed a quasi-experimental design with a pretest-posttest non-equivalent group design. The subjects consisted of 30 students divided into two groups: the experimental group (TGA) and the control group (conventional method). The instrument used was the Game Performance Assessment Instrument (GPAI), focusing on the decision-making component. Data were analyzed using paired sample t-test, independent sample t-test, and effect size calculation (Cohen's d). Results: The results showed that the experimental group improved their GPAI scores from 10.73 to 15.47, while the control group increased from 10.60 to 12.13. The t-test revealed a significant difference between the two groups in the posttest ($p = 0.000$), with an effect size of 2.59, categorized as a very large effect. Conclusion: The Tactical Games Approach was proven to be significantly effective in enhancing decision-making skills in soccer. This model is highly recommended for use in game-based sports instruction at the university level, particularly in preparing students to become both technically skilled and tactically competent.

Keywords: Tactical Games Approach, decision-making, soccer, GPAI, physical education.

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INTRODUCTION

Physical education plays a strategic role in shaping students who are not only physically healthy but also capable of critical thinking, collaboration, and making quick and accurate decisions in game contexts. In Indonesia's national education system, physical education is described as a part of the curriculum aimed at developing physical, psychological, social, and moral aspects through physical activities. Therefore, the learning process in physical education must be designed not only to focus on technical mastery but also to integrate cognitive and affective dimensions holistically (Light, 2013).

One of the most promising sports for developing students' cognitive and tactical competencies is soccer. Soccer is a complex game that demands the ability to read situations, recognize movement patterns of teammates and opponents, and make quick decisions under time and space constraints.

Unfortunately, soccer instruction at the higher education level, including among physical education students, is still dominated by conventional technical methods that are detached from real game contexts. As a result, students often acquire technical skills in a mechanical manner without understanding when and how to apply them effectively in actual game situations (Thorpe, Bunker & Almond, 1986).

To address this issue, the Tactical Games Approach (TGA), also known as Teaching Games for Understanding (TGfU), offers a more contextual pedagogical alternative. This model emphasizes modified small-sided games to develop players' tactical understanding and decision-making skills through direct game experience. The stages of this model include game form, appreciation, tactical awareness, decision making, skill execution, and performance. This progression enables learners to acquire not only techniques but also broader game strategies (Bunker & Thorpe, 1986; Light & Fawns, 2003).

Various international studies have demonstrated that TGA is effective in improving players' decision-making skills. Jiménez-Parra et al. (2024), in their meta-analysis, noted that TGfU significantly enhances tactical awareness and decision-making in game-based sports education. Similarly, García-Ceberino et al. (2020) found that students taught through TGfU showed significant improvement in game understanding and faster, more accurate responses in match situations. Furthermore, Silva et al. (2023) revealed that good decision-making skills contribute to performance stability even under physical fatigue.

Nationally, studies on the effectiveness of the TGA approach are also emerging. Aziz and Adit (2020) demonstrated that a tactical model effectively improved soccer skills among students at STKIP Muhammadiyah Kuningan. Another study by Silaban and Hendrawan (2022) found that a tactical approach in futsal significantly enhanced playing skills compared to the conventional method. However, specific research evaluating the influence of TGA on decision-making skills among physical education students in Indonesia remains limited.

Decision-making is a critical aspect of modern soccer, distinguishing between average players and those who make a significant impact on the team (Mujriah et al., 2022). The ability to read the game, analyze player positions, and choose the right option in a short time determines the success of both offensive and defensive plays (Nuryadin et al., 2022). In the context of physical education, developing decision-making skills among students is crucial, considering that they are future physical education teachers who will transfer this knowledge and skill to the next generation.

Decision-making is among the highest cognitive skills in team sports like soccer. It refers to the process of selecting the most appropriate action based on real-time processing of tactical information and game situations. According to Raab (2012), this process involves the integration of perception, tactical knowledge, intuition, and motor responses aligned with the game context.

In soccer, decision-making includes aspects such as when to pass, where to move, and how to organize defense or attack. Araújo et al. (2006) explain that decision-making in soccer heavily depends on players' mental representation of game situations and their repeated game experiences. Thus, learning in real game contexts is crucial to forming effective situational representations.

According to Travassos et al. (2013), decision-making quality can be improved through training that places players in authentic game conditions requiring spontaneous problem-solving. This aligns with the core principles of the Tactical Games Approach, where tactical learning is prioritized over isolated technical drills. In this context, decision-making becomes the central focus of learning, not just an additional element.

Gobet et al. (2007) further argue that decision-making in sports is influenced by three major factors: experience, exposure to tactical situations, and the speed of information processing. Players trained in

real-game conditions tend to have better reaction times and can recognize play patterns more efficiently, enabling them to make more accurate decisions.

Additionally, Silva et al. (2023) found that soccer players with strong decision-making skills exhibit better physical-tactical endurance. They can continue making effective decisions even when fatigued, indicating that this skill is not only cognitive but also contributes to overall performance efficiency.

Broadbent et al. (2015) stated that game-based training fosters more effective decision-making skills compared to traditional technical training. This is because players are trained in open, flexible, and complex decision-making environments that mirror actual match conditions.

In the context of physical education learning, especially in higher education, students must be facilitated to develop tactical thinking and decision-making skills through approaches embedded in real-game contexts. Research by Renshaw et al. (2019) emphasized that learning environments designed to replicate real-game conditions (representative learning design) accelerate players' adaptation to tactical demands.

Students in the Physical Education Program at Pamulang University, as future coaches and sports educators, need learning experiences that go beyond technical training to foster strategic understanding and game-based decision-making. This is essential so they can effectively transfer these competencies to their future students. The TGA approach provides a platform for students to engage in cognitively demanding games, analyze game situations, and develop tactical solutions through real interaction in small-sided games (García-Ceberino et al., 2020).

Moreover, this approach aligns with the development of 21st-century competencies such as critical thinking, collaboration, and communication. In TGA-based small-sided games, students are encouraged to work together, discuss strategies, and make decisions based on dynamic game conditions. According to Light and Fawns (2003), TGfU not only builds technically proficient players but also those who understand the meaning of the game and its socio-tactical context.

Nevertheless, the application of TGA requires careful planning, including designing game scenarios aligned with learning objectives, selecting appropriate assessment tools such as the Game Performance Assessment Instrument (GPAI), and enabling facilitators to guide students in tactical reflection. Another challenge lies in motivating students to not just play but actively engage in reflective processes about the tactical choices they make during the game (Serna et al., 2020).

Based on this review, the Tactical Games Approach has a strong theoretical and empirical foundation for implementation in university-level soccer instruction. Moreover, there is a lack of specific research examining the influence of TGA on decision-making skills in soccer among physical education students, especially at Pamulang University. Therefore, this research is essential as a scientific contribution to developing sports learning models that are not only technically effective but also cognitively and contextually meaningful.

Accordingly, this study aims to evaluate the extent to which the Tactical Games Approach enhances decision-making skills in soccer among Physical Education students at Pamulang University. The findings are expected to serve as a reference for curriculum development and instructional strategies that are more adaptive to the demands of modern physical education, which emphasize tactical thinking and problem-solving abilities.

MATERIALS AND METHODS

This study employed a quantitative approach using a quasi-experimental design involving two groups: an experimental group that received treatment through the Tactical Games Approach (TGA) and a control group that received treatment through a conventional, technique-based approach. The design utilized was a *pretest-posttest non-equivalent group design*, in which both groups were assessed before and

after the intervention to measure improvements in decision-making skills in soccer.

This design was chosen to evaluate the effectiveness of the TGA instructional model in enhancing students' decision-making skills in realistic game contexts. The independent variable in this study was the instructional model (TGA vs. conventional), while the dependent variable was the students' decision-making skills during soccer gameplay.

Instruments

The primary instrument used in this study was the **Game Performance Assessment Instrument (GPAI)** developed by Oslin, Mitchell, and Griffin (1998). GPAI is a widely validated tool designed to assess performance in games based on decision-making, positioning, and skill execution within authentic game contexts.

The components of the GPAI utilized in this research focused on:

- **Decision Making:** The ability to select the best course of action based on game situations.
- **Support:** The ability to position oneself effectively to support team play.
- **Skill Execution:** The ability to apply techniques appropriately in a game context.

Two trained raters independently assessed GPAI scores to ensure **inter-rater reliability**. The raters analyzed video recordings of student performance during pretest and posttest game sessions using a standardized GPAI rubric.

Procedures

The research procedure consisted of the following stages:

1. **Preparation and Orientation:** The research team coordinated with course instructors and fourth-semester students in the Physical Education Study Program at Pamulang University. Participants who met the inclusion criteria were voluntarily assigned to either the experimental or control group.
2. **Pretest:** All participants underwent an initial test using a 5v5 small-sided soccer game format. Their performance was recorded and analyzed using GPAI to establish baseline scores.
3. **Intervention:**
 - The **experimental group** received instruction using the Tactical Games Approach for six sessions (twice a week, 90 minutes per session).
 - The **control group** underwent instruction using traditional technical approaches, with the same duration and frequency.
4. **Posttest:** After the intervention period, all participants completed a posttest using the same small-sided game scenario. Their performance was again recorded and assessed by two independent raters using the GPAI rubric.
5. **Data Analysis:** Pretest and posttest GPAI scores were collected and compared between the two groups.

Data Analysis

Data were analyzed using both descriptive and inferential statistics, including the following steps:

1. **Normality and Homogeneity Tests** were conducted using the Kolmogorov-Smirnov test and Levene's Test to ensure the assumptions for parametric tests were met.
2. **Paired Sample t-Test** was used to compare pretest and posttest scores within each group.

3. **Independent Sample t-Test** was applied to compare posttest scores between the experimental and control groups.
4. **Effect Size** was calculated using **Cohen's d** to determine the magnitude of the TGA's impact on decision-making improvement.

All analyses were conducted using the latest version of SPSS. Interpretation was based on a significance level of $p < 0.05$ and Cohen's effect size categories (small: 0.2; medium: 0.5; large: ≥ 0.8) as recommended by Cohen (1988).

RESULTS

Descriptive Statistics

This study involved 30 students equally divided into an experimental group ($n = 15$) and a control group ($n = 15$). Decision-making skills were measured before and after the intervention using the GPAI. Table 1 presents the mean and standard deviation (SD) of GPAI scores.

Table 1. Descriptive Statistics of Decision-Making Skills (GPAI Scores)

Group	Pretest Mean $\pm$ SD	Posttest Mean $\pm$ SD
Experimental	10.73 $\pm$ 1.59	15.47 $\pm$ 1.83
Control	10.60 $\pm$ 1.56	12.13 $\pm$ 1.74

The results show a higher improvement in the experimental group's GPAI scores (increase of 4.74 points) compared to the control group (increase of 1.53 points).

Normality and Homogeneity Test

The Kolmogorov-Smirnov test indicated normal distribution ($p > 0.05$), and Levene's Test showed homogeneous variances ($p > 0.05$). Therefore, the assumptions for t-tests were met.

Paired Sample t-Test

Table 2. Paired Sample t-Test within Groups

Group	Mean Difference	t-value	p-value
Experimental	4.74	8.413	0.000**
Control	1.53	3.207	0.006**

Note: $p < 0.01$ is significant at the 99% confidence level.

Both groups showed significant improvements, but the experimental group had a much higher statistical gain.

Independent Sample t-Test (Posttest Comparison)

Table 3. Independent Sample t-Test (Posttest Scores)

Comparison	Mean Difference	<i>t</i> -value	<i>p</i> -value
Experimental vs Control	3.33	5.227	0.000**

The significant difference in posttest scores ($p = 0.000$) indicates that the Tactical Games Approach was more effective than the conventional method in improving decision-making skills.

Effect Size

To measure the magnitude of the TGA's impact, Cohen's d was calculated:

- **Cohen's $d = 4.74 / 1.83 = 2.59$** → categorized as a **very large effect**

This indicates a substantial practical impact of the TGA on student decision-making skills.

DISCUSSION

This study demonstrated that implementing the Tactical Games Approach significantly enhanced decision-making skills in soccer among Physical Education students at Pamulang University. The experimental group, which received TGA-based instruction, showed a statistically significant improvement in GPAI scores compared to the control group, validating the effectiveness of a contextual and game-based instructional model in fostering cognitive and tactical competencies.

The improvement in the experimental group aligns with findings by García-Ceberino et al. (2020), who reported that game-based learning methods like TGfU or TGA enhance tactical understanding and decision-making speed. The TGA situates students in authentic, dynamic game scenarios, prompting spontaneous tactical responses and fostering both technical and strategic skills.

Further support comes from Jiménez-Parra et al. (2024), who noted that TGfU consistently outperforms technical approaches in developing decision-making. In this study, the experimental group's 4.74-point gain (compared to 1.53 in the control group) reinforces constructivist learning theory—where students construct knowledge through direct experience.

Moreover, a **Cohen's d** value of **2.59** confirms not only statistical significance but also strong practical relevance. This finding supports Silva et al. (2023), who found that players with superior decision-making skills maintain performance even under fatigue—a crucial factor in university-level sports training.

Locally, the results align with studies by Aziz and Adit (2020), who concluded that tactical models improve students' game performance. TGA fosters student engagement in tactical thinking, problem-solving, and post-game reflection, enhancing their ability to evaluate and refine strategies.

Importantly, TGA promotes active participation and collaboration. Students engage not only in gameplay but also in strategic discussion and analysis. Renshaw et al. (2019) emphasized that such socially and cognitively interactive learning environments accelerate tactical development—aligned with 21st-century skills like critical thinking, communication, and teamwork.

Nevertheless, implementing TGA requires careful planning, including designing relevant game scenarios, facilitating tactical reflection, and employing valid assessment tools like GPAI. Instructors

must understand game pedagogy principles to implement the model effectively. Thus, teacher training is critical for successful adoption.

In conclusion, this study contributes valuable insights into physical education pedagogy, particularly in teaching soccer at the tertiary level. The Tactical Games Approach proved effective not only in enhancing decision-making but also in developing students' tactical awareness, team communication, and active learning. This model can serve as a reference for designing more contextual, student-centered sports curricula in higher education settings.

CONCLUSION

Based on the results and discussions presented, it can be concluded that the application of the **Tactical Games Approach (TGA)** is significantly effective in improving decision-making skills in soccer among students of the Physical Education Study Program at Pamulang University. This approach successfully enhanced tactical understanding, decision-making abilities in game situations, and students' active engagement in the learning process. The experimental group that received TGA-based instruction demonstrated significantly higher GPAI scores compared to the control group that received conventional technique-based instruction.

These findings affirm that learning grounded in real-game contexts, tactical discussions, and strategic reflection is more effective in developing students' cognitive and affective skills, especially in the context of team sports. Therefore, the **Tactical Games Approach** deserves broader integration into the physical education curriculum, particularly in ball-game courses such as soccer.

IMPLICATION

This study carries both practical and theoretical implications in the field of physical education. Practically, the results can serve as a reference for instructors and coaches in selecting more contextual and student-centered teaching models, particularly in soccer instruction. The TGA not only enhances gameplay skills but also cultivates reflective learners capable of making strategic decisions independently.

Theoretically, this study enriches the body of literature on the effectiveness of tactical learning approaches in higher education settings in Indonesia. Furthermore, the results open avenues for future research involving other team sports such as basketball, volleyball, or futsal, and in different educational levels such as senior high schools or elementary schools. The study also emphasizes the need for **professional training for educators** to effectively implement innovative teaching models like the TGA.

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