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Improving Football Game Knowledge Through a Game-Based Learning Approach Among Players of Universitas Bhayangkara Jakarta Raya Football Club (UBJ FC) Aged 16–19 Years

Faridatul 'Ala[1*], Arsil[2], Tjung Hauw Sin[3], Alnedral[4], Roma Irawan[5], Apriyanti Rahmalia[6]

[1]Department of Sports Coaching Education

[1]Universitas Bhayangkara Jakarta Raya

[2,3,4,5]Universitas Negeri Padang

[6]Universitas Bung Hatta

ABSTRACT: Game knowledge is an essential component in youth football development because it supports players' ability to interpret game situations, make decisions, and apply tactical principles effectively. However, many youth training programs still emphasize technical drills with limited attention to contextual understanding of the game. This study aimed to examine the effect of a Game-Based Learning (GBL) approach on improving football game knowledge among players of Universitas Bhayangkara Jakarta Raya Football Club (UBJ FC) aged 16–19 years. The study employed a quantitative approach using a quasi-experimental one-group pretest–posttest design. Participants consisted of 28 youth players who were actively involved in the UBJ FC training program. Football game knowledge was measured using a test covering tactical understanding, decision-making, positional awareness, and attacking and defending situations. Data were analyzed using descriptive statistics and a paired sample t-test. The results showed that the mean score increased from 63.2 in the pretest to 75.1 in the posttest with a significance value of 0.001 ($p < 0.05$). These findings indicate that the Game-Based Learning approach significantly improved football game knowledge among UBJ FC players aged 16–19 years. The findings suggest that game-based training can serve as an effective strategy for integrating technical, tactical, and cognitive aspects in youth football development.

KEYWORDS: Game-Based Learning, football training, tactical understanding, youth players, decision making

1. INTRODUCTION

Football is a complex team sport that requires the integration of technical, physical, tactical, and cognitive abilities. In youth development programs, training often focuses heavily on the mastery of basic technical skills such as passing, dribbling, shooting, and ball control. Although technical competence is fundamental, successful performance in football also depends on players' ability to understand the game, interpret dynamic situations, and make effective decisions during play (Williams & Hodges, 2005; Memmert, 2010).

Game knowledge in football refers to players' understanding of tactical principles, spatial awareness, positional roles, and decision-making processes in different phases of the game. Players with strong game knowledge are better able to anticipate opponents' movements, recognize opportunities, and select appropriate tactical actions within a short time frame (Araújo, Davids, & Hristovski, 2006; Travassos et al., 2012).

Players aged 16–19 years are in an important stage of cognitive and tactical development. At this stage, athletes begin to demonstrate higher levels of analytical thinking, enabling them to process tactical information and apply strategies more effectively during play (Ford, Yates, & Williams, 2010). Consequently, training programs should not only emphasize technical execution but also promote tactical understanding and decision-making abilities.

Despite this need, youth football training frequently relies on drill-based methods that isolate technical skills from actual game contexts. While such drills may improve motor execution, they often fail to provide meaningful opportunities for players to interpret game situations or develop tactical awareness (Renshaw et al., 2010).

Game-Based Learning (GBL) represents an alternative pedagogical approach that emphasizes learning through game situations. In sports education, this concept is closely associated with the Teaching Games for Understanding (TGfU) model, which focuses on tactical awareness and contextual decision-making through modified games (Bunker & Thorpe, 1982; Griffin, Mitchell, & Oslin, 1997; Harvey & Jarrett, 2014).

Within football training environments, game-based approaches can be implemented through small-sided games, modified rules, and tactical scenarios designed to simulate real match conditions. Research has shown that small-sided games can improve decision-making ability, tactical awareness, and overall player engagement during training (Davids et al., 2013; Hill-Haas et al., 2011; Clemente, Martins, & Mendes, 2014).

Given the developmental characteristics of players aged 16–19 years, the Game-Based Learning approach may provide an effective strategy for improving football game knowledge. Despite the growing number of studies examining game-centered approaches in sport pedagogy, empirical evidence focusing specifically on the improvement of football game knowledge among adolescent club players in real training environments remains limited. Many previous studies primarily examine tactical behavior, physiological responses, or general learning outcomes rather than the cognitive dimension of game understanding. In addition, limited research has explored the application of Game-Based Learning approaches within youth football development programs in the Indonesian context. Therefore, further investigation is needed to examine how game-based training can enhance football game knowledge among adolescent players in practical coaching settings. Therefore, this study aimed to examine the effect of a Game-Based Learning approach on football game knowledge among players of Universitas Bhayangkara Jakarta Raya Football Club (UBJ FC).

2. LITERATURE REVIEW

Football Game Knowledge

Football game knowledge represents the cognitive component of player performance. It involves the ability to recognize patterns of play, understand attacking and defending principles, and make appropriate tactical decisions during competition. Tactical knowledge allows players to interpret complex game situations and respond effectively within dynamic environments (Memmert, 2010).

Game-Based Learning in Sport

Game-Based Learning is an instructional approach that uses games as the central medium for learning. In sport pedagogy, this approach encourages players to develop technical and tactical skills simultaneously through contextual learning experiences (Harvey & Jarrett, 2014). Through game-based activities, players encounter realistic problems that require them to analyze situations, communicate with teammates, and make tactical decisions.

Tactical Learning in Adolescent Players

Adolescence is a critical period for the development of tactical awareness in sport. During this stage, players possess the cognitive capacity to analyze complex information and apply strategic thinking during competition (Ford et al., 2010). Training approaches that emphasize contextual learning can therefore enhance both decision-making and tactical understanding.

3. METHODS

Research Design

This study employed a quantitative approach using a quasi-experimental method with a one-group pretest–posttest design. This design allowed the researchers to measure changes in football game knowledge before and after the implementation of the Game-Based Learning intervention.

Participants

The participants consisted of 28 football players aged 16–19 years from Universitas Bhayangkara Jakarta Raya Football Club (UBJ FC). Participants were selected using purposive sampling based on the following criteria: actively participating in training sessions, physically healthy, and willing to participate in all stages of the research.

Research Instrument

Football game knowledge was measured using a structured test developed based on key tactical indicators, including:

• tactical understanding • decision making • positional awareness • attacking situations • defending situations

The instrument consisted of scenario-based questions and multiple-choice items designed to assess players' understanding of game situations.

Procedure

The research was conducted in three stages:

1. Pretest – measurement of players' initial football game knowledge.
2. Treatment – implementation of Game-Based Learning through modified games and small-sided games during training sessions.
3. Posttest – measurement of football game knowledge after the training intervention.

Data Analysis

Data were analyzed using descriptive statistics and inferential analysis. Descriptive statistics were used to calculate the mean and standard deviation of the pretest and posttest scores. Hypothesis testing was conducted using a paired sample t-test with a significance level of 0.05.

4. RESULTS

Descriptive Statistics

The results indicated an improvement in football game knowledge scores following the implementation of the Game-Based Learning approach. The mean pretest score was 63.2 (SD = 7.6), while the mean posttest score increased to 75.1 (SD = 6.9).

Table 1. Descriptive Statistics of Football Game Knowledge Scores

Variable	N	Mean	SD	Min	Max
Pretest	28	63.2	7.6	50	77
Posttest	28	75.1	6.9	62	87

The descriptive results indicate that players experienced an improvement in football game knowledge after the Game-Based Learning intervention.

Normality Test

Before hypothesis testing, a normality test was conducted to determine whether the data were normally distributed. The results showed that both pretest and posttest scores were normally distributed because the significance values were greater than 0.05.

Table 2. Normality Test Results

Variable	Sig.	Interpretation
Pretest	0.200	Normal
Posttest	0.146	Normal

Because the data were normally distributed, further analysis was conducted using a paired sample t-test.

Hypothesis Testing

The paired sample t-test results revealed a significant difference between pretest and posttest scores ($p = 0.001$). Since the significance value was lower than 0.05, the null hypothesis was rejected. This indicates that the Game-Based Learning approach significantly improved football game knowledge among UBJ FC players aged 16–19 years. In addition to the significance test, the magnitude of the intervention effect was evaluated using Cohen's d effect size. Based on the difference between the pretest mean (63.2) and posttest mean (75.1), the calculated effect size was approximately $d = 1.64$, indicating a large effect according to Cohen's criteria. This result suggests that the Game-Based Learning intervention produced a substantial improvement in football game knowledge among the participants.

Table 3. Paired Sample t-test Results

Test	Mean Pretest	Mean Posttest	Sig.	Interpretation
Paired Sample t-test	63.2	75.1	0.001	Significant

To evaluate the magnitude of the intervention effect, Cohen's d effect size was estimated based on the difference between the pretest and posttest means. The analysis indicated a large effect size ($d \approx 1.64$), suggesting that the Game-Based Learning intervention produced a substantial improvement in football game knowledge.

5. DISCUSSION

The findings of this study demonstrate that the Game-Based Learning approach significantly improved football game knowledge among youth players. The increase in the mean score from 63.2 to 75.1 suggests that players developed better understanding of tactical situations, decision-making processes, and positional awareness.

This improvement may be explained by the contextual nature of the Game-Based Learning approach. Unlike traditional drill-based training, game-based activities require players to interpret dynamic situations and make decisions in real time. Such learning environments encourage the development of perception-action coupling and tactical awareness (Davids et al., 2013).

Previous research has shown that game-centered approaches such as Teaching Games for Understanding can improve tactical knowledge, decision-making ability, and player engagement in sports learning contexts (Harvey & Jarrett, 2014; Kinnerk et al., 2018). Similarly, small-sided games have been widely recognized as effective training methods for developing tactical behavior and cognitive skills in football players (Hill-Haas et al., 2011; Clemente et al., 2020).

The findings of this study therefore support the idea that football training should integrate technical, tactical, and cognitive elements. For adolescent players in particular, training approaches that emphasize tactical understanding may enhance long-term player development.

However, this study has several limitations. First, the research design did not include a control group, which limits the ability to establish causal relationships. Second, the sample size was relatively small and limited to a single training context. Future research should involve larger samples, experimental designs, and direct measurements of tactical performance during competitive matches.

6. CONCLUSION

The results of this study indicate that the Game-Based Learning approach significantly improves football game knowledge among players aged 16–19 years. The approach supports the development of tactical understanding, decision-making ability, and positional awareness in football training contexts.

These findings suggest that youth football coaches should incorporate game-based training methods, such as modified games and small-sided games, to enhance players' cognitive and tactical development alongside technical skills.

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