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The Effect of Game-Based Training Approach on The Understanding of Tactical Skills in Adult Tennis Players

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Abstract

The purpose of this study was to determine the effect of game-based training on the tactical skills understanding of adult tennis players at Sigma Tennis Club Bandung.. The method used in this study was an experiment using a One Group Pretest-Posttest Design. The population in this study were 10 tennis players training at Sigma Tenis Club Bandung, while the sample size was 10 people. The sampling technique used was total sampling, where all members of the population were used as samples in the study. The research instrument used a questionnaire referring to the Tactical Skills Questionnaire Test. Based on data processing and analysis, the average tactical skills performance test score increased from 63.00 to 84.30. The results of the paired sample t-test on both variables showed a sig. (2-tailed) of 0.000 < 0.05. Thus, Ho was rejected and Ha was accepted. Therefore, it can be concluded that Game-Based Approach training significantly improves the tactical skills of adult tennis players.

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INTRODUCTION

Sport is an integral part of modern human life, serving not only as a means of recreation but also contributing to physical, mental, and social health. One popular sport that has grown globally is tennis. According to the International Tennis Federation (ITF, 2015), more than 87 million people worldwide actively play tennis. Tennis's popularity across all ages and backgrounds makes it an attractive subject for the development of sports coaching, particularly from the perspective of adaptive training methodology.

In practice, tennis relies not only on physical and technical abilities but also requires playing intelligence particularly tactical awareness in responding to game dynamics (Fauzi et al., 2021). Tennis athletes must be able to read their opponents' play, make quick strategic decisions, and adjust their position and execution based on the court situation. Therefore, tennis training ideally integrates technical and tactical aspects in a balanced manner to produce a well-rounded performance(Hewitt & Pill, 2020). Over time, tennis participation among beginner adults has increased significantly. (Tennis Industry Association , 2022) noted that between 2019 and 2022, tennis participation increased by 22% in the United States, particularly among beginner adults (25–45 years old). A similar trend has been observed in several other countries, including Indonesia, where adult tennis clubs have mushroomed post-pandemic as a means of exercise and a healthy lifestyle. However, the increase in participation has not been fully matched by effective learning. Many novice adult players experience stagnant skill development because the training approach used is still too focused on basic techniques and does not consider the tactical dimension of the game (Unierzyski & Crespo, 2007). Overly mechanistic methods often do not create meaningful and contextual learning conditions for adults. One crucial aspect often overlooked in adult beginner training is tactical awareness the ability to recognize game situations, determine solutions, and execute decisions quickly and accurately. Without tactical understanding, players tend to become confused on the field, even after mastering basic techniques. This leads to frustration, decreased motivation, and even potential dropout from the game (Hublin et al., 2021).

Tactical awareness doesn't develop automatically but needs to be developed through playing experience in real-world contexts. Research by (Sanchez Mencia et al., 2025) suggests that tactical skills contribute more significantly to game performance than technical skills, especially in the early learning phase. This underscores the importance of integrating cognitive-tactical aspects into every training session. This makes the learning process rigid and discourages tactical decision-making (Werner et al., 1996). This approach is clearly less effective for adult learning, which is inherently reflective and contextual.

This approach adopts a modern athlete-centered pedagogical paradigm , where the coach is not simply an instructor but a learning facilitator. Using GBA, players are more actively involved in the learning process and indirectly develop tactical understanding through experience (Hublin et al., 2021). For example, through mini-games that require players to make strategic decisions about positioning or shot types.

Empirical evidence demonstrates the effectiveness of the GBA approach in the context of sports learning. (Zetou et al., 2014) demonstrated that students trained with the game for understanding model demonstrated significant improvements in backhand skills and self-efficacy compared to a control group trained with a traditional technique approach. This improvement was due to the contextual experience that required problem-solving during the game. Limitations in previous research designs have been widely highlighted. Most studies have been solely descriptive or qualitative, thus lacking strong empirical evidence regarding the effectiveness of the Game-Based Approach (GBA) on tactical variables in a measurable and objective manner (Light & Fawns, 2003). Therefore, quantitative research is needed to fill this gap. By using an experimental design, the effect of GBA on tactical awareness in play can be evaluated more systematically. Techniques such as pretest-posttest designs allow researchers to quantitatively observe changes before and after treatment. This approach is essential for assessing the impact of interventions with good internal validity (Jarrett et al., 2014). Theoretically, this research is expected to enrich the literature in the field of sports pedagogy, particularly in net/wall sports like tennis.

The integration of GBA into tactical training for adult beginners and intermediate is a relatively new topic and has the potential to open up more effective and contextual training approaches (Miller et al., 2016). Practically, the research results can be used by community tennis coaches, training academies, and sports federations as a basis for developing game-based training curricula. This approach is also believed to increase engagement in adult players, who generally have limited time and prefer engaging learning experi-

ences (McGarry et al., 2013). Furthermore, this research is expected to encourage the use of tactical assessment instruments as an integral part of sports learning evaluation. Thus, tactical awareness is not merely considered a by product of the technical learning process, but rather a primary objective systematically designed into the curriculum (Werner et al., 1996). Based on this background, this study aims to quantitatively analyze the effect of GBA training on tactical understanding in intermediate adult tennis players.

METHODS

This research method uses the experimental method, This study examined the independent variable, the influence of game-based training approaches , and the dependent variable, the understanding of tactical skills in beginner adult tennis players. The experiment involved Sigma Tennis club players participating in the sport of tennis. this study is using a one-group pre-test post-test design. as a research design , where this research design involves measurement through a pre-test given before treatment, and a post-test conducted after treatment is given to the sample.

Table 1. Research Design

Group	Pretest	Treatment	Posttest
Experiment	O1	X	X2

Explanation :
O1 = Pretest (Tactical Skill Questionnaire Test)
X = Treatment (Game Based Approach training)
O2 = Posttest/Observation (Tactical Skill Questionnaire Test)

The population used in this study concists of 10 male tennis athletes from the Sigma Tennis Club, based in Bandung, in intermediate classes. The required athletes were aged 19-25 years. In this study, the sample was selected using the Total Sampling technique. This is based on the selection of samples in this type of sample, all members of the population are used as samples in the study. This study research uses a questionnaire instrument that covers the Tactical Skill Questionnaire Test. (Sanchez Mencia et. al., 2025) which includes tactical skill components in tennis, namely anticipation , game knowledge , strategy , problem solving, situational awareness , and execution. The author refers to the Likert scale as the measurement scale used for scoring the research questionnaire. Each question has five answer choices based on alternative answers. Each question has alternative answers, starting with "Very bad," "Poor," "Fair," "Good," and "Very good.".

This research program was conducted over three days over four weeks, with a total of 12 sessions. The training program was conducted at the Bandung Elektrik Cigereleng tennis court. A regular and consistent implementation of a training program can improve tennis quality. In this study, the researchers provided a tennis training program that emphasized tactical aspects within the context of a real-world game simulation (Tennant & Jones, 2018). Before athletes begin core training, researchers will provide a warm-up to help prepare their muscles for training and prevent muscle injury. The warm-up used by researchers includes static and dynamic stretching, as well as a ladder drill, performed for 15 minutes. The core training session includes all treatments for the players. The core training session lasts for 40 minutes, with 2 x 3 rest periods. After the training session was completed, the researcher gave instructions to the players to cool down to avoid any injury for the players.

RESULTS AND DISCUSSION

The aim of this study was to determine the effect of game-based training on the understanding of tactical skills in adult tennis players. Researchers used the Tactical Skills Test, administered 12 times over four weeks, with treatment administered three times per week. The data processing for this study was based on test results on the research sample. A pretest was conducted to determine the sample's initial understanding of tactical skills. The sample was then given treatment in the form of game-based training. A posttest was then conducted to determine the value of their tactical tennis skills.

Table 2. 1of the Pretest and Posttest Tactical Skills Test

PRETEST	POSTTEST	DIFFERENCE
65	82	17
65	84	19
63	83	20
61	84	23
61	84	23
61	85	24
66	86	20
62	85	23
62	85	23
64	85	21

From **Table 2**, shows the data obtained from the pretest and posttest . The pretest had a minimum score of 55 and a maximum score of 66. The posttest had a minimum score of 80 and a maximum score of 86. From the data above, it can be concluded that there is a significant influence of game-based training on tactical skills understanding.

After the measurements were conducted, the data were processed and analyzed using a statistical approach. Initially, the researcher collected raw data using Microsoft Excel, which was then converted into standardized data. The subsequent analysis was carried out using statistical software, namely Statistical Product and Service Solution (SPSS) version 21.

A hypothesis test or comparison was conducted using a paired sample t-test to determine whether the game-based approach training had an effect on tennis players' understanding of tactical skills.

Based on the of t-test output results, the initial and final test of playing skills are known to be sig.(2-tailed) 0.000 < 0.05. Thus, Ho is rejected and Ha is accepted. Thus, it can be concluded that game-based approach training has a significant influence on the understanding of tactical skills in adult tennis players.

Furthermore, the paired sample t- test produces a significance value of 0.000 (<0.05) with a t value of -29.971, so that H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a significant increase in the understanding of tactical skills after players receive training based on the Game-Based Approach .

Improved understanding of tactical skills after GBA training indicates that this method is effective in honing players' abilities in making tactical decisions, determining positioning, and executing game strategies. This aligns with the framework of thinking. because the causal flow shown from beginning to end is truly proven in practice in the field. The Teaching Games for Understanding (TGfU) theory proposed by (Memmert & Harvey, 2008) states that learning through modified games can place players in real-life situations, forcing them to think, react, and adapt tactically. In this study, GBA provided contextual stimuli that enabled direct transfer from training situations to real matches.

The results of this study are consistent with those of (Hublin et al. 2021), which showed that GBA was more effective than conventional methods in improving tactical understanding and tennis playing skills in beginners. Research by (Zetou et al. 2022) also supports these results, where a game-based approach significantly improved tactical skills and confidence compared to purely technique-based training.

However, this study also adds new evidence to a previously relatively understudied adult population. While most previous studies (Hopper & Rhoades, 2022) have focused on children or adolescents, this study extends the validity of GBA to the adult player segment, demonstrating that andragogical principles in sport learning are also incorporated into this approach.

Theoretically, this study strengthens the TGfU model (Mitchell et al., 2020) and the concept of athlete-centered coaching , which places the athlete at the center of learning, with playing experience as the primary medium for developing tactical skills. These results also support the theory of situational awareness (Barrett et al., 2025), where exposure to realistic game situations enhances perception, understanding, and projection of actions in a sporting context. With empirical evidence from a group of adult players, this study expands the scope of application of TGfU and GBA theories beyond the learning context of children or young athletes.

CONCLUSION

Based on the results and data analysis, it can be concluded that Game-Based Approach training significantly improves the tactical skills of adult tennis players. In other words, a game-based training program can be used to improve understanding of tactical skills in tennis.

The following are the expected consequences of this research. The results of this study indicate that the Game-Based Approach (GBA) has a significant impact on improving the tactical skills of adult tennis players. Practical implications: Tennis coaches and academies can utilize GBA as a primary strategy in tactical learning, as this approach integrates decision-making, positioning, and technique execution in real-life game situations.

These findings provide a scientific basis for developing a game-based training curriculum that is more adaptive to the learning characteristics of adults, in accordance with andragogical principles. Theoretically, this research expands the application of the Teaching Games for Understanding (TGfU) model and situational awareness theory to adults, which have previously been primarily applied to children or adolescents.

The results of this study can serve as a reference for coaches, athletes, and policymakers, both wit-

hin and outside the sporting environment. Based on the research findings, the authors offer several recommendations for further research, including further research with a true experimental design involving a control group to increase internal validity. The use of a larger and more diverse sample size, covering a variety of age levels and playing backgrounds, so that the results can be generalized more widely. Addition of follow -up tests to determine retention of tactical skills after GBA training. Combining questionnaire and interview test instruments to get a more comprehensive picture of the tactical learning process. Examining the integration of GBA with training technologies such as video feedback to see the impact on improving tactical skills.

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