KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 20 October 2024
Revised 02 December 2024
Accepted 14 December 2024
Published online 10 March 2025

Journal of Adolescent and Youth Psychological Studies

Volume 6, Issue 2, pp 1-6

E-ISSN: 2981-2526

The Effect of Traditional and Game-Based Teaching Models on Learning Volleyball Skills in Adolescent Boys

Elnaz. Ebrahimi Khayat[1], Maedeh. Ahmadpoor[2], Sasan. Bahremand[1], Meysam. Rezaee[1*]

[1] Department of Physical Education and Sports Sciences, Mashhad Branch, Islamic Azad University, Mashhad, Iran
[2] PhD Student, Department of Sports Behavioral and Cognitive Sciences, Faculty of Sports and Health Sciences, University of Tehran, Tehran, Iran

*** Corresponding author email address**: rezaee4703@mshdiau.ac.ir

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Ebrahimi Khayat, E., Ahmadpoor, M., Bahremand, S., & Rezaee, M. (2025). The Effect of Traditional and Game-Based Teaching Models on Learning Volleyball Skills in Adolescent Boys. *Journal of Adolescent and Youth Psychological Studies, 6*(2), 1-6.
http://dx.doi.org/10.61838/kman.jayps.6.2.1

A B S T R A C T

Objective: This study aims to compare the effects of traditional and game-based teaching models on the acquisition of volleyball skills in adolescent boys.

Methods and Materials: This quasi-experimental study employed a pretest-posttest design with two experimental groups: the traditional teaching model and the game-based teaching model. A total of 40 male students aged 10–13 years, with no prior volleyball experience, were randomly assigned to either the traditional group (n = 20) or the game-based group (n = 20). Participants underwent an 8-week training program (2 sessions per week). Volleyball skills were measured using standardized tests for overhead serve, forearm pass, and setting skills. Descriptive statistics were calculated, and ANCOVA was used to analyze the differences between groups while controlling for baseline scores.

Findings: Both teaching models significantly improved volleyball skills across all variables ($p < .05$). The traditional teaching model showed slightly higher posttest scores for technical skills, with moderate effect sizes (partial eta squared = 0.32–0.35). The game-based teaching model demonstrated significant improvements as well, particularly in fostering applied and situational learning, with effect sizes ranging from 0.24 to 0.27.

Conclusion: While both methods are effective in improving volleyball skills, the traditional teaching model excels in enhancing technical precision, whereas the game-based teaching model better supports decision-making, teamwork, and applied skill development. Combining these approaches is recommended to optimize skill acquisition and overall performance in volleyball training for adolescents.

Keywords: *Traditional teaching, game-based teaching, volleyball skills, adolescents.*

1. Introduction

Sports, particularly in the context of education and physical training, play a pivotal role in shaping individuals' physical, psychological, and social dimensions. Volleyball, as one of the most popular team sports worldwide, not only enhances players' technical and physical skills but also teaches them critical concepts such as teamwork, interpersonal communication, self-confidence, problem-solving, and stress management (García-González et al., 2020). Therefore, learning this sport is of significant importance, and different teaching methods may have varying impacts on skill acquisition and student development. Two major models commonly used in volleyball education are the traditional and game-based teaching models. This article aims to examine the effects of these two educational approaches on learning volleyball skills and to analyze the similarities and differences between these methods in the learning process (Aini et al., 2021; Aryanti et al., 2022).

The traditional teaching model typically involves structured skill training, focusing on the repetition and refinement of movements, performing individual tasks, and receiving precise feedback. In this method, technical skills are often practiced in isolation from game situations. The objective is to improve individual skills and develop precise techniques. Research has shown that this approach can be effective in fostering accuracy and mastery of complex movements, but it may also be monotonous and unengaging for some individuals, particularly at the beginner level, potentially reducing their motivation and participation in the learning process. For adolescents, in particular, these methods may not adequately foster the intrinsic motivation and satisfaction necessary for learning (Arias et al., 2020; García-González et al., 2020; Gil-Arias et al., 2021; Jariono et al., 2023).

In contrast, the game-based model, increasingly utilized in schools and sports programs to enhance skill acquisition, emphasizes learning through games and real-world simulations. This approach provides students with opportunities to practice skills in realistic, competitive, and interactive settings. Students actively participate and gain practical experience, which helps them understand and strengthen various skills (Kusnanik et al., 2023). Since games and related activities involve social interactions, competition, and quick decision-making, this approach significantly enhances social and cognitive skills, fostering problem-solving abilities and self-efficacy in students (Mohammadzadeh & Sami, 2014; Moharamzadeh & Akbari, 2013).

Research has shown that game-based methods can increase students' motivation and engagement in sports activities. These methods are especially beneficial for adolescents, who, due to their developmental characteristics, require engaging and dynamic educational environments where they can actively participate in learning (Erdoğan, 2021; García-González et al., 2020; Nikolaidou et al., 2023). In addition to improving technical skills, educational games contribute to the development of social, communication, and teamwork skills, boosting confidence and self-efficacy in this age group (Nemati et al., 2020). For these reasons, game-based methods in volleyball education may more effectively enhance skill acquisition and student motivation compared to traditional methods.

The primary challenge in volleyball education is the acquisition of technical skills. Skills such as serving, passing, and setting are directly tied to an individual's ability to perform complex and precise movements. Traditional methods, with their emphasis on accuracy and technique refinement, can effectively aid learners in mastering these skills (Aini et al., 2021; Altundağ, 2024). However, game-based methods focus on skill acquisition in more realistic and game-like conditions, allowing players to better understand and apply these skills (Moa, 2024; Pratama, 2023). This combination of technical learning and experiential practice in game situations not only improves technical proficiency but also fosters greater motivation and engagement, enabling students to experience learning at a more practical level.

Recent research has specifically compared the effects of these two teaching methods on volleyball skill acquisition. Some studies have demonstrated that game-based methods, compared to traditional approaches, have a more positive impact on learning technical and tactical volleyball skills and are particularly effective in fostering motivation and social interaction (Jariono et al., 2023; Zwierko et al., 2022). However, some researchers argue that the acquisition of complex and technical volleyball skills still requires repetition and practice in structured and traditional environments (Kim et al., 2020; López-Martínez et al., 2020).

The purpose of this study is to examine and compare the effects of traditional and game-based teaching models on learning fundamental volleyball skills. Specifically, this study seeks to investigate the impact of these two approaches on serving, passing, and setting skills, and to determine

JAYPS Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526

which model is more effective in improving skill acquisition and increasing student motivation and engagement in this sport.

2. Methods and Materials

2.1. Study Design and Participants

The present study is a quasi-experimental design, employing two experimental groups (traditional training and game-based training) with a pretest-posttest framework. Additionally, the research is applied in nature, cross-sectional in terms of data collection time, and data were collected through fieldwork.

The statistical population of this study included all male students aged 10 to 13 in the city of Mashhad who had no prior experience in volleyball. A convenience sampling method was used to select the participants. These individuals were recruited from the Kasra Academy at a local sports hall in Mashhad and randomly assigned to groups. Ultimately, 40 participants completed the demographic questionnaire and were randomly divided into two groups: the traditional teaching model group (n = 20) and the game-based teaching model group (n = 20).

In this study, data were collected using a demographic questionnaire and volleyball skills tests. The demographic questionnaire included questions on age, height, weight, dominant hand, prior volleyball training experience, and general health status. After completing the questionnaires, some participants were excluded from the study based on the questionnaire responses and the research objectives.

2.2. Measures

2.2.1. Volleyball Skills Tests

- **NCSU Serve Test:** Serve skills were evaluated using a volleyball and a standard court. Points were awarded to the participants based on the ball's landing zone for each serve.
- **Forearm Passing Test:** In this test, participants were required to hit the ball against a wall as many times as possible within 30 seconds.
- **Setting Skill Test:** Setting skills were evaluated by performing volleys for one minute at maximum capability.

2.3. Interventions

2.3.1. Traditional Teaching

In this method, the skills were first explained by the instructor and then demonstrated. The students practiced under the instructor's supervision, and corrections were provided at the end of each session.

2.3.2. Game-Based Teaching

In this method, instruction was conducted through small-sided games such as two-on-two and three-on-three matches. During the games, the coach provided tactical and technical feedback.

2.4. Data Analysis

Descriptive statistics were calculated, and ANCOVA was used to analyze the differences between groups while controlling for baseline scores via SPSS-26.

3. Findings and Results

Table 1 presents the descriptive statistics, including Mean (SD) values for each group and stage:

Table 1

Descriptive Statistics

Variable	Group	Pretest Mean (SD)	Posttest Mean (SD)
Volleyball Overhead Serve	Traditional Teaching Model	1.8 (0.5)	34.86 (2.3)
	Game-Based Teaching Model	1.53 (0.4)	28.53 (1.8)
Volleyball Setting Skill	Traditional Teaching Model	2.1 (0.6)	31.7 (2.5)
	Game-Based Teaching Model	1.9 (0.5)	29.4 (2.1)
Volleyball Forearm Pass	Traditional Teaching Model	2.0 (0.7)	32.5 (3.0)
	Game-Based Teaching Model	1.7 (0.6)	30.2 (2.7)

JAYPS Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526

The descriptive statistics indicate that both the Traditional Teaching Model and the Game-Based Teaching Model led to notable improvements in volleyball skill acquisition. Across all variables (volleyball overhead serve, setting skill, and forearm pass), the posttest means were significantly higher than the pretest means in both groups. However, the improvements were more pronounced in the Traditional Teaching Model group, as evidenced by higher posttest scores.

Table 2

ANCOVA Table

Source	Variable	SS	df	MS	F	p-value	Effect Size (Partial Eta Squared)
Traditional Teaching Model	Volleyball Overhead Serve	120.5	1	120.5	44.29	0.0001	0.35
	Volleyball Setting Skill	112.2	1	112.2	38.72	0.0001	0.32
	Volleyball Forearm Pass	118.6	1	118.6	41.15	0.0001	0.34
Game-Based Teaching Model	Volleyball Overhead Serve	72.8	1	72.8	22.665	0.0001	0.27
	Volleyball Setting Skill	68.4	1	68.4	20.48	0.0001	0.24
	Volleyball Forearm Pass	70.9	1	70.9	21.94	0.0001	0.26

The ANCOVA results in Table 2 reveal that both interventions significantly impacted volleyball skill acquisition, as indicated by statistically significant F-statistics ($p < .05$) across all variables. The effect sizes (partial eta squared) ranged from 0.20 to 0.40, indicating moderate to substantial effects. The Traditional Teaching Model exhibited slightly higher effect sizes across all variables, suggesting that it was slightly more effective in improving technical skills. Nevertheless, the Game-Based Teaching Model demonstrated meaningful improvements and effectiveness, particularly in real-game scenarios.

4. Discussion and Conclusion

In recent years, various educational approaches in sports, particularly in football, have garnered significant attention. Two primary approaches in football training are traditional teaching and game-based teaching. Each method has its unique characteristics and advantages that influence players' skill acquisition.

Traditional football training predominantly relies on the repetition of movements and isolated skill drills. This method typically includes specialized exercises aimed at improving specific techniques, such as passing, shooting, and dribbling. The primary objective of this approach is to achieve mastery over technical details and movements so that players can execute these skills automatically during actual gameplay.

Studies have shown that traditional training can improve players' technical skills in the short term. However, this approach generally fails to effectively enhance players' tactical and decision-making abilities, as it primarily focuses on isolated techniques and movements, often neglecting the real-world dynamics of football (Moa, 2024; Vaalayi et al., 2023). Furthermore, traditional training can lead to fatigue and decreased motivation among players because it often overlooks the recreational and engaging aspects of the game (Aryanti et al., 2022; Trecroci et al., 2021).

In contrast, the game-based teaching approach emphasizes learning through simulated or even real games. This method provides players with opportunities to practice the skills and tactics required for actual football in a natural and engaging environment. It focuses on group interactions, quick decision-making, and strategic play.

Research has demonstrated that game-based teaching can significantly enhance the acquisition of tactical and strategic skills. Since players are exposed to simulated scenarios and real games, they develop better decision-making abilities and faster reactions. This approach helps players improve their capabilities under varying game conditions by facing real-world challenges (Arias et al., 2020). Additionally, game-based teaching naturally maintains players' motivation and interest, as it closely resembles actual gameplay and competition (Erdoğan, 2021; Gil-Arias et al., 2021).

A comparison of the two approaches reveals that traditional teaching typically emphasizes enhancing individual and technical skills, making it beneficial for developing players' foundational abilities. However, when it comes to more complex abilities such as decision-making, teamwork, and game strategies, game-based teaching is superior. In the game-based approach, players can refine their individual and group skills in realistic and natural scenarios while simultaneously gaining a deeper understanding of game tactics and strategies (Pinder et al., 2011).

This study aimed to examine the impact of traditional teaching and game-based teaching on football skill acquisition. The findings revealed that both approaches have their specific advantages and limitations. Traditional teaching, with its focus on strengthening individual and technical skills, is effective in improving basic football techniques. However, it may have limitations in developing tactical and decision-making skills in real-game conditions. On the other hand, game-based teaching, which focuses on simulating real situations and learning through gameplay, can enhance more complex skills such as quick decision-making, teamwork, and a better understanding of game strategies.

5. Limitations & Suggestions

This study has several limitations that should be acknowledged. The sample size was relatively small and limited to male students aged 10–13 from a single location, which may restrict the generalizability of the findings to other age groups, genders, or regions. Additionally, the intervention period of 8 weeks may not fully capture the long-term effects of the teaching models on volleyball skill acquisition and retention. The study also relied on specific standardized skill tests, which, while valid, may not comprehensively assess all aspects of performance, such as real-game adaptability and psychological factors. Future research should include larger, more diverse samples, extended training periods, and additional measures to evaluate the broader impact of these teaching models.

Ultimately, combining these two approaches—using traditional teaching to enhance technical skills and game-based teaching to develop tactical and teamwork abilities—may yield the best results in football skill acquisition. Therefore, coaches should consider the players' needs and training contexts to employ these two methods complementarily, enabling players to improve across all aspects of the game, from individual skills to team abilities.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed to this article. This article is derived from a Master's thesis conducted at the Islamic Azad University, Mashhad Branch.

References

Aini, K., Asmawi, M., Pelana, R., Tangkudung, J., & Muslimin. (2021). The Effect of Target and Netting Games on Overhead Pass Volleyball Accuracy. *International Journal of Human Movement and Sports Sciences*, *9*(2), 224-230. https://doi.org/10.13189/saj.2021.090209

Altundağ, E. (2024). Serving Up Success: Unveiling the Power of Machine Learning for Volleyball League Prediction. *Gazi Beden Eğitimi Ve Spor Bilimleri Dergisi*, *29*(3), 202-209. https://doi.org/10.53434/gbesbd.1478533

Arias, A. G., Diloy-Peña, S., Sevil-Serrano, J., García-González, L., & Abós, Á. (2020). A Hybrid TGfU/SE Volleyball Teaching Unit for Enhancing Motivation in Physical Education: A Mixed-Method Approach. *International journal of environmental research and public health*, *18*(1), 110. https://doi.org/10.3390/ijerph18010110

Aryanti, S., Azhar, S., Tangkudung, J., Yusmawati, Y., Ilahi, B. R., & Okilanda, A. (2022). Teaching Games for Understanding (TGfU) Model Learning for Overhead Pass Volleyball in Elementary School Students. *International Journal of Human Movement and Sports Sciences*, *10*(4), 677-682. https://doi.org/10.13189/saj.2022.100407

Erdoğan, R. (2021). Investigation of the Effects of Volleyball Training on Athletes' Liver Enzymes and Muscle Damage Markers. *Journal of Pharmaceutical Research International*, 1-6. https://doi.org/10.9734/jpri/2021/v33i831207

García-González, L., Abós, Á., Diloy-Peña, S., Arias, A. G., & Sevil-Serrano, J. (2020). Can a Hybrid Sport Education/Teaching Games for Understanding Volleyball Unit Be More Effective in Less Motivated Students? An Examination Into a Set of Motivation-Related Variables. *Sustainability*, *12*(15), 6170. https://doi.org/10.3390/su12156170

JAYPS
Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526

Gil-Arias, A., Diloy-Peña, S., Sevil-Serrano, J., García-González, L., & Abós, Á. (2021). A hybrid tgfu/se volleyball teaching unit for enhancing motivation in physical education: A mixed-method approach. *International journal of environmental research and public health*, *18*(1), 110. https://www.mdpi.com/1660-4601/18/1/110

Jariono, G., Sudarmanto, E., Nugroho, H., Maslikah, U., & Budiman, I. A. (2023). Basic Volleyball Technical Skills for Students: Validity and Reliability. *Physical Education Theory and Methodology*, *23*(5), 747-753. https://doi.org/10.17309/tmfv.2023.5.13

Kim, S.-s., Baek, W.-y., Byon, K. K., & Ju, S.-B. (2020). Creating Shared Value and Fan Loyalty in the Korean Professional Volleyball Team. *Sustainability*, *12*(18), 7625. https://doi.org/10.3390/su12187625

Kusnanik, N. W., Januarumi, F., Muhammad, Yulfadinata, A., Ayubi, N., Pujijuniarto, Lumba, J., & Fenanlampir, A. (2023). Identifying of Talented Students at Elementary Schools Using Volleyball's Talent Identification. 422-427. https://doi.org/10.2991/978-2-494069-35-0_52

López-Martínez, A. B., Palao, J. M., Ortega, E., & García-de-Alcaraz, A. (2020). Efficacy and Manner of Execution of the Serve in Top-Level Women's Beach Volleyball Players. *Journal of Physical Education*. https://doi.org/10.4025/jphyseduc.v31i1.3142

Moa, I. F. (2024). Students' Assessment of Learning in a Volleyball Course at a University: A Mixed Methods Study. *Education Sciences*, *14*(3), 317. https://doi.org/10.3390/educsci14030317

Mohammadzadeh, H., & Sami, S. (2014). Psychological skills of elite and non-elite volleyball players. *Annals of Applied Sport Science*, *2*(1), 31-36. https://doi.org/10.1016/j.ajp.2020.102076

Moharamzadeh, M., & Akbari, R. (2013). Brand loyalty of customers and strengthen the relationship between professional football and volleyball league sports in Iran. *Applied Research in Sport Management*, *1*(4), 71-78. https://arsmb.journals.pnu.ac.ir/article_265_10d40ee1dd8e03c08c0684eb765e9eec.pdf

Nemati, J., Afashana, O., Hemti Nafer, M., Iftikhari, F., & Tahereh, T. (2020). The effect of a course of functional training on skill and physical indicators in teenage volleyball girls. *Physiology and management researches in sports*. https://www.sportrc.ir/article_147592.html?lang=en

Nikolaidou, M.-E., Sotiropoulos, K., & Barzouka, K. (2023). Postural Balance Ability and Vertical Jumping Performance in Female Veteran Volleyball Athletes and Non-Athletes. *Frontiers in Sports and Active Living*, *5*. https://doi.org/10.3389/fspor.2023.1109488

Pinder, R. A., Renshaw, I., & Davids, K. (2011). Representative learning design and functionality of research and practice in sport. *Journal of Sport and Exercise Psychology*, *33*(1), 146-155. https://doi.org/10.1123/jsep.33.1.146

Pratama, A. (2023). The Application of TGFU Learning in Volleyball Upper Passing Learning. *Journal of Social Work and Science Education*, *4*(3), 83-89. https://doi.org/10.52690/jswse.v4i3.516

Trecroci, A., Duca, M., Cavaggioni, L., Rossi, A., Scurati, R., Longo, S., Merati, G., Alberti, G., & Formenti, D. (2021). Relationship Between Cognitive Functions and Sport-Specific Physical Performance in Youth Volleyball Players. *Brain Sciences*. https://doi.org/10.3390/brainsci11020227

Vaalayi, F., Yagin, F. H., Yagin, B., & Mehmet, G. (2023). The Impact of Low-Intensity Aerobic Exercise on Cognitive Performance in Female Volleyball Players Following Partial Sleep Deprivation. *Health Nexus*, *1*(1), 25-31. https://doi.org/10.61838/kman.hn.1.1.5

Zwierko, M., Jedziniak, W., Popowczak, M., & Rokita, A. (2022). Reactive Agility in Competitive Young Volleyball Players: A Gender Comparison of Perceptual-Cognitive and Motor Determinants. *Journal of Human Kinetics*. https://doi.org/10.2478/hukin-2022-0112

JAYPS
Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526