

APPLICATION OF HANGING BALL MEDIA TO IMPROVE THE QUALITY OF VOLLEYBALL UNDERHAND PASSING

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Abstract

Underhand passing is a fundamental technique of great importance in volleyball, yet it frequently remains a weakness among students in physical education learning. Common problems identified include improper body positioning, inconsistent ball contact, and low control and accuracy in passing. The hanging ball medium is proposed as an alternative to address these issues, enabling students to practice repeatedly with focus on technical movement without distraction from the ball's incoming direction. This study systematically examines the effectiveness of hanging ball media in improving volleyball underhand passing quality through a Systematic Literature Review (SLR) method. Articles from various scientific sources were analyzed to identify improvements in underhand passing technique aspects. The results show that the use of hanging ball media has a positive impact on improving basic technique, particularly in body position, ball contact on the forearm, body balance, and control of passing direction. Additionally, practice with hanging ball media helps students improve passing consistency and accuracy through a gradual and structured learning process. Overall, the application of hanging ball media is proven effective as both a learning and training medium for volleyball underhand passing.

Keywords: hanging ball media; underhand passing; volleyball; systematic literature review; physical education

1. INTRODUCTION

Underhand passing is a fundamental technique in volleyball. With the correct movement and positioning, the ball can be controlled well and delivered to teammates without causing difficulty during play. Volleyball was invented by William G. Morgan, a director of physical education, and first played in Holyoke, United States in 1895 (Hanief, Subekti, & Mashuri, 2018). Volleyball is a fast-paced game with ball contact limited to three touches. Therefore, mastery of basic techniques greatly supports volleyball performance, including underhand passing, overhead passing, smash, service, and blocking (Cuzzocrea & Zubcoff, 2011).

The teacher's role in guiding students in volleyball is essential — beyond providing information, the teacher also demonstrates correct movement during initial ball reception so that students feel confident rather than fearful when the ball approaches. With the motivation and guidance provided by the trainer, students become calmer and more confident in performing underhand passing correctly.

Research questions guiding this SLR are: (1) How does the use of hanging ball media influence underhand passing learning outcomes in volleyball? (2) To what extent does the hanging ball affect underhand passing among elementary school students?

2. METHODS

The research method used in this study is Systematic Literature Review (SLR). The SLR was conducted to systematically identify, evaluate, and analyze prior studies discussing the application of hanging ball media

in volleyball underhand passing learning or training. The article search process was conducted through scientific databases including Google Scholar and national journal portals using keywords 'bola gantung,' 'passing bawah bola voli,' and 'media pembelajaran bola voli.'

SLR stages included literature identification, article selection, data analysis, and synthesis of research results. Articles that passed selection were analyzed to determine the influence of hanging ball media on improving underhand passing technique quality — from aspects of accuracy, body posture, and learning effectiveness. The results were then synthesized to obtain general conclusions regarding the effectiveness of hanging ball media as an alternative learning medium.

3. RESULTS AND DISCUSSION

Literature review results analyzed through network visualization and word cloud approaches show that the application of hanging ball media has a real contribution to improving volleyball underhand passing quality. Network visualization was used to map the relationships between underhand passing skill indicators that frequently appeared across studies, so that relationships between technical aspects could be seen systematically. Word cloud functioned to display the most dominant indicators experiencing improvement based on frequency of occurrence in research data.

Network visualization shows close relationships between several main underhand passing indicators, including body position, ball contact, passing direction, and ball control. These relationships indicate that improvement in one technical aspect will affect other aspects continuously. For example, good body position supports precise ball contact, which ultimately contributes to the direction and accuracy of passing. Hanging ball media allows students to practice passing movements repeatedly with relatively stable ball conditions, so that practice focus can be directed toward basic technique formation.

The blue cluster in the network visualization represents the basic technical aspects of underhand passing that experienced the most significant improvement after the application of hanging ball media. These aspects include more stable body position, ball contact on the forearm, and body balance during passing. This confirms that hanging ball media is highly effective at the basic technique learning stage. The suspended ball helps students adjust their body position and arm angle without pressure from the ball's incoming speed, making it easier to understand the basic movement concept correctly.

Results using RStudio visualization showed a clear distribution of improvement in students' underhand passing scores after the application of hanging ball media — a clear difference between conditions before and after treatment, with the majority of students experiencing improvement in technique and passing results. Importantly, this improvement occurred not only in students with initially high ability but also in those with initially low ability, indicating that hanging ball media is inclusive and usable for various skill levels.

Word cloud of keywords showed that the most dominant indicators were body position, ball contact, passing direction, and ball control — consistent across analyzed studies. These findings confirm that hanging ball media primarily improves fundamental technical aspects. Overall, hanging ball media application positively impacts passing quality improvement, and these results provide a strong basis for teachers and coaches to integrate hanging ball media into volleyball training programs.

4. CONCLUSION

Based on the results and data visualization analysis conducted, it can be concluded that the application of hanging ball media has a significant impact on improving volleyball underhand passing quality. Hanging ball media is proven effective in helping students improve basic technique, particularly in body position, ball contact, body balance, and control and direction of passing. Network visualization shows strong interconnections between skill indicators, indicating that technique improvement occurs in a structured and mutually supportive manner. Word cloud clarifies that basic technique aspects are the components most dominantly improving after treatment. Therefore, hanging ball media can be recommended as an effective alternative learning and training medium for improving volleyball underhand passing quality.

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