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The role of some holistic thinking in learning the underhand serve skill in volleyball for female students

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Abstract

The significance of this research lies in the fact that learning is a complex process requiring learners to possess the necessary skills and study habits to achieve success, particularly in light of the increasing role of the learner and the growing complexity of educational tasks as students advance through academic stages. One of the major criticisms directed at traditional teaching methods such as explanation and model performance is their failure to account for learners' abilities and individual differences. Therefore, understanding the role of holistic thinking in learning the underhand serve skill is essential for achieving success in volleyball, as it makes training more effective and contributes to the comprehensive development of players' skills. The research problem emerged from the researchers' observation of the performance of the underhand serve skill among female students at the College of Physical Education and Sports Sciences, University of Misan, where they noticed a weakness in learning and performing this skill, as well as difficulty in its execution. Since holistic thinking helps players understand the interaction among various elements such as ball movement, players' positions, and opponents' strategies it can enhance spatial awareness and assist in making effective decisions during play. Therefore, the researchers sought to explore holistic thinking by integrating it into the educational curriculum to examine its effect on learning and performing the underhand serve skill in volleyball among female students. The study aimed to identify the level of holistic thinking among fourth year students, determine its effect on technical performance in the serve skill, assess its role in improving the team's overall performance, and investigate the correlation between holistic thinking and the underhand serve skill. The researchers adopted the descriptive method as it suited the nature of the problem, and the research population consisted of fourth year female students at the College of Physical Education and Sports Sciences, University of Misan, for the academic year 2024-2025. The findings revealed a significant correlation between holistic thinking and learning the underhand serve skill, and the researchers recommended applying the principle of reinforcement, as it helps eliminate performance defects and improve overall execution.

Keywords: Holistic thinking, learning, underhand, serve skill, volleyball

Introduction

Learning is a complex process that requires the learner's awareness of the skills necessary to achieve success (Siedentop, Hastie & Van der Mars, 2019) ^[30]. Therefore, there has been an increasing focus on study skills and learning habits, particularly in light of the active role of the learner on one hand, and the growing complexity of educational tasks as academic levels advance on the other (McCardle, Young & Baker, 2019) ^[19]. One of the major weaknesses of traditional teaching methods such as explanation and model performance is their failure to consider learners' abilities and individual differences (Bessa *et al.*, 2021) ^[9]. Such methods are no longer acceptable in the modern educational era, as the focus must now shift toward utilizing learners' intrinsic abilities and developing them further (Ali & Kasim, 2022; Singh & Parmar, 2023) ^[14, 27]. Consequently, new teaching approaches have emerged, relying on self-directed learning and educational technology, which have redefined the roles of both teacher and learner the teacher now acts more as a guide than a transmitter of knowledge (Toto & Limone, 2019) ^[28]. The formation of skills results from individual impressions or perceptions that vary from one learner to another (Bessa *et al.*, 2019) ^[8]. Educational curricula, particularly in physical education and sports sciences, are rich in both abstract and tangible concepts, and their units are structured around specific skills (Roccliffe *et al.*, 2023) ^[25].

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These curricula emphasize active student participation in the learning process, the practice of holistic thinking, and the development of inferential abilities Aithal PS, (2025) ^[3]. Such curricular organization is intended to help students think critically about the content of their subject matter, making general concepts the core objectives to be achieved (Mitchell, Oslin & Griffin, 2020) ^[20]. Educational techniques and strategies enable students to store knowledge and apply it in new contexts (Lin, Hsia & Hwang, 2025) ^[17]. Hence, the significance of this research lies in employing holistic thinking to enhance the learning of the underhand serve skill in volleyball among female students, combining both theoretical and practical aspects of knowledge acquisition. Moreover, this type of thinking has not been previously applied in this context, making its use essential for understanding how holistic thinking contributes to effective learning and comprehensive skill development in volleyball.

Research Problem

Many female players, particularly in the early stages of learning, face difficulties in developing the serving skill in volleyball (Boichuk *et al.*, 2018) ^[10]. These challenges stem from an excessive focus on the technical aspects of the game, while neglecting the strategic and cognitive dimensions that it requires (Parente, Ginciene & Impolcetto, 2020) ^[24]. Emphasizing the practical aspect over the theoretical one leads to weak engagement with the conceptual and informational components of the skill being learned, this in turn results in poor technical performance ((Ali & Kasim, 2022; Conejero Suarez *et al.*, 2020) ^[14, 11]. Therefore, it is essential to employ students' existing thinking abilities and knowledge to enhance their learning outcomes. The research problem lies in the insufficient use of holistic thinking in the training process, which negatively affects players' ability to understand the game as an integrated whole (Jiang, Sun & Yu, 2024) ^[16]. Without this type of thinking, players may lack spatial awareness, timing, and understanding of opponents' strategies, leading to unbalanced performance and missed opportunities (Nodarse, 2025) ^[22]. Furthermore, the absence of holistic thinking contributes to weak communication and coordination among players, which diminishes team performance and increases the likelihood of errors (Aquino & Jolo, 2024) ^[7]. Through their observation of the underhand serve performance among female students in the College of Physical Education and Sports Sciences at the University of Misan, the researchers found noticeable weaknesses and difficulties in learning and executing this skill. Since holistic thinking enables players to understand the interaction between various elements such as ball movement, player positioning, and opponent strategies it can enhance spatial awareness and support effective decision making during gameplay. Therefore, the researchers sought to integrate holistic thinking into the educational curriculum to improve the learning and performance of the underhand serve skill in volleyball among female students. In this sense, studying the role of holistic thinking in learning the serving skill represents a vital necessity for improving players' performance and enhancing their overall proficiency in volleyball.

Research Objectives

- To identify the level of holistic thinking among fourth

year female students at the College of Physical Education and Sports Sciences.

- To examine how holistic thinking influences the technical performance of players in the serving skill and the extent to which it improves the overall performance of the team.
- To determine the correlation between holistic thinking and the underhand serve skill in volleyball among fourth year female students.

Research Hypotheses

There is a correlation between holistic thinking and the underhand serve skill in volleyball among female students.

Research Fields

- **Human Field:** Fourth year female students at the College of Physical Education and Sports Sciences, University of Misan, for the academic year 2025-2026.
- **Temporal Field:** The period from October 14, 2025, to April 6, 2026.
- **Spatial Field:** The sports hall at the College of Physical Education and Sports Sciences, University of Misan.

Methodology

Research Method

The nature of the problem under study determines the appropriate research method. In this study, the researcher employed the descriptive method because it is suitable for addressing the research problem. This method is one of the fundamental approaches in scientific research, as it aims to collect data from members of the population in order to identify the existing problem and attempt to bring about a specific change.

Research Sample

The research sample represents the portion of the population or model on which the researcher conducts the core part of the study (Wajih Mahjoub & Ahmed Badri, 2002, p. 67) ^[29]. The research population consisted of fourth year female students at the College of Physical Education and Sports Sciences, University of Misan, with a total of (22) student. The main experimental sample included (16) students from the theoretical sciences branch, representing (75%) of the total research population, while the pilot study sample consisted of (5) students.

Instruments, Tools, and Equipment Used in the Research

- Registration form.
- Arabic and foreign sources.
- Internet resources.
- Assistant research team.
- Volleyball court.
- (10) Volleyballs.
- Measuring tape.
- Adhesive tape.
- Stationery (papers, pens).
- Arabic and foreign references.
- Holistic Thinking Scale.

Field Procedures of the Research

Holistic Thinking Scale: The researcher adopted the Holistic Thinking Scale developed by Hind Ubaid Abd Al

Salam (2023) ^[13]. This standardized scale consists of 24 items, with responses distributed across five alternatives: (Applies to me completely, Applies to me to a great extent, Applies to me moderately, Applies to me to a small extent, Does not apply to me at all).

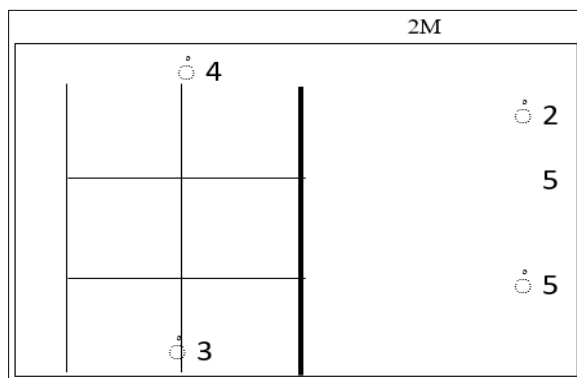
- **Underhand Directed Serve Test:** The Underhand Serve Test was adopted from Mohammed Sobhi Hassanein and Hamdi Abdul Munim (1988, p. 221) ^[21].
- **Purpose of the Test:** To measure the accuracy of the underhand serve in volleyball.
- **Instruments:** Ten volleyballs, a standard volleyball court, and a scoring system based on target zones.
- **Performance Specifications:** The examinee performs five consecutive underhand serves, attempting to direct the ball toward the zone marked with the highest score.

Conditions

- Each participant performs five attempts, all using the underhand serve.
- Points are awarded according to where the ball lands within the designated target zones; the participant receives the score indicated inside that zone.
- If the ball touches the net or goes out of bounds, the participant receives a score of zero (0).

If the ball lands on a line, it is counted as landing within the zone that the line defines. If it falls on a line shared between two zones, the participant is awarded the score of the higher valued zone.

Scoring: The participant's total score is the sum of the five attempts, with a maximum score of 25 points.



Pilot Study

The researcher conducted a pilot study on a sample of five (5) fourth year female students from the College of Physical Education and Sports Sciences, University of Misan, in order to implement the test. The participants were selected randomly, and the pilot study was carried out on Tuesday, December 24, 2024. Through this pilot study, the researcher was able to control and verify the following aspects:

- Ensuring the clarity of test instructions.
- Assessing the suitability and validity of the tests for the sample.
- Instructing and guiding the assisting research team.
- Identifying the conditions and challenges that might accompany the application of the test.
- Gaining practical experience to personally identify both the strengths and weaknesses encountered during the main experiment.

The pilot study revealed the following findings:

- The instructions were clear to the participants.
- The tests were appropriate and suitable for the sample.

Main Experiment

The researcher conducted the main experiment on the primary sample of sixteen (16) fourth year female students at the College of Physical Education and Sports Sciences, University of Misan, on December 31, 2024. During this stage, the researcher collected the completed forms and then administered the underhand serve accuracy test.

Statistical Means

The following statistical tools were used for data analysis:

- Statistical Package for the Social Sciences (SPSS).
- Arithmetic Mean.
- Standard Deviation.
- Pearson's Simple Correlation Coefficient.

Results

Table 1: Presentation and analysis of the results of the holistic thinking scale and the underhand serve test:

| Variables | Unit of Measurement | M | SD | Calculated (t) | Sig | Significance |
|-------------------|---------------------|--------|--------|----------------|------|--------------|
| Holistic Thinking | Score | 82.312 | 13.235 | 4.058 | 0.00 | Significant |
| Underhand Serve | Score | 19.125 | 1.928 | — | — | — |

It shows the values of the arithmetic means, standard deviations, the calculated (t) values, and the significance level for holistic thinking and the underhand serve under a degree of freedom of $n - 2 = 14$ and at a significance level of 0.05. From Table (1), it is clear that the arithmetic mean of holistic thinking is 82.312 with a standard deviation of 13.235, while the arithmetic mean of the underhand serve is 19.125 with a standard deviation of 1.928. The calculated (t) value was 4.058, and when compared to the significance level of 0.00, it was found to be less than 0.05, indicating that the difference is statistically significant.

Presentation of the results of the correlation between holistic thinking and the underhand serve for the research sample and their analysis

Table 2: Shows the values of the arithmetic means, standard deviations, the calculated (r) values, and the significance level for holistic thinking and the underhand serve

| Variables | Unit of Measurement | Mean | SD | Calculated (r) | Table (r) | Sig | Significance |
|-------------------|---------------------|--------|--------|----------------|-----------|------|--------------|
| Holistic Thinking | Score | 82.312 | 13.235 | 0.735 | 0.497 | 0.00 | Significant |
| Underhand Serve | Score | 19.125 | 1.928 | — | — | — | — |

Under a degree of freedom of $n - 2 = 14$ and at a significance level of 0.05, Table (2) shows that the arithmetic mean of holistic thinking is 82.312 with a standard deviation of 13.235, while the arithmetic mean of the underhand serve is 19.125 with a standard deviation of 1.928. The calculated (r) value is 0.735, which is greater than the table value of (r) 0.497, and at a significance level of 0.00, which is less than 0.05, indicating that the difference is statistically significant.

Discussion of the results of the relationship between the researched variables: Holistic thinking and the underhand serve

Based on the results presented in the tables and the calculation of the arithmetic mean and standard deviation, the researcher used Pearson's correlation coefficient to examine the relationship between holistic thinking and the underhand serve skill among the students at a significance level of 0.00 (which is lower than the 0.05 significance level used in SPSS). Consequently, there is a statistically significant positive relationship between holistic thinking and the underhand serve skill, indicating that the accuracy of the serve increases among individuals with higher levels of holistic thinking. The current study also found that using certain holistic thinking strategies had a notable positive impact on learning the underhand serve skill in volleyball among fourth year students. These results suggest that integrating cognitive and perceptual aspects into the learning process contributes effectively to motor performance development, particularly in fundamental skills that require coordination between thinking and movement. Holistic thinking is a mental approach that relies on understanding the relationships among the parts and forming a comprehensive image of the skill before actual execution (Ahmed & Hamoodi, 2021; Abdul-Salam & Abdul-samea, 2023; Aquino & Jolo, 2024) ^[2, 1, 6]. This aligns with modern motor learning principles, which emphasize the importance of understanding the skill prior to performance. Analysis indicates that a student who employs holistic thinking can connect the movement steps of the underhand serve in a coherent context, improving both timing and accuracy in execution (Majid, Puriana & Wahyono, 2025; Jabbar & Kasim, 2023) ^[18, 15]. The study's results are consistent with previous research in educational and sports psychology, which emphasizes that learning is ineffective if it relies solely on mechanical repetition without cognitive understanding, especially for open skills influenced by environmental and mental factors (De Waelle, 2021; Ottoboni, Nicoletti & Tessari, 2021) ^[12, 23]. The findings also showed that students who relied on holistic thinking strategies improved their performance more rapidly compared to those using traditional learning methods (Abdul-Salam & Abdul-Samea, 2023; Hussein & Kasim, 2022; Sgrò *et al.*, 2022) ^[1, 5, 26]. This positive effect of holistic thinking can be attributed to its ability to allow learners to utilize their cognitive skills for analysis and movement prediction, enhancing self-confidence and reducing common errors when acquiring new skills. Additionally, holistic thinking improves selective attention by focusing on essential elements of the skill while ignoring irrelevant details, which is critical in a fast paced, precision based game like volleyball. It should be noted that the effectiveness of this type of thinking may vary among students depending on individual differences in cognitive abilities and learning styles, highlighting opportunities for future research to include other variables such as personality type, intelligence level, or motor readiness.

Conclusions

Based on the results obtained, the researcher reached the following conclusions:

- The results of the study showed that holistic thinking has a significant relationship with serving in volleyball.

- The study indicated that holistic thinking plays an important role in volleyball serving performance.
- There are statistically significant differences in holistic thinking results and their relationship with the underhand serve skill.

Recommendations

- According to the study results and strategies, the following recommendations were proposed:
- Pay attention to the psychological and emotional aspects of students or players when designing educational and simple offensive training programs, as they significantly affect skill performance.
- Consider assessing holistic thinking when testing athletes in any sport, due to its influence on skill performance.
- Take into account holistic thinking when selecting players, as it serves as an indicator of a player's self-satisfaction in performing personal skills.
- Conduct similar studies and research to explore the relationship between holistic thinking, personality, and psychological factors.

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