

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

Mental Visualization and Its Relationship to Skills of Passing and Scoring from a Jump in Basketball for Female Students

Ibrahim Bahram Khurshid Muhammad Ali

Kirkuk University, Iraq

ibrahim_bahram@uokirkuk.edu.iq

Correspondensi Author

Email: ibrahim_bahram@uokirkuk.edu.iq

Article History

Received: 10-01-2026;

Reviewed: 05-02-2026;

Accepted: 14-02-2026;

Published: 28-02-2026

ABSTRACT

The research aimed to identify level of mental imagery among second-year female students at faculty of Physical Education and Sports Sciences, University of Kirkuk, and to determine accuracy of their basketball passing and jump scoring skills. It also sought to identify correlation between mental imagery and this basketball passing and scoring skills among research sample. The researcher used a descriptive approach with correlational analysis, as it was suitable for nature of research. The research population was selected purposively from second-year female students at faculty of Physical Education and Sports Sciences, University of Kirkuk, during 2024-2025 academic year, divided into one section, totaling (60) students. The research sample was randomly selected from (26) students, resulting in a final sample size of (26) students, representing (43.33%) of original population. The results showed a statistically significant positive correlation between level of mental imagery and accuracy of students' performance in basketball passing and jump scoring skills. Mental imagery contributes to improving students' ability to execute these skills accurately. The highest, indicating effectiveness of this strategy in developing skill performance, it is recommended to incorporate regular mental visualization sessions into basketball training programs with aim of enhancing skill performance, especially in skills of handling and jump scoring, and to organize specialized training workshops for coaches to teach mental visualization strategies and how to apply them effectively with players, and to urge students to practice mental visualization daily before or after training, with a focus on accurately imagining movements and skills.

Keywords: Mental Visualization; Passing; Scoring; Jump, Basketball.

ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi tingkat citra mental di antara mahasiswa perempuan tahun kedua di fakultas Pendidikan Jasmani dan Ilmu Olahraga, Universitas Kirkuk, dan untuk menentukan akurasi keterampilan passing bola basket dan mencetak gol lompatan mereka. Ini juga berusaha untuk mengidentifikasi korelasi antara citra

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mental dan keterampilan passing dan scoring bola basket ini di antara sampel penelitian. Peneliti menggunakan pendekatan deskriptif dengan analisis korelasional, karena cocok untuk sifat penelitian. Populasi penelitian dipilih secara sengaja dari mahasiswi tahun kedua fakultas Pendidikan Jasmani dan Ilmu Olahraga Universitas Kirkuk selama tahun akademik 2024-2025, dibagi menjadi satu bagian, berjumlah (60) mahasiswa. Sampel penelitian dipilih secara acak dari (26) siswa, menghasilkan ukuran sampel akhir dari (26) siswa, mewakili (43,33%) dari populasi asli. Hasilnya menunjukkan korelasi positif yang signifikan secara statistik antara tingkat citra mental dan akurasi kinerja siswa dalam keterampilan passing bola basket dan mencetak gol lompat. Citra mental berkontribusi untuk meningkatkan kemampuan siswa untuk menjalankan keterampilan ini secara akurat. Yang tertinggi, menunjukkan efektivitas strategi ini dalam mengembangkan kinerja keterampilan, disarankan untuk memasukkan sesi visualisasi mental secara teratur ke dalam program pelatihan bola basket dengan tujuan meningkatkan kinerja keterampilan, terutama dalam keterampilan penanganan dan mencetak gol lompatan, dan untuk menyelenggarakan lokakarya pelatihan khusus bagi pelatih untuk mengajarkan strategi visualisasi mental dan bagaimana menerapkannya secara efektif dengan pemain, dan untuk mendesak siswa untuk berlatih visualisasi mental setiap hari sebelum atau sesudah pelatihan, dengan fokus pada membayangkan gerakan dan keterampilan secara akurat.

Kata Kunci: Visualisasi mental; Umpan; Mencetak gol; Lompat; Bola Basket.

INTRODUCTION

Sports have gained a prominent place in various parts of the world and have become an essential part of the lives of many people (A. P. Moran, 2012; A. Moran & Toner, 2017). Sports stars and champions have become role models for many nations, who emulate their example. Interest in basketball is increasing in both developed and developing countries due to the game's popularity. This game has been the subject of much research, which has played a significant and fundamental role in developing players' skills (Andrade et al., 2020; Lochbaum et al., 2022; Schinke et al., 2018).

Countries have made great efforts to provide material and moral support to elevate this game for different categories and ages. To raise the technical level of players, it is necessary to focus on and improve all physical, technical, tactical, and psychological aspects, as futsal is a complex and unpredictable game.

Mental visualization is one of the vital psychological factors that plays a pivotal role in developing athletic performance, as it effectively contributes to enhancing the mental and technical abilities of athletes by activating the mental processes associated with motor performance (Abebe et al., 2019; Antonio, 2023).

Mental visualization is defined as a mental process through which a player can accurately and clearly imagine performing motor skills without executing them, thus contributing to improved performance quality and increased motor efficiency (Frank et al., 2014; Mandolesi et al., 2024). Numerous scientific studies have confirmed the importance of mental visualization in boosting self-confidence and reducing stress and psychological pressure during performance (Abdurrahman et al., 2024; Frank et al., 2021).

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Mental visualization is the process of conjuring mental images of performing skills based on previously acquired, observed, or generalized events. It usually originates from within the individual and is not a result of observing external things (Rateb, 1997: 480).

Using mental visualization with skill performance will generate mental images for students of new situations that they can acquire or imagine during performance, thus enhancing their ability to maintain skill (Mohammed, 2008: 23).

Rapid and tremendous development has been observed in all areas of human life, including the educational sector, in terms of modernizing teaching methods with scientific foundations and new learning strategies for students (Majed, 2022: 11-20).

Passing and jump scoring are fundamental and crucial skills in basketball, requiring a high level of neuromuscular coordination, accuracy, and mental focus for optimal performance (Eremin et al., 2022; Risjanna et al., 2022; Shallaby, 2010). Passing is the primary means of moving the ball between players, contributing to the development of organized attacks, while jump scoring is one of the most important scoring skills, relying on accuracy, power, and speed in execution. He emphasizes the importance of variation during learning and argues that the movement pattern can be characterized by adding a random variable. Hussein states that variations should be created in movements without repeating movements and without correction during the skill (Hussein: 236-244: 2024).

The importance of this research stems from the need to understand the relationship between mental visualization and the performance of female students in the skills of tackling and jumping. The research seeks to explore the extent to which mental abilities influence the quality of skill performance, which may contribute to the development of more effective training programs. Furthermore, the research aims to provide scientific and practical insights to help coaches and teachers integrate mental visualization strategies into training plans, thereby enhancing the development of female students' athletic performance.

In basketball, it's observed that female students exhibit varying performance levels in passing and jump scoring, despite possessing the necessary physical and technical abilities. This disparity may stem from psychological factors such as mental imagery, which plays a significant role in enhancing athletic performance. However, there's a clear lack of research specifically examining the relationship between mental imagery and the performance of these skills among female students.

The research problem stems from the question: What is the relationship between the level of mental imagery and the performance of the passing and jump scoring skills in basketball among female students? And is there a statistically significant relationship between the level of mental imagery and the performance of the jump scoring skill?

Research objectives are identifying level of mental visualization among second-year female students at College of Physical Education and Sports Sciences at Kirkuk University. To assess the accuracy of the students' basketball handling and jump scoring skills. Identifying the correlation between mental imagery and the basketball handling and scoring skills of the research sample.

Research hypothesis is significant correlation between perception, mental skills, and the skills of handling and scoring with jump basketball among second-year female students at the College of Physical Education and Sports Sciences at Kirkuk University.

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METHOD

The researcher used the descriptive method with a correlational approach because it is suitable for the nature of the research. The research population was chosen purposively from the second-year female students at the College of Physical Education and Sports Sciences, Kirkuk University, for the academic year 2024/2025, numbering (60) female students. The research sample was chosen randomly, consisting of (26) female students. Thus, the final number of the research sample was (26) female students, and thus the research percentage reached (43.33%) of the original population. Tools used in research

A legal basketball court, legal basketballs, a Sunny video camera, a Nikon D.3000 photo camera, a measuring tape, a medical scale, a stopwatch that measures time to the nearest 1/100 of a second (8), and a whistle (2).

Research tests

1. Basketball passing skill test (Al-Daim: 1999: 124-125):

The purpose of the test: To measure the ability of the test-taker to quickly handle and receive the ball.

Equipment needed: A flat ground, a smooth wall, a basketball, a stopwatch, and a whistle to give the starting signal.

Performance specifications: The test subject stands behind a line drawn on the ground and at (9) feet (2.70m) from the wall. Upon hearing the start signal, the test subject passes the ball to the wall, ensuring that this pass is at the level of the test subject's head and as quickly as possible. Then, he receives the ball after it bounces off the wall, and the action is repeated until he performs (10) correct passes. All passing must be performed from behind the line drawn on the ground. It is not allowed to hit the ball after it bounces off the wall; it must first be caught and then passed back. The ball can touch the wall at any height. If the ball falls to the ground during play, the tester may regain possession of it and continue playing from behind the line, provided that only correct passes that are made from the tester to the wall and then directly to the tester without the ball touching the ground are counted. The test subject is allowed two attempts at the test, and his best attempt will be counted.

Recording: The time of the test is calculated from the moment the ball touches the wall on the first successful pass until the ball touches the wall on the tenth successful pass. The time is calculated in seconds, provided that the laboratory records two authorized attempts, noting that the attempt in which it records a time less than the two attempts it has made is counted for the laboratory.

2. Accuracy of jump scoring test:

Test of scoring by jumping under the basket: (Al-Hakim: 2004: 180)

The purpose of the test: to measure the ability to follow one shot at a time under pressure. Equipment needed: Basketball goal, basketball, stopwatch, whistle to give the starting signal. Performance specifications: The player stands anywhere under the basket, then shoots as many times as possible in (30 seconds), and the tester can shoot in any way he wants from the scoring methods. When a player loses the ball, he has the right to retake the test, noting that this should only be repeated once. The player is allowed two full attempts, and his best attempt will be counted.

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Recording: The test taker is credited with one point for each correct goal achieved within the specified time period of the test (30 seconds). Both attempts by the test taker must be recorded, with the better attempt being recorded.

3. Mental Imagery Scale.

The translator from London (Salary: 1997: 322-324). The scale shown in Appendix (1) is a standardized and prepared measure for the purpose of measuring mental imagery. It has been used in many similar studies and was then presented to the experts and specialists mentioned previously to obtain their opinions before its implementation. Their opinions indicated that this questionnaire is valid and appropriate for application to the research sample. This scale is based on the player's mental imagery because it includes the different senses, as well as the vacancy and emotions associated with the activity, across four axes:

- 1) Optical.
- 2) Audio.
- 3) Kinesthetic sense.
- 4) Emotional.

After completing the conceptualization of the matrix, the student evaluates themselves in the skill that was tested in these questions that are answered:

- 1) No mental image appears (none).
- 2) The mental image of the activity can be identified, but it is (not clear).
- 3) The mental image of the activity is clear and of a moderate degree (moderate).
- 4) The mental image of the activity (clear).
- 5) The mental image of the activity is very clear and active.

After distributing this form to the students and receiving their answers, scores are recorded for each set of questions (visual, auditory, kinesthetic, and emotional dimensions) on a scale of 20 to 40 points, with the rating being "Excellent" or "Weak" (Al-Kissi, 1982: 95). A "Weak" rating indicates a need for development in that area of perception.

Exploratory Experiment

The researcher conducted a pilot study with a sample of (10) female students from the research population, who were subsequently excluded from the main experiment. The experiment was carried out on 29/10/2024 in the gymnasium of the College of Physical Education and Sports Sciences, Kirkuk University at 10:30 AM.

The experiment involved distributing a mental imagery scale to the students, followed by a test of their basketball handling and scoring skills from a jump. The pilot study aimed to achieve the following objectives:

- 1) Identifying potential errors and obstacles during the implementation of the experiment.
- 2) Ensuring the validity of the instruments used in the measurements.
- 3) Evaluate the efficiency of the support staff and their familiarity with measurement and testing procedures.
- 4) Determining the time required to conduct the tests to ensure the smooth flow of the research process.

Main Experiment

The researcher conducted the main experiment on the research sample on Tuesday, November 5, 2024, distributing the Mental Imagery Scale form to the female

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students. After completing the scale items, the researcher prepared the tools and materials for testing the basketball handling and scoring accuracy skills. The test was conducted in the gymnasium of Faculty of Physical Education and Sports Sciences, Kirkuk University at 10:30 AM, with all variables controlled and the research results documented in preparation for statistical analysis.

Statistical methods

The researcher used SPSS statistical package to extract the results.

RESEARCH RESULTS

Results of correlation between mental imagery and skills of passing in basketball among members of research sample:

Table 1. Study Reveals Correlation Between Mental Imagery and Basketball Passing Skills Among Research Sample.

Variable	Mean	St.d	Standard error	(t) value	Correlation coefficient	Error rate	Sig.
Mental imagery	59.619	4.834	2.362	18.971	0,397917	0.004	Sig.
Passing	14.306	1.901	0,2875				

Based on the table, the mental imagery variable had a mean value of 59.619 with a standard deviation of 4.834 and a standard error of 2.362. The t-value of the calculation was obtained as 18.971 with a correlation coefficient of 0.397917 and an error rate of 0.004. Significance values indicate significant results (Sig.). Meanwhile, the passing variable has a mean value of 14.306 with a standard deviation of 1.901 and a standard error of 0.2875. The results significance value ($p < 0.05$), concluding that there is a significant relationship between mental imagery and basketball passing skills.

Table 2. The study reveals the correlation between mental imagery and scoring accuracy in jump basketball among the research sample.

Variable	Mean	St.d	Standard error	(t) value	Correlation coefficient	Error rate	Sig.
Mental imagery	59.619	4.834	2.362				
Accuracy of scoring by jumping	17.619	3.542	0,536111	21.505	0,450694	0.001	Sig.

Based on Table 2, the mental imagery variable has a mean value of 59.619 with a standard deviation of 4.834 and a standard error of 2.362. The t-value was calculated as 21.505 with a correlation coefficient of 0.450694 and an error rate of 0.001, which showed significant results (Sig.). The accuracy variable of scoring by jumping has a mean value of

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17.619 with a standard deviation of 3.542 and a standard error of 0.536111. The results a significance value ($p < 0.05$), concluding that there is a significant relationship between mental imagery and accuracy of scoring in jump basketball.

DISCUSSION

Through the results of Table (1) and (2), the results showed a significant correlation between mental imagery and the skills of passing and scoring with jump basketball for female students. The researcher believes that this is a natural objective because visual deflection is necessary for female students due to what the offensive plan requires and all the duties required of them. They have a great need for visual deflection to help them be creative. As for the emotional axis, it was present, and this indicates that there is a significant correlation between the degree of the auditory axis and the accuracy of scoring. Through the presentation and discussion of the results, it became clear that there is a correlation between some mental imagery, which are (visual deflection, auditory axis, sensory-motor axis, emotional axis) and the skill of passing and scoring with basketball, despite the importance of this mental imagery due to the many changing situations in it and the multiplicity of its defensive and offensive plans. The researcher attributes this to the nature of the exercises and lectures that are given and lead to development through special training for it.

The researcher also attributes these results to the specific educational units and exercises that foster mental visualization. The daily curriculum should include some form of scoring practice, and teachers should have a clear understanding of mental visualization. The specifics of these scoring exercises—the number of practice balls per week, their accuracy, the scoring technique, and the necessary resources for success are crucial. Through discussion of the results, the researcher achieved the research objective: the relationship between mental visualization and basketball passing and scoring skills. The researcher concluded that mental visualization, mental recall, and multiple repetitions prepare learners to perform skill tests more accurately (Salman, 2021: 11).

The researcher believes that the educational approach to mental imagery gave the members of the experimental group the opportunity to learn through multiple different responses that result in images being imprinted in the brain, and to avoid errors. As Qasim Lazam (2005) points out, "Learning and practicing a specific skill within a motor task leads to increased experience and development in skill performance. Therefore, practice is the most important variable in the learning process for complex and even simple skills." (Lazam: 2005: 56)

CONCLUSIONS AND RECOMMENDATIONS

Considering the discussion of the results, the researcher concluded that results showed a statistically significant positive correlation between the level of mental visualization and the accuracy of the students' performance in handling and scoring skills from a jump. Mental visualization contributes to improving students' ability to execute handling and aiming with greater accuracy, indicating the effectiveness of this strategy in developing skill performance. It was observed that female students with a higher level of mental visualization performed better in handling and aiming tests compared to their

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peers with lower mental visualization. Students who relied on mental visualization showed lower error rates while performing skills, indicating its role in improving self-confidence and reducing stress during play.

Based on findings, the researchers recommend it is recommended to incorporate regular mental imagery sessions into basketball training programs with the aim of enhancing skill performance, especially in the skills of passing and jump scoring.

Organizing specialized training workshops for coaches to teach mental visualization strategies and how to apply them effectively with female players. Encourage the students to practice mental visualization daily before or after training, focusing on accurately imagining the movements and skills. It is preferable to combine mental visualization exercises with techniques to improve focus and reduce sports anxiety, which enhances the overall performance of female students. Future studies involving larger samples and different skill levels beginners and advanced are recommended to explore the impact of mental visualization on other basketball skills.

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