



## The Psychological barriers and their relationship to the accuracy of serving skills among national tennis team players

Asst. Lect. Aya Hashim Ashour

Southern Technical University /College of Health and Medical  
Techniques

[aya.hashim@stu.edu.iq](mailto:aya.hashim@stu.edu.iq)

### ABSTRACT

This research aims to investigate the relationship between psychological barriers and the concentration level of serve accuracy in tennis given the pivotal role of psychological factors in individual sports. The descriptive survey method was adopted where the participants included 10 National Team players selected via total enumeration of the available elite population in addition to 2 players for the pilot study. Data were collected using the Psychological Barriers Scale and the Serve Accuracy Test. The results revealed a statistically significant inverse correlation between psychological barriers and serve accuracy indicating that higher levels of psychological barriers are associated with decreased concentration and skill accuracy. The study concludes that psychological stability is a prerequisite for precise skill execution and recommends integrating pre-performance psychological routines into training programs to mitigate performance anxiety rather than relying solely on physical training.

**Keywords:** Psychological Barriers, Performance Concentration, Serving Skill, Tennis.

### 1. Introduction to the Research

#### 1.1 Introduction and Significance of the Study

The contemporary world is witnessing an accelerating race toward scientific advancement across various fields, particularly in sports, which has become increasingly grounded in scientific principles throughout preparation and

competition in pursuit of elite performance. Among the most prominent of these disciplines is **sports psychology**, which has assumed a leading role as a foundational pillar in optimizing athletes' physical and mental capacities and maintaining psychological balance in the face of obstacles and competitive pressures (Ali & Najm, 2022).

The psychological dimension becomes even more critical in individual sports, especially tennis, where the athlete bears full emotional responsibility for performance during competition. Achieving elite levels in such sports is closely linked to the player's ability to regulate complex psychological variables and maintain composure under pressure (Al-Anzi, 2021). Tennis demands a diverse skill set and sustained physical and mental exertion, requiring a high degree of emotional stability throughout the match.

Within the context of skill execution, the serve represents the primary offensive weapon and a decisive factor in determining match outcomes. As the only stroke that initiates play and remains entirely under the player's control, it requires exceptional levels of focused attention and self-confidence (Abdullah, 2024). However, the quality and precision of the serve are not determined solely by physical ability; they are also directly influenced by the player's psychological state, particularly the degree of attentional focus or distraction experienced during performance.

In this regard, psychological barriers—such as fear of failure and competitive anxiety—emerge as negative factors that can affect an athlete's personality and hinder adaptation to competitive demands. These barriers may lead to a decline in skill accuracy, even among highly competent players (Mahmoud et al., 2023).

The importance of this research lies in investigating how psychological barriers directly affect the accuracy of serving skills among national tennis team players. Within the context of skill execution, the serve represents the primary offensive weapon and a decisive factor in determining match outcomes. Achieving precision in this specific skill is not determined solely by physical ability; it is highly dependent on the player's psychological stability. Therefore, the significance of the present study is to statistically examine the exact relationship between these psychological barriers and serve accuracy. This will provide coaches and specialists with evidence-based insights on how to mitigate these specific barriers, enabling them to guide athletes toward optimal serving performance during actual competitions.

## **1.2 Research Problem**

Tennis requires a high level of integration among physical, physiological, technical, and psychological factors. Although national team players possess advanced technical skills and physical capabilities, the research problem is defined as the difficulty in performing the serve skill with high accuracy consistently throughout the game. These difficulties may be psychological in nature, manifesting as psychological barriers that potentially affect the accuracy of the serve in tennis. During competition, where the player alone bears full responsibility for either victory or defeat, these psychological barriers contribute to lapses in concentration, particularly during the execution of the serve. As a result, crucial points may be lost despite the technical ease of the skill itself. Accordingly, this study seeks to examine the exact relationship between these psychological barriers and the accuracy of the serve performance among national team players.

## **1.3 Research Objectives**

1. To identify the level of psychological barriers and the level of serve performance accuracy among national tennis team players.
2. To examine the correlational relationship between psychological barriers and the accuracy of serving skills among the players.

## **1.4 Scope of the Research**

### **1.4.1 Human Scope:**

Players of the Iraqi national tennis team, aged between 18 and 28 years.

### **1.4.2 Temporal Scope:**

From September 1, 2024, to March 1, 2025.

### **1.4.3 Spatial Scope:**

Tennis courts at sports clubs and the training center in Basra Governorate.

## **2. Research Methodology and Field Procedures**

### **2.1 Research Method**

The researcher used a descriptive approach with correlational relationships, as it is the most appropriate method for the nature of the research problem, which seeks to identify the relationship between psychological barriers and serve accuracy.

## 2.2 Research Population and Sample

The research population consisted of players from the Iraqi National Tennis Team in Basra Governorate. Given the nature of the study—which requires a high technical level—and the limited size of this elite population, the researcher employed a comprehensive census approach and intentionally selected the sample.

The total number of players was 12. Of these, 10 players were selected as the main research sample, representing 83.33% of the original population, to ensure accuracy of results and adequate representation of high-level performance. The remaining 2 players (16.67%) were assigned to the pilot study in order to test and refine the research instruments. Table (1) presents the distribution of the sample.

**Table (1)**  
Distribution and Description of the Research Population Sample

Total	Pilot Sample	Main Sample	National Team
12	2	10	National Tennis Team Players
100 %	16.66	83.33	Percentage (%)

## 2.3 Equipment and Tools Used in the Research

### 2.3.1 Resources Utilized in the Study

- Arabic and foreign references and literature
- International information networks
- Psychological Barriers Scale (Appendix 1)

### 2.3.2 Tools and Equipment Used

- Standard tennis balls
- Tennis rackets
- Measuring tape
- Colored adhesive tapes for court marking
- Data recording forms
- Computer (Dell)

## 2.4 Psychological Measurements and Tests

### 2.4.1 Psychological Barriers Scale

The study adopted the Psychological Barriers Scale developed by Laheeb (Ahmed Shaker ,2014) as the primary tool for data collection. The scale consists of 52 items distributed across six domains: Self-Confidence, Training and Competition Pressure, Pessimism, Sporting Experience and Adaptation, Sporting Knowledge, and Self-Awareness.

The scale includes both positively and negatively worded items. For positive items, the scoring is calculated in a standard progressive manner (e.g., 1, 2, 3, 4, 5). Conversely, for the negative items, the scoring is reversed (e.g., 5, 4, 3, 2, 1) during the statistical adjustment. The final score for each player is calculated by summing the scores obtained across all 52 items. A higher total score indicates greater psychological barriers, while a lower score reflects better psychological stability. The scale includes both positively and negatively worded items, which were statistically adjusted during scoring (negative items were reverse-scored). The final score is calculated by summing the scores obtained by the player across all items. A higher total score indicates greater psychological barriers, while a lower score reflects better psychological stability.

### Validity of Offensive Skill Tests in Tennis

**Test Name:** Serve Accuracy Test

**Purpose of the Test:** To measure the accuracy of serve performance.

**Test Description:** The service area on the opposite side of the court was divided into three equal longitudinal zones (A, B, C), each with a width of 1.37 meters.

**Procedure:** The tester stands behind the baseline at the service position and performs the serve, attempting to land the ball in the designated zones sequentially. Each of the three zones is attempted twice consecutively. A ball landing on the line between two zones is considered a successful attempt.

### Scoring:

- The maximum score for the test is 24 points.
- **2 points** are awarded if the ball lands precisely within the designated zone (or on the line separating two zones).
- **1 point** is awarded if the serve is legally executed and lands within the service box but outside the designated zone (A, B, or C).

- **0 points** are given for a failed attempt: if the ball touches the net and does not cross, or lands outside the service box (Out).
- **Note:** A serve is retaken if the ball touches the top of the net but lands in the correct service zone (Let).

## **2.5 Pilot Study**

The researcher conducted a pilot study on October 1, 2024, using a sample of 2 players from the research population (outside the main sample). The purpose of this study was to ensure the validity of the instruments, clarify test instructions, evaluate the competence of the assisting team, and determine the time required to perform the test, thereby minimizing obstacles during the main experiment (Al-Mandalawi et al., 1989).

## **2.2.6 Main Experiment**

The field procedures of the research, including the administration of the psychological scale and the skill test, were conducted on the main research sample of 10 players. The procedures began on Tuesday, October 15, 2024. The scale items were completed and the skill tests were performed under controlled conditions to ensure the validity and reliability of the results.

## **2.7 Statistical Methods**

The **Statistical Package for the Social Sciences (SPSS)** was used to process and analyze the research data. The statistical methods employed included:

- Arithmetic mean
- Standard deviation
- Percentage
- Pearson's simple correlation coefficient to examine the relationship between variables

## **3. Presentation, Analysis, and Discussion of Results**

### **3.1 Presentation of Psychological Barriers and Serve Accuracy**

To examine the status of the research variables among the sample of national team players, arithmetic means and standard deviations were calculated and compared with the hypothetical mean of the scale, as shown in Table (2).

**Table (2)**  
Arithmetic Mean, Standard Deviation, and Hypothetical Mean of the Variables

Hypothetical Mean	Standard Deviation	Arithmetic Mean	Unit of Measurement	Variables
153	1.562	157.31	Score	Psychological Barriers
	0.389	18.40	Score	Serve Accuracy

It is evident from Table (2) that the arithmetic mean for **psychological barriers** was 157.31, which is higher than the hypothetical mean of the scale (153). This indicates that the national team players experience a relatively elevated level of psychological barriers, such as competitive anxiety, hesitation, and reduced self-confidence at the moment of performance. The researcher attributes this finding to deficiencies in systematic psychological preparation programs within the daily training units, as coaches often focus primarily on physical and technical aspects (mechanical repetition). Consequently, players are more susceptible to psychological pressure during actual competition, particularly in critical points that require mental resilience.

The table also shows that the **serve accuracy** score (18.40) was at a moderate level when measured against the maximum score of 24. This relative decrease in accuracy, despite the players' experience, can be explained by the nature of the serve as a "closed skill," in which the player has full control over timing. This pause before execution allows negative thoughts (psychological barriers) to infiltrate the player's mind, disrupting the fluidity of movement. This observation aligns with Abdullah and Hamoud (2020), who noted that psychological barriers act as negative indicators that hinder a player's ability to predict and respond accurately. Increased internal psychological pressure leads to involuntary muscular tension, which disrupts the fine neuromuscular coordination necessary to direct the ball precisely toward the target. This explains why players do not achieve full marks or peak accuracy levels despite their physical competence.

### 3.2 Presentation of the Relationship Between Psychological Barriers and Serve Accuracy

**Table (3)**

Arithmetic Mean, Standard Deviation, and Pearson Correlation Coefficient Between Psychological Barriers and Serve Accuracy

Level of Significance	(Sig)	Correlation Coefficient	Standard Deviation	Arithmetic Mean	Variables
Significant	0.018	- 0.722	1.562	157.31	Psychological Barriers
			0.389	18.40	Serve Accuracy

The **tabulated value of (r)** is 0.567 at 8 degrees of freedom, and the significance level (0.05) corresponds approximately to 0.632.

Table (3) shows a strong and statistically significant inverse correlation between psychological barriers and serve accuracy, with a calculated correlation coefficient of **-0.722**. The negative sign indicates that as the intensity of psychological barriers (such as fear, hesitation, and reduced confidence) increases, the level of serve accuracy decreases, and vice versa.

This result can be attributed to the specific nature of the serve, which is classified as a “closed skill” in which the player has full control over the timing of execution. The brief pause before the serve, if not used for positive focus, provides a fertile ground for psychological barriers and negative thoughts to emerge. This leads to a disruption of the focal attention necessary to direct the ball accurately toward a designated area. Internal preoccupations with fear or hesitation disconnect the player from the actual situation on the court, impairing their ability to mentally visualize the correct trajectory of the ball. This aligns with the findings of **Ahmed Abdel-Zahra and Anwar Abdel-Hadi (2020)**, who stated that psychological barriers act as negative variables that hinder accurate anticipation and the psychological stability required for precise performance in skills that demand high concentration.

From a physiological perspective, elevated psychological barriers directly increase neural excitation and muscle tension, disrupting the smooth functioning of the kinetic chain required for a strong and accurate serve. Muscle tension can lead to stiffness in the wrist or hitting arm, and, more critically, it can affect the stability of the hand holding the ball, making the toss unstable. Even a slight deviation in the toss forces the player to adjust their body position in fractions of a second, disrupting neuromuscular coordination and reducing accuracy. This is consistent with **Al-Nasser (2001)**, who noted

that psychological pressure increases when a player perceives an imbalance between the demands of competition and their capabilities, generating negative physiological responses that impede optimal skill performance.

On a mental level, perceiving the competitive situation as a threat rather than a challenge increases anxiety and interferes with the automatic retrieval of motor programs stored in the brain. Psychological barriers act as cognitive distractions, preventing the player from achieving full mental immersion necessary for optimal performance. As a result, the player's attention shifts from achieving the target to merely avoiding mistakes. This shift from automatic performance to hesitant conscious thinking is a primary reason for reduced accuracy. These findings are in agreement with **Al-Ansari et al. (2023)**, who indicated that psychological barriers vary in intensity and negative impact in individual sports, and they act to suppress a player's true capabilities during competition.

#### ***4.4. Conclusions and Recommendations***

##### **4.1 Conclusions**

1. There is a significant inverse relationship between psychological barriers and serve performance accuracy; psychological stability is a fundamental condition for achieving skill precision.
2. National team players exhibit elevated levels of psychological barriers, exceeding the hypothetical mean, indicating insufficient psychological preparation.
3. High psychological barriers lead to attentional dispersion and reduced focus during performance, resulting in the loss of easy points.

##### **4.2 Recommendations**

1. Integrate pre-performance psychological routines into training sessions, such as deep breathing, visualizing the ball's trajectory, and gentle ball taps, to reduce tension at the moment of execution.
2. Include a specialized sports psychologist in the national team's coaching staff to help overcome psychological barriers and build mental resilience in players.
3. Use the Psychological Barriers Scale regularly to monitor players' mental state and intervene early when negative indicators rise.
4. Educate coaches on the importance of providing positive feedback after errors to enhance self-confidence, rather than criticism, which exacerbates psychological barriers.

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