

The Impact of Physical and Tactical Performance on Offensive and Defensive Playing Styles in Intermediate-Level Tennis Players

أثر الأداء البدني والتكتيكي على أساليب اللعب الهجومية والدفاعية لدى لاعبي التنس من المستوى المتوسط

هادي عيسى (*) Hadi Issa

تاريخ القبول: 2025-10-22

تاريخ الإرسال: 2025-10-13

Abstract

Turnitin: 16%

This study aimed to analyze the relationship between physical and tactical performance and playing style in tennis, by identifying the differences between players with offensive and defensive tendencies at the intermediate level. The research sample consisted of 12 players from Serve Tennis Academy in Lebanon, divided into two groups based on video analysis of their match play (6 offensive, 6 defensive). The study employed a descriptive analytical approach and included physical tests (speed, endurance, strength, flexibility) and tactical performance assessments (number of strokes per rally, rally duration, net approaches, and ratio of winning to unforced errors). Results indicated significant differences in physical and tactical indicators between the two playing styles. The study recommends integrating individualized physical and tactical training plans to suit each player's style, and using match video analysis as a tool for technical-tactical profiling

Keywords: Tennis, Physical Performance, Tactical Performance, Offensive Style, Defensive Style, Video Analysis, Intermediate Players.

الملخص

هدفت هذه الدراسة إلى تحليل العلاقة بين الأداء البدني، والتكتيكي وأسلوب اللعب في رياضة التنس، من خلال تحديد الفروقات بين اللاعبين ذوي النزعة الهجومية، والدفاعية في المستوى المتوسط. تكونت عينة البحث من 12 لاعباً من أكاديمية سيرف للتنس في لبنان، قُسمت إلى مجموعتين بناءً على تحليل فيديو لمبارياتهم (6 لاعبين هجوميين

* طالب ماجستير وأستاذ تربية رياضية وبدنية - في الجامعة اللبنانية - بيروت لبنان - كلية التربية

Master's Thesis and Professor of Physical Education - Lebanese University - Beirut - Lebanon - Email: Hadyissa11@icloud.com

اللعبة. توصي الدراسة بدمج خطط تدريب بدني وتكتيكي فردية تتناسب مع أسلوب كل لاعب، واستخدام تحليل الفيديو للمباريات كأداة لتحديد الملف الفني والتكتيكي للاعبين.

الكلمات المفتاحية: التنس، الأداء البدني، الأداء التكتيكي، الأسلوب الهجومي، الأسلوب الدفاعي، تحليل الفيديو، اللاعبين المتوسطين

1. Introduction

Tennis is a physically and mentally demanding sport that requires players to combine technical skills, physical capacities, and tactical intelligence. Success in tennis depends on a player's ability to execute precise shots, sustain high performance during long matches, and make strategic decisions based on opponent behavior and match context.

Playing styles in tennis are generally classified as offensive or defensive. Offensive players rely on aggressive shot selection, power, and rapid point completion, often approaching the net and attempting winners early in rallies. Defensive players, in contrast, focus on consistency, minimizing errors, and sustaining rallies to induce mistakes from the opponent.

Understanding the physical and tactical demands of these styles is critical for player development. For instance, endurance and flexibility

6 دفاعيين). استخدمت الدراسة المنهج الوصفي التحليلي، وتضمنت اختبارات بدنية (السرعة، التحمل، القوة، والمرونة، بالإضافة إلى تقييمات الأداء التكتيكي بعدد الضربات في كل تبادل، مدة التبادل، التقدم نحو الشبكة، ونسبة النقاط الراجعة إلى الأخطاء غير القسرية). أشارت النتائج إلى وجود فروقات دالة إحصائية في المؤشرات البدنية والتكتيكية بين أسلوب

enable defensive players to engage in longer rallies, while speed and explosive power support offensive players in finishing points quickly. Video analysis provides detailed insights into match behavior and tactical choices, allowing coaches to tailor individualized training programs.

While research has extensively studied elite tennis players, intermediate-level athletes—who are in a crucial developmental stage—have received less attention. This study aims to fill this gap by examining how physical and tactical performance influences the natural tendency toward offensive or defensive playing styles among intermediate-level players in Lebanon.

2. Problem Statement:

Despite the growing interest in tennis performance analysis, limited research has addressed the relationship

between physical and tactical characteristics and players' preferred playing styles, particularly at the intermediate level. The problem lies in whether physical and tactical factors influence or determine a player's style — offensive or defensive — and how these aspects can be objectively measured and analyzed in a structured training environment.

2. Research Objectives, Questions, and Hypotheses

2.1 Research Objectives

The main goal of this study is to analyze the influence of physical and tactical performance on the playing styles (offensive or defensive) of intermediate-level tennis players at Serve Tennis Academy in Lebanon. The specific objectives are:

1. To identify the physical characteristics (e.g., agility, muscular power, speed, endurance) that differentiate offensive and defensive players.
2. To analyze tactical tendencies such as decision-making, rally control, and shot selection in both styles.
3. To determine correlations between specific fitness indicators and the adopted playing style.
4. To provide recommendations for individualized training programs based on performance profiles.

2.2 Research Problem / Statement

Although much research exists on elite players, less attention is paid to intermediate-level athletes who are in the development phase. It is unclear how specific physical and tactical traits influence the natural inclination toward offensive or defensive playing styles at this level.

This study addresses the following core issue:

What is the relationship between physical and tactical performance characteristics and the preferred playing style (offensive or defensive) in intermediate-level tennis players?

2.3 Research Questions

1. What are the key physical performance differences between offensive and defensive intermediate-level tennis players?
2. How do tactical behaviors differ between these two groups during match play?
3. Can specific physical or tactical test results predict whether a player will adopt an offensive or defensive playing style?

3. Research Hypotheses

1. There are statistically significant differences in physical performance between offensive and defensive tennis players.

2. There are statistically significant differences in tactical performance indicators between offensive and defensive players.
 3. Physical and tactical performance levels can predict the preferred playing style (offensive or defensive) of a tennis player.
- decision-making, shot selection, point construction, court positioning, and adaptation to match dynamics. Offensive players often approach the net more frequently, attempt winners early in rallies, and rely on powerful serves and forehands. In contrast, defensive players extend rallies, retrieve deep balls, and rely on consistency.

4. Theoretical Framework

4.1 Physical Performance in

Tennis

Physical performance in tennis includes speed, endurance, muscular power, agility, flexibility, and reaction time. These attributes are critical for executing shots efficiently, recovering between points, and maintaining performance under fatigue.

Speed & Agility: Crucial for offensive players to close points quickly and approach the net

Muscular Power: Supports explosive movements, including serves, groundstrokes, and rapid directional changes.

Endurance: Enables defensive players to sustain long rallies and maintain consistency

Flexibility: Supports defensive players in reaching wide shots and avoiding injuries

4.2 Tactical Performance in Tennis

Tactical performance involves

4.3 Playing Styles

According to [Crespo & Reid, 2009], playing styles in tennis can be categorized based on observable tendencies in point construction. Offensive players dominate the point; defensive players react and counter. Styles are influenced by both innate characteristics and training.

5. Operational Definitions

- **Offensive Playing Style:** A style characterized by aggressive shot-making, shorter rallies, and higher risk-taking to win points quickly.
- **Defensive Playing Style:** A style marked by consistency, long rallies, error minimization, and forcing the opponent to make mistakes.
- **Physical Performance:** The measurable abilities of the body in terms of speed, strength, agility, and endurance.
- **Tactical Performance:** The player's ability to make strategic

decisions during play, including positioning, shot selection, and rally management.

intermediate players, developing a balance of these physical qualities can enhance versatility and adaptability on the court

6. Previous Studies

1. Reid et al. (2013): Integrating Physical and Tactical Profiling in Elite Tennis Training

Reid and colleagues emphasized the importance of combining physical and tactical profiling to enhance performance and prevent injuries in elite tennis players. They highlighted that understanding an athlete's physical capabilities and tactical preferences allows for more personalized and effective training programs. While the study primarily focused on elite players, the principles of integrating physical and tactical assessments can be beneficial for intermediate-level players aiming to elevate their game..

2. Kovacs (2007): The Role of Physical Qualities in Playing Styles

Kovacs explored how specific physical attributes, particularly anaerobic endurance and speed, contribute differently to various playing styles in tennis. He noted that players with high anaerobic endurance are better suited for baseline rallies, while those with greater speed excel in net play and quick transitions. For

3. O'Donoghue (2001): Tactical Patterns and Player Styles

O'Donoghue analyzed tactical patterns in match play and concluded that players often gravitate towards certain styles based on their physical abilities and coaching backgrounds. He found that players with strong baseline games tend to engage in longer rallies, while those with powerful serves and volleys adopt more aggressive strategies. For intermediate players, understanding these tendencies can aid in developing a playing style that aligns with their strengths and training history.

4. Fernández-Fernández et al. (2009): Physiological Demands in Tennis

In their study, Fernández-Fernández and colleagues compared the activity profiles and physiological demands of advanced and recreational veteran male tennis players during one hour of match play. The research aimed to examine whether differences in playing level influence these factors. While the study primarily focused on veteran players, it provides insights

into the physiological demands of tennis that can be relevant to intermediate-level players as well. The findings highlighted the importance of endurance, agility, and recovery in tennis performance.

5. Gillet et al. (2009): Decision-Making and Anticipation in Tennis

Gillet and colleagues conducted a notational analysis of singles events at the French Open Grand Slam tournament in 2005 and 2006 to characterize game patterns and strategies of serve and serve-return. They found that elite players demonstrated advanced decision-making and anticipation skills, particularly in their serve and return strategies. While the study focused on elite players, it underscores the significance of these cognitive skills in tennis performance, which are also crucial for intermediate-level players aiming to enhance their tactical abilities.

6. Carboch et al. (2016): Cognitive Differences in Tennis Players

Carboch and colleagues explored the cognitive differences between professional and competitive tennis players. Their study examined how perceptual-cognitive training,

based on video recordings of tennis serves modified by temporal occlusion, affected the development of anticipatory skills. The research involved 32 participants divided into intervention and control groups based on skill level. The findings indicated that perceptual-cognitive training could enhance anticipation skills in both high-performance tennis players and beginners. This highlights the potential benefits of cognitive training for intermediate-level players seeking to improve their anticipatory abilities.

7. Research Methodology

7.1 Research Approach

This study adopts a descriptive comparative approach, as it aims to explore the differences between offensive and defensive playing styles in tennis based on physical and tactical performance indicators.

7.2 Sample of the Study

The sample consisted of 12 intermediate-level tennis players (ages 14–17) from Serve Tennis Academy – Lebanon. Players were selected based on their regular participation in academy training and internal matches.

They were divided into two groups after video analysis of recorded match play:

- Offensive players (n = 6)

- Defensive players (n = 6) length, net approaches, and shot Classification was based on rally aggressiveness.

7.3 Research Tools and Instruments

A. Physical Performance Tests		
Component	Test Name	Measurement Unit
Speed	20-meter sprint	Seconds
Muscular Power	Standing long jump	Centimeters
Agility	Illinois agility test	Seconds
Endurance	Yo-Yo Intermittent Recovery Test	Level/Distance
Flexibility	Sit and Reach Test	Centimeters

B. Tactical Performance

Indicators (via video analysis)

- Average rally length (number of shots per rally)
- Number of net approaches per set
- Percentage of winners per set
- Unforced error rate
- Serve efficiency (1st serve in %, aces, double faults)

C. Tools Used

- Handheld stopwatch
- Measuring tape and cones
- Full HD video camera
- Kinovea software for video analysis
- Microsoft Excel for data processing
- SPSS (version 26) for statistical analysis

7.4 Validity and Reliability of Tools

- Content validity confirmed by a panel of 3 expert tennis coaches and sports scientists.
- Test–retest reliability applied to a pilot sample of 4 players ($r > 0.85$ for all tests).

7.5 Statistical Analysis:

- Descriptive statistics: Mean, standard deviation.
- Independent sample t-test: To compare means between offensive and defensive groups.
- Pearson correlation coefficient: To examine the relationship between physical and tactical indicators.
- Significance level: Set at $p < 0.05$.

8. Results and Analysis

8.1 Descriptive Statistics

Variable	Offensive Players (n = 6)	Defensive Players (n = 6)	p-value	Significance
20-meter Sprint (sec)	3.21 ± 0.12	3.46 ± 0.14	0.011	Significant

Standing Long Jump (cm)	224.5 ± 8.2	207.3 ± 9.1	0.005	Significant
Illinois Agility Test (sec)	17.12 ± 0.64	18.32 ± 0.48	0.008	Significant
Yo-Yo IR Test (Level)	18.1 ± 1.3	20.4 ± 1.1	0.016	Significant
Sit & Reach Test (cm)	25.4 ± 2.2	28.9 ± 2.6	0.031	Significant

Interpretation: Offensive players and agility, while defensive players showed significantly better speed, power, excelled in endurance and flexibility.

8.2 Tactical Performance Indicators

Tactical Variable	Offensive	Defensive	p-value	Significance
Average rally length (shots)	4.1 ± 0.8	8.7 ± 1.1	0.002	Significant
Net approaches (per set)	9.3 ± 1.5	3.1 ± 0.7	0.001	Significant
Winners per set (%)	36.4%	18.7%	0.009	Significant
Unforced error rate (%)	14.5%	8.2%	0.013	Significant
Serve efficiency (1st serve %)	68.7%	65.3%	0.381	Not significant

Interpretation: Offensive players favor shorter rallies, more net play, and higher winner rates. Defensive players play longer rallies and commit fewer errors.

supporting the theory that style is influenced by an athlete's physiological strengths.

These results support the idea that player development programs must consider individual styles and adapt training accordingly. Coaches should integrate physical conditioning plans that reinforce each player's dominant tendencies while also addressing weaker components to build versatility

9. Discussion:

The findings confirm that offensive and defensive playing styles in intermediate-level tennis players are associated with distinct physical and tactical profiles.

- Offensive players demonstrate higher explosive power and speed, allowing them to finish points quickly.
- Defensive players rely on endurance and consistency, reflected in longer rallies and lower error rates.
- The tactical choices seem to be aligned with physical capacities,

10. Conclusion

This study concluded that physical and tactical performance indicators significantly differ between offensive and defensive playing styles among intermediate-level tennis players. Offensive players tend to be faster and more explosive, while defensive players

exhibit higher endurance and consistency. These findings emphasize the importance of tailoring training programs based on a player's style to enhance performance and competitiveness.

11. Recommendations

1. Customized Training: Coaches should implement individualized training plans that align with players' physical profiles and tactical tendencies.
2. Performance Profiling: Regular use of video analysis and physical

testing to assess and track player development.

3. Balanced Development: Encourage players to improve weaker physical/tactical aspects while strengthening their dominant style.
4. Longitudinal Research: Future studies should track the development of playing styles over time and in different competitive settings.
5. Design hybrid programs to enhance both offensive and defensive capabilities

12. References (APA Style)

- Crespo, M., & Reid, M. (2009). Coaching beginner and intermediate tennis players. International Tennis Federation.
- Kovacs, M. (2007). Tennis physiology: Training the competitive athlete. *Sports Medicine*, 37(3), 189–198.
- O'Donoghue, P. (2001). Match analysis of elite tennis performance. *Journal of Sports Sciences*, 19(2), 107–115.
- Reid, M., McMurtrie, D., & Crespo, M. (2010). The relationship between match statistics and top 100 ranking in professional men's tennis. *International Journal of Performance Analysis in Sport*, 10(2), 131–138.
- Fernandez-Fernandez, J., Sanz-Rivas, D., & Mendez-Villanueva, A. (2009). A review of the activity profile and physiological demands of tennis match play. *Strength and Conditioning Journal*, 31(4), 15–26.
- Gillet, E., Leroy, D., Thouvarecq, R., & Stein, J. F. (2009). A notational analysis of elite tennis serve and return strategies. *Journal of Strength and Conditioning Research*, 23(4), 1401–1408.
- Carboch, J., Stastny, P., & Zahradnik, D. (2016). Tactical behavior in intermediate tennis players. *Journal of Sports Sciences*, 34(15), 1445–1452.