



## **EFFECTS OF SCORELINE ON POINT- AND GAME-WINNING PROBABILITY IN PROFESSIONAL MEN'S PADEL**

### **EFFECTOS DEL MARCADOR EN LA PROBABILIDAD DE GANAR PUNTOS Y JUEGOS EN EL PÁDEL PROFESIONAL MASCULINO**

IVÁN MARTÍN MIGUEL

Institute of Health and Sport Sciences,  
Faculty of Health Science, Universidad  
Francisco de Vitoria. Madrid, Spain.  
ORCID: 0000-0002-1894-3651

**Correspondence:** Iván Martín Miguel. Institute of Health and Sport Sciences, Faculty of Health Science, Francisco de Vitoria University. Madrid, Spain.  
[ivan.martinmiguel@ufv.es](mailto:ivan.martinmiguel@ufv.es)

Section: original article

Received: 11/05/2026; Accepted: 30/06/2026

## ABSTRACT

The influence of scoreline on match outcome has been previously explored in padel, primarily focusing on differences between winning and losing pairs. However, limited evidence exists regarding how each point within the game contributes to the final outcome. Therefore, the aim of this study was to examine the probability of winning both the point and the game as a function of scoreline, as well as to identify game sequences and critical points associated with game outcome. An observational design was used to analyze 2,077 points from 17 professional men's matches on the 2023 Premier Padel circuit. Results revealed a general advantage for the serving pair, with point-winning probabilities exceeding 55% in most scenarios. This advantage was particularly evident in early disadvantage situations (0–30 = 69%; 0–40 = 66%) and at critical moments such as deuce (40–40 = 65%), with point success decreasing by approximately 3% with each additional shot ( $\beta = -.031$ ; OR = .970;  $p < .001$ ). Game-winning probability varied significantly depending on scoreline ( $p < .001$ ;  $V_c = .396$ ), increasing under advantageous conditions (30–0 = 89.80%; 40–15 = 93.91%; 40–0 = 98.73%, ASR = 5.61–5.67) and decreasing markedly under disadvantage (0–30 = 36.21%; 0–40 = 5.56%, ASR = -5.56–6.07). Intermediate scorelines emerged as key transitional moments, where the outcome of a single point led to substantial shifts in winning probability (e.g., from 15–15 = 67.92% to 15–30 = 48.11%; from 30–30 = 66.17% to 30–40 = 39.02%). The most critical situations were identified at deuce (40–40 = 100%) and during break points (30–40 = 65.31%; 15–40 = 45.45%). Furthermore, sequence analysis showed that winning the first two points markedly increases the likelihood of winning the game for both the serving pair (e.g., 15–0; 30–0; 40–0 or 15–0; 30–0; 30–15; 40–15, 27.7%, ASR = 3.12–4.74) and the returning pair (e.g., 0–15; 0–30; 15–30; 15–40 or 0–15; 0–30; 0–40, 15.54%, ASR = 3.92–5.09). In conclusion, scoreline plays a decisive role in padel performance, as not all points contribute equally to the final outcome.

*Keywords:* racket sports, match analysis, critical moments.

## RESUMEN

La influencia del marcador sobre el resultado final ha sido previamente analizada en pádel, centrándose principalmente en las diferencias entre parejas ganadoras y perdedoras. Sin embargo, existe evidencia limitada sobre cómo cada punto dentro del juego contribuye al desenlace final. Por ello, el objetivo de este estudio fue analizar la probabilidad de ganar tanto el punto como el juego en función del marcador, así como identificar las secuencias de juego y los puntos críticos asociados al resultado. Se empleó un diseño observacional para analizar 2,077 puntos correspondientes a 17 partidos masculinos profesionales del circuito Premier Padel 2023. Los resultados mostraron una ventaja general de la pareja al

saque, con probabilidades de ganar el punto superiores al 55% en la mayoría de las situaciones. Esta ventaja fue especialmente evidente en contextos de desventaja inicial (0–30 = 69%; 0–40 = 66%) y en momentos críticos como el iguales (40–40 = 65%). Además, la probabilidad de ganar el punto disminuyó aproximadamente un 3% por cada golpe adicional ( $\beta = -.031$ ; OR = .970;  $p < .001$ ). La probabilidad de ganar el juego varió significativamente en función del marcador ( $p < .001$ ;  $V_c = .396$ ), incrementándose en situaciones favorables (30–0 = 89.80%; 40–15 = 93.91%; 40–0 = 98.73%; ASR = 5.61–5.67) y disminuyendo notablemente en condiciones de desventaja (0–30 = 36.21%; 0–40 = 5.56%; ASR = –5.56–6.07). Los marcadores intermedios emergieron como momentos de transición clave, donde el resultado de un solo punto producía cambios sustanciales en la probabilidad de victoria (por ejemplo, de 15–15 = 67.92% a 15–30 = 48.11%, o de 30–30 = 66.17% a 30–40 = 39.02%). Los contextos más críticos se identificaron en iguales (40–40 = 100%) y en situaciones de punto de break (30–40 = 65.31%; 15–40 = 45.45%). Asimismo, el análisis de secuencias indicó que ganar los dos primeros puntos del juego incrementa notablemente la probabilidad de victoria, tanto para la pareja al saque (por ejemplo, 15–0; 30–0; 40–0 o 15–0; 30–0; 30–15; 40–15, 27.7%; ASR = 3.12–4.74) como para la pareja al resto (por ejemplo, 0–15; 0–30; 15–30; 15–40 o 0–15; 0–30; 0–40, 15.54%; ASR = 3.92–5.09). En conclusión, el marcador desempeña un papel determinante en el rendimiento en pádel, ya que no todos los puntos contribuyen de igual manera al resultado final del juego.

*Palabras clave:* deportes de raqueta; análisis del rendimiento; momentos críticos.

## Introduction

Padel has experienced a marked increase in participation in recent years (Martín-Miguel et al., 2025), largely driven by its social nature and the cognitive, emotional, and well-being benefits associated with regular practice (Pérez-Muñoz et al., 2024; Rodríguez-Cayetano et al., 2023). This growth has contributed to a progressive professionalization of the sport and, consequently, to a rise in scientific research focused on performance analysis and game-related factors (Gutiérrez-Plaza et al., 2025; Martín-Miguel et al., 2023). Nevertheless, existing literature has predominantly examined technical–tactical or temporal aspects of play, with comparatively limited attention given to the specific influence of score-related variables on performance (García-Giménez et al., 2022).

Scoreline represents a potentially critical determinant of performance, as different scoreline situations impose varying levels of psychological pressure

that may affect attentional processes, self-efficacy, and emotional regulation (Hufton et al., 2026; Koehn & Morris, 2012). In other racket sports such as tennis, scoreline-related differences have been linked to variations in performance indicators, including service aces, serve velocity, and stroke effectiveness (Katić et al., 2011), as well as to changes in shot selection and directional patterns (Zhao et al., 2025). In this context, scoreline has been identified as a key factor shaping match dynamics, as favorable situations tend to increase the likelihood of success (Wang et al., 2024), while simultaneously influencing decision-making and tactical behavior according to competitive context (i.e., leading vs. trailing) (Shangguan & Zha, 2025). Therefore, scoreline conditions appear to play a relevant role in determining player performance.

In padel, previous studies have approached scoreline primarily from a global match-performance perspective. Findings indicate that winning pairs tend to exhibit higher percentages of break points converted, greater success in decisive points, and a higher frequency of effective offensive actions such as winners and finishing shots (Martín-Miguel, Muñoz, Escudero-Tena, et al., 2024). Moreover, successful pairs demonstrate greater efficiency in offensive play, including higher success rates in winners executed through smashes, groundstrokes, and volleys (Escudero-Tena et al., 2021), as well as a greater presence in offensive court positions, particularly when executing cross-court volleys and smashes (Ramón-Llín et al., 2020). Differences have also been reported in game patterns and physiological demands, with losing players generally showing higher physical loads (Conde-Ripoll, Jamotte, et al., 2025). However, these studies typically consider performance at the match level, without providing a detailed examination of how specific score situations influence point-by-point performance within the game.

From this perspective, a gap remains in the literature regarding the analysis of score from a microstructural standpoint, which would allow for a more precise understanding of how each point outcome influences the probability of winning the game. This approach is particularly relevant, as certain moments within the game may represent critical points that ultimately shape the final outcome. Accordingly, the aim of the present study was to examine the probability of winning both the point and the game as a function of scoreline, as well as to identify game sequences and critical points associated with game outcome. It was hypothesized that specific scoreline situations exert a decisive influence on game results, leading to performance differences between the serving and returning pair.

## Materials and Methods

### *Research Design*

This study adopted a descriptive, observational, cross-sectional design to investigate playing patterns in elite men's padel competition. A quantitative, non-experimental approach was implemented through the retrospective analysis of previously recorded matches, without any form of researcher intervention in the natural competitive environment. Match actions were systematically observed and coded according to predefined criteria, and subsequently examined using inferential statistical procedures (Ato et al., 2013).

### *Sample*

A total of 2,077 points obtained from 17 professional men's padel matches (40 sets) were included in the analysis. Matches corresponded to the quarterfinal, semifinal, and final stages of eight tournaments from the 2023 Premier Padel circuit.

An a priori sample size calculation was conducted using G\*Power 3.1 software. Given that the main analyses involved categorical variables, chi-square tests of independence were planned. Assuming a medium effect size ( $w = .25$ ), an alpha level of .05, statistical power ( $1 - \beta$ ) of .80, and a maximum of 49 degrees of freedom (derived from 50 mutually exclusive sequence categories;  $df = k - 1$ ), the minimum required sample size was estimated at 333 points. The final dataset ( $n = 2,077$  points) clearly exceeded this requirement, ensuring sufficient statistical power and reducing the risk of type II error.

All matches were recorded between January and December 2023. The sample involved 12 different players (age:  $25.32 \pm 5.21$  years; height:  $178.69 \pm 6.01$  cm), all with experience at the professional level. Only rallies in which both the beginning and the end of the point were clearly visible were included in the analysis. All matches were played with golden point.

The study adhered to the principles of the Declaration of Helsinki (World Medical Association, 2013) and received approval from the corresponding institutional Ethics Committee (Ref. 166//2023). As all data were derived from publicly available sources, no personal or sensitive information was processed.

### *Variables*

All variables were defined according to their categorical nature and level of openness (Anguera & Hernández-Mendo, 2015).

- **Scoreline.** The point score within each game was recorded, including the standard values (0, 15, 30, and 40) and all possible scoreline combinations (e.g., 0–15, 30–30). Additionally, the full progression of the game score was considered (e.g., 0–15; 15–15; 30–15; 40–15 or 0–15; 0–30; 0–40).
- **Grouped scoreline.** Scoreline was further categorized into three conditions: (i) disadvantage, when the server was trailing (e.g., 15–30, 15–40); (ii) neutral, when no clear dominance was established (e.g., 15–15, 30–30); and (iii) advantage, when the server held a clear lead (e.g., 30–15, 40–0).
- **Serve direction.** Serve placement was classified into three categories: T, lateral glass, and body, following previous methodological approaches in the literature (Martín-Miguel et al., 2026; Martín-Miguel, Sánchez-Alcaraz, et al., 2024).
- **Number of strokes.** The total number of strokes per point was recorded separately for the left-side and right-side players, allowing for a more detailed characterization of rally structure.
- **Winning pair.** The outcome of both the point and the game was coded by distinguishing whether the serving pair or the returning pair achieved victory.

### *Procedures*

Data were collected through systematic observation of professional men's padel matches from the 2023 Premier Padel season. All matches were broadcast live and are publicly available on Red Bull TV (<https://www.redbull.com/us-en/event-series/premier-padel>).

Observational coding was conducted using LINCE software (Soto-Fernández et al., 2022). Analysis was performed by an observer with formal training in padel and specific instruction on the operational definitions of the study variables. A prior familiarization phase ensured consistent application of coding criteria and reduced observer-related bias.

Data quality was ensured through intra- and inter-observer reliability assessments. Intra-observer reliability was evaluated by reanalyzing a randomly selected subsample of 311 points ( $\approx 10\text{--}20\%$  of the total sample) after a sufficient interval to minimize recall bias (Schwesig et al., 2020). Inter-observer reliability was assessed by having the same subsample independently coded by a second observer holding a PhD in Sport Sciences, with extensive experience in performance analysis and research. Reliability coefficients exceeded .90 across all variables, indicating high consistency in the observational data (Altman, 1990). Table 1 presents the intra- and inter-observer reliability coefficients (Cohen's  $\kappa$ ) for all coded variables.

**Table 1.**

Cohen's Kappa coefficient ( $\kappa$ ) for each of the study variables.

Study Variables	Cohen's K	
	Intra-Oberserver	Inter-Oberserver
Game score	1.00	1.00
Grouped game score	1.00	1.00
Serve direction	.97	.98
Number of strokes	.96	.95
Winning pair	1.00	1.00
Total	.98	.98

### *Statistical Analysis*

Descriptive statistics are reported as mean  $\pm$  standard deviation. Associations between categorical variables were examined using contingency tables and the chi-square ( $\chi^2$ ) test. Adjusted standardized residuals (ASR) identified cells with observed frequencies significantly deviating from expected values;  $ASR > |1.96|$  indicated meaningful differences (Field, 2018).

Association strength was quantified using Cramer's V ( $V_c$ ) (Field, 2018), with effect sizes classified as trivial ( $< .10$ ), small ( $.10-.29$ ), moderate ( $.30-.49$ ), or large ( $> .50$ ) (Crewson, 2006).

Point criticality was calculated as the absolute difference between the probability of winning the game after winning the point and the probability of winning the game after losing the same point ( $\text{Criticality} = |P(\text{win game} | \text{win point}) - P(\text{win game} | \text{lose point})|$ ). Points were classified into low, moderate, and high criticality using a priori thresholds based on the magnitude of this probability difference ( $< 20$ ,  $20-40$ , and  $> 40$ , respectively), to ensure consistent interpretation and avoid data-driven bias.

A binary logistic regression assessed the contribution of selected predictors to point-winning probability. The dependent variable was point outcome (1 = win; 0 = loss), and independent variables included grouped game score, serve direction, and strokes per point. Model fit was evaluated using the likelihood ratio test ( $\Delta\chi^2$ ) and pseudo- $R^2$  indices (Nagelkerke, Cox & Snell). Predictive performance was assessed via classification accuracy and area under the receiver operating characteristic curve (AUC). Regression coefficients were expressed as beta values ( $\beta$ ) and odds ratios (OR), with corresponding significance levels ( $p$ ). Multicollinearity was examined using the variance inflation factor (VIF), with values  $< 5$  considered acceptable. Although logistic regression enables simultaneous evaluation of predictors, causal inferences are not justified due to the observational cross-sectional design (Hosmer et al., 2013). The significance level was set at  $p < .05$ . Analyses were performed using JASP (version .19).

## Results

The probability of winning the point on serve varied according to game score (Table 2), ranging from .53 (30–0) to .69 (0–30). Overall, the server exhibited probabilities above 55% in most situations. Notably, higher values were observed both in early disadvantage scenarios (0–30 = .69; 0–40 = .66) and in critical deuce situations (40–40 = .65). In contrast, intermediate scorelines such as 15–30 (.54) and 30–0 (.53) showed relatively lower success probabilities.

**Table 2.**

Probability of winning the point on serve as a function of game score

<b>Game Score</b>	<b>Valid</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>0-0</b>	364	.61	.48
<b>0-15</b>	142	.59	.49
<b>0-30</b>	58	.69	.46
<b>0-40</b>	18	.66	.48
<b>15-0</b>	222	.66	.47
<b>15-15</b>	159	.58	.49
<b>15-30</b>	106	.54	.50
<b>15-40</b>	60	.55	.50
<b>30-0</b>	147	.53	.50
<b>30-15</b>	161	.54	.50
<b>30-30</b>	133	.62	.48
<b>30-40</b>	82	.59	.49
<b>40-0</b>	79	.63	.48
<b>40-15</b>	115	.60	.49
<b>40-30</b>	129	.58	.49
<b>40-40</b>	102	.65	.47

The logistic regression model (Table 3), was statistically significant ( $\Delta\chi^2 = 41.14$ ;  $p < .001$ ), although it demonstrated limited explanatory power (Nagelkerke  $R^2 = .027$ ). The dependent variable was coded as point outcome for the returning pair (1 = point won; 0 = point lost), and score categories were dummy-coded using disadvantage as the reference. The number of shots emerged as a significant predictor ( $\beta = -.031$ ; OR = .970;  $p < .001$ ), indicating an approximate 3% decrease in the probability of winning the point for each additional shot.

For scoreline variables, only the advantage condition was significant ( $\beta = -.321$ ; OR = .726;  $p = .045$ ), whereas disadvantage and neutral conditions were not ( $p > .05$ ). Given the coding of the dependent variable, this negative coefficient indicates that, compared to disadvantage, advantage situations reduce the probability of the returning pair winning the point, implying a higher likelihood of success for the serving pair. Serve direction showed no significant effect ( $p = .969$ ). The model achieved an overall classification accuracy of 60.1% and an AUC of .607.

**Table 3.**

Logistic regression model predicting point outcome

Variable	$\beta$ (Estimate)	Standard Error	OR	z	p
Intercept	-11.81	324.74	—	-.036	.971
Serve direction (T)	12.74	324.74	—	.039	.969
Serve direction (Lateral glass)	12.76	324.74	—	.039	.969
Serve direction (Body)	12.67	324.74	—	.039	.969
Score (Disadvantage)	-.21	.179	.805	-1.210	.226
Score (Neutral)	-.13	.154	.877	-.848	.397
Score (Advantage)	-.32	.160	.726	-2.008	.045*
Number of shots	-.03	.005	.970	-5.759	< .001

The probability of winning the game according to the point score (Table 4), shows significant differences ( $\chi^2 = 326.1$ ;  $df = 15$ ;  $p < .001$ ;  $V_c = .396$ ), indicating a moderate association. The server's probability of winning the game increased progressively under advantageous conditions, reaching high values at 30–0 (89.80%), 40–15 (93.91%), and 40–0 (98.73%). Conversely, disadvantage situations showed a marked reduction, particularly at 0–30 (36.21%) and 0–40 (5.56%). Intermediate scorelines displayed more balanced probabilities, notably at 15–30 (48.11%) and 30–30 (66.17%). Break-point scenarios such as 15–40 (25.00%) and 30–40 (39.02%) were associated with a high likelihood of losing the game for the server.

**Table 4.**

Probability of winning the game as a function of point score.

Game Score	Game won by the server			Game won by the returner		
	N	%	ASR	N	%	ASR
0-0	261	71.70	.56	103	28.30	-.56
0-15	83	58.45	-3.26	59	41.55	3.26
0-30	21	36.21	-5.81	37	63.79	5.81
0-40	1	5.56	-6.07	17	94.44	6.07
15-0	178	80.18	3.35	44	19.82	-3.35
15-15	108	67.92	-.74	51	32.08	.74
15-30	51	48.11	-5.18	55	51.89	5.18
15-40	15	25.00	-7.84	45	75.00	7.84

30-0	132	89.80	5.32	15	10.20	-5.32
30-15	131	81.37	3.15	30	18.63	-3.15
30-30	88	66.17	-1.13	45	33.83	1.13
30-40	32	39.02	-6.37	50	60.98	6.37
40-0	78	98.73	5.61	1	1.27	-5.61
40-15	108	93.91	5.67	7	6.09	-5.67
40-30	110	85.27	3.80	19	14.73	-3.80
40-40	67	65.69	-1.09	35	34.31	1.09

The analysis of critical points indicated that point importance varied substantially with game score (Table 5), reflecting the impact of winning or losing a single point on the probability of winning the game. The highest values were observed at deuce (40–40), with a difference of 100%, as well as in break-point scenarios such as 30–40 (65.31%) and 15–40 (45.45%). Intermediate contexts, including 30–30 (51.54%) and moderate disadvantage situations such as 0–30 (44.44%) and 15–30 (34.62%), also showed elevated criticality. In contrast, extreme scorelines exhibited low variability, with minimal differences at 40–0 (3.45%) and 0–40 (8.33%).

**Table 5.**

Critical points in relation to scoreline and outcome probability.

Game score	Win point	Lose point	Difference	Criticality
0-0	80.18	58.45	21.73	Moderate
0-15	72.94	36.84	36.10	Moderate
0-30	50.00	5.56	44.44	High
0-40	8.33	0.00	8.33	Low
15-0	89.80	61.33	28.47	Moderate
15-15	82.80	46.97	35.83	Moderate
15-30	63.79	29.17	34.62	Moderate
15-40	45.45	0.00	45.45	High
30-0	98.73	79.41	19.32	Low
30-15	91.95	68.92	23.03	Moderate
30-30	85.54	34.00	51.54	High
30-40	65.31	0.00	65.31	High
40-0	100.00	96.55	3.45	Low
40-15	98.57	86.67	11.90	Low
40-30	100.00	64.81	35.19	Moderate
40-40	100.00	0.00	100.00	High

Finally, the analysis of scoring sequences revealed significant differences depending on the game winner ( $\chi^2 = 262.7$ ;  $df = 50$ ;  $p < .001$ ;  $V_c = .851$ ) (Table 6). Games won by the server were primarily characterized by linear and dominant progressions (e.g., 15-0; 30-0; 40-0 = 18.85%; ASR = 4.74), and with an initial lead (e.g., 15-0; 30-0; 30-15; 40-15 = 8.85%; ASR = 3.12). In contrast, games won by the returner were associated with initial server disadvantages (e.g., 0-15; 0-30; 15-30; 15-40 = 9.71%; ASR = 5.09) or descending score trajectories (e.g., 0-15; 0-30; 0-40 = 5.83%; ASR = 3.92). More balanced sequences, including deuce situations, were observed in both groups but occurred less frequently. Additionally, no significant differences were found based on whether the team won the first point of the game ( $p > .05$ ;  $V_c = .023-.029$ ).

**Table 6.**

Scoreline sequences according to game winner.

Server win			Returner win		
Game score	%	ASR	Game score	%	ASR
15-0; 30-0; 40-0	18.85	4.74	0-15; 0-30; 15-30; 15-40	9.71	5.09
15-0; 30-0; 30-15; 40-15	8.85	3.12	0-15; 15-15; 15-30; 15-40	6.80	4.24
15-0; 30-0; 40-0; 40-15	6.92	2.74	0-15; 0-30; 0-40; 15-40	5.83	3.92
0-15; 15-15; 30-15; 40-15	6.92	2.74	15-0; 15-15; 30-15; 30-30; 30-40	5.83	3.92
15-0; 30-0; 30-15; 30-30; 40-30	4.62	2.22	15-0; 15-15; 15-30; 15-40; 30-40	5.83	3.92
0-15; 15-15; 30-15; 30-30; 40-30	4.62	2.22	0-15; 0-30; 0-40	5.83	3.92
15-0; 15-15; 30-15; 40-15	3.85	1.44	15-0; 30-0; 30-15; 30-30; 30-40; 40-40	4.85	2.17
15-0; 30-0; 30-15; 40-15; 40-30	3.46	1.91	15-0; 15-15; 15-30; 30-30; 30-40	4.85	3.58
15-0; 15-15; 30-15; 40-15; 40-30	3.08	1.80	0-15; 0-30; 15-30; 30-30; 40-30; 40-40	3.88	.60
15-0; 30-0; 40-0; 40-15; 40-30	3.08	1.80	15-0; 30-0; 30-15; 30-30; 40-30; 40-40	3.88	1.37
0-15; 0-30; 15-30; 30-30; 40-30; 40-40	2.69	-.60	15-0; 15-15; 15-30; 15-40	3.88	3.20
0-15; 0-30; 15-30; 15-40; 30-40; 40-40	2.31	1.55	0-15; 15-15; 30-15; 40-15; 40-30; 40-40	2.91	1.18
0-15; 15-15; 15-30; 30-30; 40-30	2.31	1.55	0-15; 0-30; 0-40; 15-40; 30-40; 40-40	2.91	2.08
15-0; 15-15; 30-15; 30-30; 40-30	2.31	.83	15-0; 30-0; 30-15; 30-30; 30-40	2.91	2.76
0-15; 0-30; 15-30; 30-30; 40-30	1.92	1.42	0-15; 15-15; 15-30; 15-40; 30-40	2.91	2.76

0-15; 15-15; 30-15; 30-30; 40-30; 40-40	1.92	1.42	0-15; 0-30; 15-30; 30-30; 30-40	2.91	2.76
15-0; 15-15; 15-30; 30-30; 40-30	1.92	1.42	15-0; 30-0; 30-15; 40-15; 40-30; 40-40	1.94	.58
0-15; 15-15; 15-30; 30-30; 30-40; 40-40	1.92	-.01	15-0; 15-15; 15-30; 30-30; 30-40; 40-40	1.94	1.48
15-0; 15-15; 15-30; 15-40; 30-40; 40-40	1.54	.42	0-15; 15-15; 15-30; 30-30; 30-40; 40-40	1.94	.01
15-0; 30-0; 30-15; 30-30; 40-30; 40- 40	1.54	- 1.37	0-15; 15-15; 30-15; 30-30; 30-40	1.94	2.25
15-0; 15-15; 15-30; 30-30; 40-30; 40-40	1.54	.42	0-15; 15-15; 15-30; 30-30; 40-30; 40-40	1.94	1.48
0-15; 15-15; 15-30; 15-40; 30-40; 40-40	1.54	.42	0-15; 0-30; 15-30; 15-40; 30-40	1.94	2.25
0-15; 15-15; 30-15; 40-15; 40-30	1.54	1.27	0-15; 0-30; 0-40; 15-40; 30-40	1.94	2.25
15-0; 30-0; 30-15; 40-15; 40-30; 40- 40	1.15	-.58	15-0; 15-15; 15-30; 15-40; 30-40; 40-40	.97	-.42
0-15; 15-15; 30-15; 40-15; 40-30; 40-40	1.15	- 1.18	15-0; 30-0; 40-0; 40-15; 40-30; 40-40	.97	.19

## Discussion

This study examined the probability of winning both the point and the game as a function of scoreline, and identified game sequences and critical points associated with game outcome. Results showed an overall server advantage, with point-winning probabilities exceeding 55% in most situations, particularly under early disadvantage (0–30 = 69%; 0–40 = 66%) and at critical moments such as deuce (40–40 = 65%). Point success declined by ~3% per additional shot, highlighting the influence of rally length. Accordingly, the server's probability of winning the game increased under advantageous conditions (30–0 = 89.80%; 40–15 = 93.91%; 40–0 = 98.73%) but dropped sharply under disadvantageous scorelines (0–30 = 36.21%; 0–40 = 5.56%). Additionally, intermediate scorelines emerged as key transitional moments, where losing a single point led to large shifts in game-winning probability, such as from 15–15 (67.92%) to 15–30 (48.11%) or from 30–15 (81.37%), and from 30–30 (66.17%) to 30–40 (39.02%), whereas winning the point generated advantageous contexts (e.g., 40–30 = 85.27%). Moreover, the most critical points were observed at deuce (40–40 = 100%) and in break-point situations such as 30–40 (65.31%) and 15–40 (45.45%), followed by intermediate

contexts including 30–30 (51.54%), 0–30 (44.44%), and 15–30 (34.62%). Finally, analysis of scoring sequences indicated that winning the first two points markedly increases the likelihood of winning the game for both the serving pair (e.g., 15–0; 30–0; 40–0 or 15–0; 30–0; 30–15; 40–15) and the returning pair (e.g., 0–15; 0–30; 15–30; 15–40 or 0–15; 0–30; 0–40).

The higher probability of winning the point when serving observed in this study is consistent with previous research in padel (Bueno-García et al., 2024; Martín-Miguel, Muñoz, Lupo, et al., 2024). This advantage has been attributed to several performance-related factors, including the relatively low frequency of extended net exchanges in men's padel (Escudero-Tena et al., 2024), the high effectiveness with the serve (Bueno-García et al., 2024), and the strong performance of the serving pair in offensive positions, particularly at the net (Conde-Ripoll, Martín-Miguel, et al., 2025). Together, these elements contribute to an initial tactical superiority that favors the serving pair in male padel players and may not be directly transferable to female competitions or other performance levels.

In addition, prior studies have suggested that longer rallies tend to reduce the advantage of the serving pair (Martín-Miguel et al., 2026). It has been proposed that, beyond the 11<sup>th</sup> stroke in professional men's padel, the initial benefit of the serve diminishes, increasing the chances of the returning pair to win the point (Martín-Miguel, Muñoz, Lupo, et al., 2024). The present findings provide further precision to this notion, indicating a progressive decline of approximately 3% in the probability of winning the point for each additional shot. This reinforces the idea that rally length is a key performance constraint, and highlights its practical relevance in shaping point outcomes.

Scoreline dynamics represent another key contribution of this study. Previous research in tennis has demonstrated that the probability of winning a game varies substantially depending on the scoreline. For example, situations such as 30–0 are associated with very high probabilities of success, whereas disadvantage scenarios such as 0–30 considerably reduce the likelihood of winning (Sim & Choi, 2020). A similar pattern was observed in the present padel data, suggesting that scoreline exerts a comparable influence across racket sports. From a theoretical perspective, these variations may be partially explained by psychological factors, as score-related pressure can influence players' emotional states, decision-making processes, and risk-taking behavior (Hill et al., 2010). Specifically, being ahead in the score may facilitate more controlled and confident play, whereas trailing situations may induce greater pressure and constrain performance execution. Nevertheless,

it should be noted that all matches were played under the golden point rule, which may amplify the importance of specific scoreline situations compared to traditional advantage scoring formats.

In line with these findings, the present results highlight that specific scoreline situations act as pivotal moments within the game. Beyond deuce (40–40), traditionally regarded as a decisive context (Martín-Miguel, Muñoz, Escudero-Tena, et al., 2024), intermediate scores such as 15–15 and 30–30 emerge as particularly influential. In these situations, the outcome of a single point can produce substantial shifts in the probability of winning the game, decreasing from ~66% to values between 39–48% if the point is lost, or increasing to approximately 81–85% if it is won. At 15–15, this scoreline represents the first meaningful divergence within the game structure. The result of this point determines whether the server moves into a clear advantage (30–15) or falls into a disadvantage scenario (15–30). This pattern underscores the importance of early-game equal score situations, where small performance differences begin to accumulate and shape subsequent tactical behavior and game control (Gutiérrez-Santiago et al., 2024; Klaassen & Magnus, 2001, 2003). Similarly, the 30–30 scoreline can be considered structurally critical, as it immediately precedes either a potential game point (40–30) or a break-point situation (30–40). From a tactical standpoint, this moment represents a decisive transition, in which a single rally can alter the balance of control between the serving and returning pair (Gutiérrez-Santiago et al., 2024; Klaassen & Magnus, 2001).

Finally, the analysis of scoring sequences provides further insight into game dynamics. The findings indicate that a positive start to the game plays a key role, as winning the first two consecutive points markedly increases the likelihood of securing the game. This pattern was consistent for both the serving pair (e.g., 15–0; 30–0; 40–0 or 15–0; 30–0; 30–15; 40–15) and the returning pair (e.g., 0–15; 0–30; 15–30; 15–40 or 0–15; 0–30; 0–40). Previous research has suggested that consecutive point success may generate momentum-related effects, often described as a “winning mood” (Klaassen & Magnus, 2001), which can enhance confidence and positively influence subsequent decision-making and execution. In this context, the present results reinforce the idea that early point sequences are not merely descriptive patterns, but may play a meaningful role in shaping game outcomes in padel.

Despite the relevance of the findings, several limitations should be considered. First, the current body of research in padel remains relatively limited, which constrains direct comparisons with previous studies. Similarly,

although some studies in other racket sports, particularly tennis, have examined the influence of score on performance, there is still a lack of research addressing how scoreline affects both point and game outcomes in a directly comparable manner. In addition, although the logistic regression model was statistically significant, its explanatory capacity was low, indicating that only a small proportion of the variance in point outcome was explained by the included variables. These results should therefore be interpreted cautiously, without overstating the model's predictive value. This limited explanatory power suggests that point outcome in padel is influenced by multiple contextual and performance-related factors not considered here. Variables such as player identity, ranking, court side, set context, match status, or specific tactical features of the rally may play a substantial role and should be included in future research to improve model accuracy and ecological validity. Finally, the analysis was conducted within a specific competitive setting (elite professional padel), which may restrict the external validity of the results. Performance dynamics, decision-making, and pressure responses may differ across skill levels, competitive formats, or populations. Future research should therefore incorporate larger and more diverse samples, as well as multiple competitive contexts, to validate and extend these findings.

### **Practical Applications**

The present findings offer relevant practical implications for both coaches and players in competitive and training contexts. From a competitive perspective, understanding the influence of scoreline allows for more informed tactical decision-making, enabling players to adapt their behavior according to the importance and context of each point. In particular, critical situations such as 15–30, advantageous contexts such as 30–0, or structurally decisive moments like 30–30 may require differentiated tactical approaches to optimize performance.

From a training standpoint, these score-specific scenarios can be systematically replicated to enhance players' adaptation to high-pressure situations. Designing practice tasks that simulate critical scorelines may improve players' ability to manage game dynamics, make effective decisions, and respond more efficiently to the contextual demands imposed by the score during competition. However, coaches should consider that these applications are derived from professional men's padel played under the golden point format, and training designs may need adjustment for female players, youth categories, amateur levels, or competitions using traditional scoring rules.

## Conclusions

The findings of this study indicate that scoreline is a key determinant in the development of the game, as not all points contribute equally to the final outcome. Although the serving pair generally holds an advantage in point-winning probability, the impact of each rally is strongly modulated by the score context.

In particular, intermediate scorelines such as 15–15 and 30–30, as well as break-point situations, emerge as critical moments that can substantially alter the likelihood of winning the game. These results suggest that performance in padel is not solely dependent on technical or tactical proficiency, but also on players' ability to interpret and strategically manage score-related situations throughout the game.

## References

- Altman, D. G. (1990). *Practical Statistics for Medical Research* (0 ed.). Chapman and Hall/CRC. <https://doi.org/10.1201/9780429258589>
- Anguera, M. T., & Hernández-Mendo, A. (2015). Técnicas de análisis en estudios observacionales en ciencias del deporte. *Cuadernos de Psicología del Deporte*, 15(1), 13-30.
- Ato, M., López-García, J. J., & Benavente, A. (2013). A classification system for research designs in psychology. *Anales de Psicología*, 29(3), 1038-1059. <https://doi.org/10.6018/analesps.29.3.178511>
- Bueno-García, R., Sánchez-Pay, A., Sánchez-Alcaraz, B. J., Muñoz, D., & Martín-Miguel, I. (2024). Analysis of the parameters of the serve and serve-return in professional padel. *Padel Scientific Journal*, 2(2), 151-169. <https://doi.org/10.17398/2952-2218.2.151>
- Conde-Ripoll, R., Jamotte, A., Parraca, J. A., & Bustamante-Sánchez, Á. (2025). Heart Rate Variability Differences by Match Phase and Outcome in Elite Male Finnish Padel Players. *Journal of Functional Morphology and Kinesiology*, 10(3), 306. <https://doi.org/10.3390/jfkm10030306>
- Conde-Ripoll, R., Martín-Miguel, I., Bustamante-Sánchez, Á., Llanos-García, M. B., García-Sánchez, J. M., & Escudero-Tena, A. (2025). Bridging the gap: A sex-based examination of shot types and effectiveness in professional padel. *International Journal of Sports Science & Coaching*, 20(6), 2540-2550. <https://doi.org/10.1177/17479541251348161>
- Crewson, P. (2006). *Applied statistics handbook* (Vol. 1). AcaStat Software.
- Escudero-Tena, A., Conde-Ripoll, R., Lupo, C., & Ungureanu, A. N. (2024). Strategic Analysis of Net Exchanges in Professional Padel: Insights From Different Competition Phases of the World Padel Tour Finland Padel Open Tournament. *International Journal of Sports Physiology and Performance*,

- 19(12), 1417-1425. <https://doi.org/10.1123/ijsp.2024-0173>
- Escudero-Tena, A., Sánchez-Alcaraz, B. J., García-Rubio, J., & Ibáñez, S. J. (2021). Analysis of Game Performance Indicators during 2015–2019 World Padel Tour Seasons and Their Influence on Match Outcome. *International Journal of Environmental Research and Public Health*, 18(9), 4904. <https://doi.org/10.3390/ijerph18094904>
- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5.ª ed.). SAGE Publications Ltd. <https://us.sagepub.com/en-us/nam/discovering-statistics-using-ibm-spss-statistics/book285130>
- García-Giménez, A., Pradas, F., Castellar Otín, C., & Carrasco Páez, L. (2022). Performance Outcome Measures in Padel: A Scoping Review. *International Journal of Environmental Research and Public Health*, 19(7), 4395. <https://doi.org/10.3390/ijerph19074395>
- Gutiérrez-Plaza, G., Arrufat, S., & Alfonso-Asencio, M. (2025). La evolución y el auge del pádel en España: Análisis de la cobertura del pádel en grandes medios y su impacto en las audiencias. *Padel Scientific Journal*, 3(1), 79-96. <https://doi.org/10.17398/2952-2218.3.79>
- Gutiérrez-Santiago, A., Cidre-Fuentes, P., Orío-García, E., Silva-Pinto, A. J., Reguera-López-de-la-Osa, X., & Prieto-Lage, I. (2024). Women's Singles Tennis Match Analysis and Probability of Winning a Point. *Applied Sciences*, 14(15), 6761. <https://doi.org/10.3390/app14156761>
- Hill, D. M., Hanton, S., Matthews, N., & Fleming, S. (2010). Choking in sport: A review. *International Review of Sport and Exercise Psychology*, 3(1), 24-39. <https://doi.org/10.1080/17509840903301199>
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied Logistic Regression* (1.ª ed.). Wiley. <https://doi.org/10.1002/9781118548387>
- Hufton, J. R., Vella, S. A., Goddard, S. G., & Schweickle, M. J. (2026). How do athletes perform well under pressure? A meta-study. *International Review of Sport and Exercise Psychology*, 19(1), 150-173. <https://doi.org/10.1080/1750984X.2024.2414442>
- Katić, R., Milat, S., Zagorac, N., & Durović, N. (2011). Impact of game elements on tennis match outcome in Wimbledon and Roland Garros 2009. *Collegium Antropologicum*, 35(2), 341-346.
- Klaassen, F. J. G. M., & Magnus, J. R. (2001). Are Points in Tennis Independent and Identically Distributed? Evidence From a Dynamic Binary Panel Data Model. *Journal of the American Statistical Association*, 96(454), 500-509. <https://doi.org/10.1198/016214501753168217>
- Klaassen, F. J. G. M., & Magnus, J. R. (2003). Forecasting the winner of a tennis match. *European Journal of Operational Research*, 148(2), 257-267. [https://doi.org/10.1016/S0377-2217\(02\)00682-3](https://doi.org/10.1016/S0377-2217(02)00682-3)
- Koehn, S., & Morris, T. (2012). The relationship between performance and flow state in tennis competition. *The Journal of Sports Medicine and Physical Fitness*, 52(4), 437-447.

- Martín-Miguel, I., Escudero-Tena, A., Muñoz, D., & Sánchez-Alcaraz, B. J. (2023). Performance Analysis in Padel: A Systematic Review. *Journal of Human Kinetics*, 89, 213-233. <https://doi.org/10.5114/jhk/168640>
- Martín-Miguel, I., Moreno-Holguera, N., & Muñoz, D. (2025). Evolución de las licencias federativas de pádel en España: Análisis por sexo y comunidad autónoma. *Padel Scientific Journal*, 3(2), 151-163. <https://doi.org/10.17398/2952-2218.3.151>
- Martín-Miguel, I., Muñoz, D., Escudero-Tena, A., Toro-Román, V., & Sánchez-Alcaraz, B. J. (2024). Differences in performance parameters between winning and losing pairs in men's and women's professional padel. *International Journal of Sports Science & Coaching*, 19(3), 1339-1348. <https://doi.org/10.1177/17479541231213544>
- Martín-Miguel, I., Muñoz, D., Lupo, C., & Sánchez-Alcaraz, B. J. (2024). Absence of association between serve and winning point in professional padel. *The Journal of Sports Medicine and Physical Fitness*, 64(2), 103-110. <https://doi.org/10.23736/S0022-4707.23.15291-1>
- Martín-Miguel, I., Romero-Maraver, J., & Gama-Doncel, T. (2026). Saque y continuación del punto en pádel femenino profesional en formación australiana: Un análisis técnico-táctico. *Padel Scientific Journal*, 4(1), 73-92. <https://doi.org/10.17398/2952-2218.4.73>
- Martín-Miguel, I., Sánchez-Alcaraz, B. J., Ramón-Llín, J., & Muñoz, D. (2024). Influence of the tactical formation on serve and follow-through parameters in professional padel. *European Journal of Human Movement*, 52, 1-14. <https://doi.org/https://doi.org/10.21134/eurjhm.2024.52.5>
- Pérez-Muñoz, S., Martín-Cuadrado, O. L., Dueñas López De San Román, F. J., & Rodríguez-Cayetano, A. (2024). Efecto agudo de los partidos de pádel en las emociones de jugadoras amateur. *Padel Scientific Journal*, 2(1), 21-38. <https://doi.org/10.17398/2952-2218.2.21>
- Ramón-Llín, J., Guzmán, J., Martínez-Gallego, R., Muñoz, D., Sánchez-Pay, A., & Sánchez-Alcaraz, B. J. (2020). Stroke Analysis in Padel According to Match Outcome and Game Side on Court. *International Journal of Environmental Research and Public Health*, 17(21), 7838. <https://doi.org/10.3390/ijerph17217838>
- Rodríguez-Cayetano, A., Aliseda García, V., Morales Campo, P. T., & Pérez-Muñoz, S. (2023). ¿Por qué el pádel es tan popular?: Análisis de los motivos de participación y nivel de satisfacción intrínseca. *Padel Scientific Journal*, 1(2), 137-156. <https://doi.org/10.17398/2952-2218.1.137>
- Schwesig, R., Wegener, R., Hurschler, C., Laudner, K., & Seehaus, F. (2020). Intra- and Interobserver Reliability Comparison of Clinical Gait Analysis Data between Two Gait Laboratories. *Applied Sciences*, 10(15), 5068. <https://doi.org/10.3390/app10155068>
- Shangguan, R., & Zha, Z. (2025). The impact of framing effects, competitive state, and time pressure on risk-taking decisions in tennis players of

- different skill levels. *Frontiers in Psychology*, 16, 1573070. <https://doi.org/10.3389/fpsyg.2025.1573070>
- Sim, M. K., & Choi, D. G. (2020). The Winning Probability of a Game and the Importance of Points in Tennis Matches. *Research Quarterly for Exercise and Sport*, 91(3), 361-372. <https://doi.org/10.1080/02701367.2019.1666203>
- Soto-Fernández, A., Camerino, O., Iglesias, X., Anguera, M. T., & Castañer, M. (2022). LINCE PLUS software for systematic observational studies in sports and health. *Behavior Research Methods*, 54(3), 1263-1271. <https://doi.org/10.3758/s13428-021-01642-1>
- Wang, J., Guo, S., & Zhou, Y. (2024). A multidimensional momentum chain model for tennis matches based on difference equations. *PLOS ONE*, 19(12), e0316542. <https://doi.org/10.1371/journal.pone.0316542>
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. *JAMA*, 310(20), 2191. <https://doi.org/10.1001/jama.2013.281053>
- Zhao, Z., Cui, Y., Gómez, M.-Á., Zong, S., & Qi, B. (2025). Quantifying the technical-tactical diversity of elite tennis players during match-play. *Frontiers in Sports and Active Living*, 7, 1634573. <https://doi.org/10.3389/fspor.2025.1634573>