Analysis and prediction of winners in professional padel: sex and set outcome differences

Análisis y predicción de golpes ganadores en el pádel profesional: diferencias por sexo y resultado del set

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Abstract

Objectives: 1) assess differences in winners between male and female professional padel players during 5 seasons (2018-2022); 2) assess differences in winners between winning and losing pairs of a set during 5 seasons (2018-2022); and 3) predict the evolution of winners in the coming seasons (2023-2027).
Methodology: 4,048 winners (2,268 men´s winners and 1,780 women´s winners) of 2,024 sets (1,134 men's and 890 women's) were analyzed from the World Padel Tour circuits (2018-2022). Using Student's t-test for independent samples, with 95% confidence intervals and effect size (Cohen's d).
Results: a significantly higher number of winners in men's padel (.001 < p < .029; ES: 0.257 < d < 0.587), except for losing pairs in the third set and during 2020 and 2021. For the second aim, winning pairs produced significantly more winners (p < .001; ES: 0.502 < d < 1.678), except in 2020. Concerning the third aim, the number of winner/set is foreseen to remain consistently random (2023-2027: men's winning pairs:20-24; losing pairs: 16-20; women's winning pairs: 18-21; losing pairs: 14-18).
Conclusions: men achieve more winners than women, winning pairs make more winners than losing pairs, and the number of winners will remain consistently random over the coming seasons.

Keywords

Racquet sports; performance analysis; shot efficacy; high performance

Resumen

Objetivos: 1) evaluar las diferencias de golpes ganadores entre jugadores y jugadoras profesionales de pádel durante 5 temporadas (2018-2022); 2) evaluar las diferencias de golpes ganadores entre parejas ganadoras y perdedoras de un set durante 5 temporadas (2018-2022); y 3) predecir la evolución de los golpes ganadores en las próximas temporadas (2023-2027).
Metodología: Se analizaron 2.024 sets (1.134 masculinos y 890 femeninos) de los circuitos World Padel Tour (2018-2022). Mediante la prueba t de Student para muestras independientes, con intervalos de confianza del 95% y tamaño del efecto (d de Cohen).
Resultados: un número significativamente mayor de golpes ganadores en el pádel masculino (,001 < p < ,029; ES: 0,257 < d < 0,587), excepto para las parejas perdedoras en el tercer set y durante 2020 y 2021. Para el segundo objetivo, las parejas ganadoras produjeron significativamente más golpes ganadores (p < ,001; ES: 0,502 < d < 1,678), excepto en 2020. En cuanto al tercer objetivo, se prevé que el número de golpes ganadores/set siga siendo aleatorio (2023-2027: parejas ganadoras masculinas: 20-24; parejas perdedoras: 16-20; parejas ganadoras femeninas: 18-21; parejas perdedoras: 14-18).
Conclusiones: los hombres logran más golpes ganadores que las mujeres, las parejas ganadoras logran más golpes ganadores que las parejas perdedoras, y el número de golpes ganadores permanecerá consistentemente aleatorio en las próximas temporadas.

Palabras clave

Deportes de raqueta; análisis del rendimiento; eficacia del golpe; alto rendimiento

Introduction

Numerous studies have measured external load parameters in professional padel, representing the conditions athletes encounter (García-Giménez et al., 2022; Martín-Miguel et al., 2023). These studies have provided insights into the specific dynamics of this sport, categorized into four major domains: 1. Examinations of the temporal structure (playing time, rest intervals), 2. Assessments of player movements, 3. Inquiries into game scores and 4. Investigations into technical-tactical actions.

In terms of the temporal structure, a professional padel set typically lasts around 30 minutes, with differences based on gender, notably higher in women (Sánchez-Alcaraz, Jiménez et al., 2021). Out of the total duration, only 30% corresponds to the active phase of play (Sánchez-Alcaraz, Jiménez et al., 2021). Each point has an average duration of between 12.5 and 13.5 s (Sánchez-Alcaraz, Jiménez et al., 2021). Between points, rest intervals usually last less than 10 seconds at non-key moments, whereas they extend between 10 and 20 seconds during key moments of the match (Sánchez-Alcaraz et al., 2019).

Regarding players' movement, high-level players cover an average distance of 1000 meters per set, with 50.8% of this covered during ball play (Ramón-Llín et al., 2021). On a per-point basis, a player covers an average of 11 meters (Ramón-Llín et al., 2021). The primary movements involve lateral or forward motion, with a significant number of jumps executed for split-steps and overhead shots (Priego et al., 2013). Furthermore, a recent study found that winning players exhibited significantly greater mobility than losing players (Miralles et al., 2025). Specifically, winning players covered a greater distance per hour than losing players and performed a greater number of accelerations per hour.

Several previous investigations have studied aspects of scoring in professional padel (Sánchez-Alcaraz et al., 2019; Sánchez-Alcaraz, Siquier-Coll et al., 2021). These investigations use the set as a unit of measurement, instead of the match, since the data vary very significantly depending on whether two or three sets are played. According to the rules, a padel match is won by the pair that wins two sets before the opponent. Therefore, in the scenario of a three-set match, the results could lead to confusion as each pair would win and lose a set before playing a third and final set. In over 70% of men's matches, only 2 sets are played, while in women's padel, this percentage falls below 70% (Sánchez-Alcaraz, Siquier-Coll et al., 2021). Additionally, the number of games per match tends to increase as rounds of a tournament progress (Muñoz, Toro-Román, Vergara et al., 2022).

In relation to game actions, men´s professional players typically execute around 9.6 shots per point, while females execute approximately 12 shots per point (Lupo et al., 2018), with the volley the most frequently employed stroke (Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). Moreover, despite the last shot of the point has already been analyzed in professional padel (Conde-Ripoll, Martín-Miguel et al., 2024; Escudero-Tena et al., 2024; Pozo-Ayerbe et al., 2024; Romero et al., 2024), the sample size of each investigation is small and, therefore, the results are questionable. These studies have indicated that the point can end with a winner, a forced error or an unforced error. A winner can be considered as an action where a player wins the point with a direct shot, while a forced error is an action where the player loses the point due to an error in a highly difficult shot, and with a poor position for its execution due to the opponent's prior shot (Sánchez-Alcaraz, Jiménez et al., 2021). Finally, an unforced error is that action where the player loses the point due to an error produced in a shot of little difficulty and with good space-time disposition for the execution (Sánchez-Alcaraz, Jiménez et al., 2021).

Previous studies analyzed the dynamics of winner shots in padel, being the most determinant performance factor in both, men´s and women´s padel, together with the forced or unforced errors (Conde-Ripoll, Martín-Miguel et al., 2024; Escudero-Tena et al., 2024; 2022). Moreover, players seem to perform more winners when rallies last between 6 to 10 shots, followed by 1 to 5 shots, which highlights the offensive pattern at elite level, although they also commit more forced and unforced errors (Escudero-Tena et al., 2024). Furthermore, the importance of the point significantly influences the occurrence of winners (Escudero-Tena et al., 2022), with male players producing fewer winners on golden points compared to other points, while females showing the opposite trend, and producing more winners in these situations. Additionally, the type of shot plays a crucial role in scoring winners, with smashes, bandejas and volleys being predominant sources for both men and women (Conde-Ripoll, Martín-Miguel et al., 2024; Escudero-Tena et al., 2024; 2023). In men's padel, the most common sequential pattern leading to a winner involves a direct lob (either forehand or backhand), followed by a smash, and concluding

with a smash off the wall(s) for the winner (Conde-Ripoll, Muñoz, Escudero-Tena et al., 2024). Conversely, in women's padel, the typical sequence for scoring a winner includes a volley (forehand or backhand), a direct low shot (forehand or backhand), and finishing with another volley (forehand or backhand) for the winner (Conde-Ripoll, Muñoz, Escudero-Tena et al., 2024).

After reviewing the scientific articles on professional padel winners, we can determine their importance to success. However, due to the small sample size in these studies, the findings may not be conclusive. Therefore, a study with a larger sample size is necessary. The aims of the present study were: 1) to assess the differences in winners between male and female professional padel players during 5 seasons (2018-2022); 2) to assess the differences in winners between the winning and the losing pair of the set during 5 seasons (2018-2022); and 3) to predict the evolution of winners in the coming seasons (2023 to 2027). The following hypotheses were established: 1) in men's professional padel, the number of winners will be higher than in women's; 2) winning pairs, irrespective of the gender, will produce more winners than the losing pairs; 3) the number of winners is predicted to increase in the winning pairs in the coming seasons, regardless of the gender, while it is predicted to decrease in the losing pairs.

Method

Research design

The observational research methodology was quantitative and descriptive, with data based on natural observations (direct and systematic observation of players in a real game environment, allowing researchers to capture the true essence of their actions and reactions). Furthermore, this study is empirical, nomothetic, cross-sectional or longitudinal (depending on the analysis), and multidimensional (Ato et al., 2013).

Sample

A total of 4,048 winners (2,268 men´s winners and 1,780 women´s winners (Table 1)) of 2,024 sets (1,134 men´s sets and 890 women´s sets) corresponding to matches from the final draw (round of 32, round of 16, quarterfinals, semi-finals and finals) of tournaments on the WPT men's and women's circuits were analyzed. The data collection was carried out from the recording of the winners provided by the WPT during the 2018 to 2022 seasons at the end of each set in the open access videos of WPT TV (https://www.worldpadeltourtv.com/) or on the official YouTube channel (https://www.youtube.com/@Worldpadeltour), following the ethical provisions of Declaration of Helsinki (World Medical Association, 2018).

Table 1. Winners as a function of the contextual variables.

Winners according to:		Number of winners	
		Men	Women
Set	First	966	774
	Second	974	776
	Third	328	230
Round	Round of 32	228	218
	Round of 16	246	201
	Quarterfinals	1,022	533
	Semi-finals	508	544
	Finals	264	284
Season	2018	268	218
	2019	312	256
	2020	328	232
	2021	328	262
	2022	1,032	812
Court	Outdoor	560	434
	Indoor	1,708	1,346

Study variables

Following previous studies (Courel-Ibáñez et al., 2017; Escudero-Tena et al., 2022; 2024; Mellado-Arbelo et al., 2019; Sánchez-Alcaraz, Jiménez et al., 2021), the performance indicator analyzed were the

winner shots. According to WPT, winners is that action where a player wins the point with a direct shot (Sánchez-Alcaraz, Jiménez et al., 2021). In addition, the following contextual variables were also included in the analysis: sex of the players (men and women), result of the set (winning or losing pair), tournament round (round of 32, round of 16, quarterfinals, semi-finals, and finals), set number (first, second and third sets), season (2018, 2019, 2020, 2021 and 2022) and court type (outdoor and indoor).

Process

WPT provides a series of statistical data after each set, including the number of winners. The WPT analyst responsible for recording the winners during the sampled seasons was a certified padel coach with over 10 years of experience. A researcher, holding a PhD in Sports Sciences and author of numerous relevant scientific publications on padel, collected the number of winners provided by WPT and the contextual variables of the study to which these winners using an ad-hoc instrument. Nonetheless, an inter-observer reliability analysis was performed to ensure the accuracy of the collected winners, used the LINCE video analysis software (Soto et al., 2022) to analyze the winners in a random sample of 380 sets (varied and homogeneous according to their quantity in terms of gender, number of sets, round of the draw and season) ensuring a significant amount of data representing between 10% and 20% of the total study sample (Landis & Koch, 1977). The reliability of the inter-observer analysis test was 0.93 (Table 2), considered almost perfect (Landis & Koch, 1977). Furthermore, the researcher collected again the same random sample of 380 sets to conduct an intra-observer reliability analysis, with an average reliability of 0.99 (Table 2), considered almost perfect (Landis & Koch, 1977).

Table 2. Inter-observer and intra-observer reliability.

Study variables	Inter-observer	Intra-observer
	K	
Winners	0.93	0.95
Sex of the players		1.00
Result of the set		1.00
Tournament round		1.00
Set number		1.00
Season		1.00
Court type		1.00

Statistical analysis

A descriptive analysis (means and standard deviations) of winners organized according to the contextual variables, was carried out. Subsequently, an inferential analysis was conducted, using the Student t-test for independent samples (Fagerland, 2012) to identify differences between men´s and women´s professional padel and between the winning and losing pairs of the set in professional padel according to the set number, the round, the season and outdoor or indoor tournament. Statistical significance was established at $p < .05$. Mean differences and 95% confidence intervals (95% CI) were calculated to identify differences in absolute values. Effect size was estimated by Cohen's d, interpreted as small .20, medium .50 and large .80 (Thalmheimer & Cook, 2002). In addition, the IBM SPSS Time Series Modeller was used, which, through an expert modeller, automatically identifies and estimates the autoregressive integrated moving average model (ARIMA) or the exponential smoothing model that best fits the variables to be analyzed. Thus, graphs were created using this modelling procedure to illustrate the evolution of winners in professional padel. Statistical analysis was conducted using SPSS 27.0 software for Windows (IBM SPSS Statistics for Windows, Version 27.0. IBM Corp., Armonk, NY USA).

Results

Table 3 shows the differences found between men´s and women´s player professional padel in winners according to the set number, tournament round, season and court type.

Table 3. Winners as a function of the winning or losing pair of the set by gender.

Pair	Winners according to:		Men $\overline{X}$ (SD)	Women $\overline{X}$ (SD)	t	p	d	MD 95% CI	
Winning	Set	First	22.33(5.14)	20.36(5.14)	5.628	<.001	0.384	1.287	2.666
		Second	22.98(6.02)	20.90(4.97)	5.466	<.001	0.372	1.331	2.823

		Third	22.91(5.21)	20.24(5.73)	4.046	<.001	0.491	1.369	3.965
	Round	Round of 32	22.38(4.87)	19.88(4.54)	3.959	<.001	0.529	1.253	3.738
		Round of 16	23.07(4.49)	20.72(3.31)	4.372	<.001	0.587	1.291	3.410
		Quarterfinals	22.41(5.62)	20.50(5.25)	4.598	<.001	0.348	1.096	2.730
		Semi-finals	22.79(5.57)	20.38(5.57)	4.957	<.001	0.433	1.454	3.364
		Finals	23.52(6.56)	21.55(5.58)	2.687	.008	0.325	0.527	3.420
	Season	2018	23.37(7.20)	21.03(5.69)	2.768	.006	0.357	0.676	4.015
		2019	22.72(3.97)	20.95(4.79)	3.390	.001	0.404	0.740	2.790
		2020	20.85(7.00)	18.50(6.41)	2.868	.004	0.348	0.738	3.969
		2021	22.38(5.82)	20.89(5.78)	2.193	.029	0.257	0.153	2.829
		2022	23.20(4.68)	20.84(4.32)	7.856	<.001	0.521	1.771	2.950
	Court type	Outdoor	22.73(5.35)	20.47(5.32)	4.679	<.001	0.423	1.312	3.212
		Indoor	22.68(5.62)	20.62(5.10)	7.431	<.001	0.383	1.521	2.613
Losing	Set	First	17.33(6.69)	9.44 (3.88)	5.044	<.001	0.344	1.381	3.141
		Second	18.38(6.38)	15.07(6.41)	6.959	<.001	0.474	2.167	3.869
		Third	18.10(6.50)	16.95(6.73)	1.429	.154	0.174	-0.435	2.735
	Round	Round of 32	17.47(7.25)	13.63(6.39)	4.191	<.001	0.561	2.032	5.656
		Round of 16	16.07(6.23)	12.79(5.81)	4.022	<.001	0.542	1.670	4.880
		Quarterfinals	17.97(6.38)	15.43(7.11)	5.058	<.001	0.382	1.553	3.523
		Semi-finals	18.31(6.22)	16.43(5.95)	3.549	<.001	0.310	0.842	2.928
		Finals	18.86(7.17)	16.80(5.67)	2.637	.009	0.319	0.520	3.586
	Season	2018	17.89(6.73)	14.43(6.32)	4.090	<.001	0.528	1.792	5.122
		2019	16.80(4.99)	15.37(5.75)	2.249	.025	0.268	0.179	2.689
		2020	19.40(6.84)	17.96(6.52)	1.774	.077	0.215	-0.158	3.050
		2021	18.50(6.75)	17.73(6.79)	0.976	.330	0.114	-0.788	2.337
		2022	17.56(6.67)	14.28(6.18)	7.644	<.001	0.507	2.438	4.122
	Court type	Outdoor	17.36(6.65)	15.13(6.02)	3.848	<.001	0.348	1.088	3.359
		Indoor	18.07(6.50)	15.54(6.58)	7.505	<.001	0.387	1.870	3.193

Note. $\overline{X}$: mean; SD: standard deviation; t: student t-test for independent samples; p: p-value; d: effect size MD: Mean differences; CI: Confidence interval; p < .05: Bold.

Results showed that male players make significantly more winners than female players (p<.001, p=.004, p=.006, p=.008, p=.009, p=.025 or p=.029), regardless of the set number, tournament round, season or court type. Except in the losing pairs the third set (p=.154) and the 2020 and 2021 seasons (p=.077 and p=.330).

Table 4 shows the differences found regarding the distribution of winners, according to the set number, tournament round, season and court type, between winning and losing pairs in men´s and women´s.

Table 4. Winners as a function of gender by winning/losing pair.

Gender	Winners according to:		Winning pair $\overline{X}$ (SD)	Losing pair $\overline{X}$ (SD)	t	p	d	MD 95% CI	
Men	Set	First	22.33(5.14)	17.33(6.69)	13.011	<.001	0.837	4.246	5.754
		Second	22.98(6.02)	18.38(6.38)	11.555	<.001	0.740	3.817	5.378
		Third	22.91(5.21)	18.10(6.50)	7.390	<.001	0.816	3.530	6.092
	Round	Round of 32	22.38(4.87)	17.47(7.25)	5.992	<.001	0.794	3.291	6.516
		Round of 16	23.07(4.49)	16.07(6.23)	10.120	<.001	1.290	5.644	8.372
		Quarterfinals	22.41(5.62)	17.97(6.38)	11.794	<.001	0.738	3.702	5.179
		Semi-finals	22.79(5.57)	18.31(6.22)	8.543	<.001	0.758	3.447	5.506
		Finals	23.52(6.56)	18.86(7.17)	5.513	<.001	0.679	3.000	6.333
	Season	2018	23.37(7.20)	17.89(6.73)	6.439	<.001	0.787	3.808	7.162
		2019	22.72(3.97)	16.80(4.99)	11.582	<.001	1.311	4.911	6.922
		2020	20.85(7.00)	19.40(6.84)	1.898	.059	0.210	-0.053	2.956
		2021	22.38(5.82)	18.50(6.75)	5.578	<.001	0.616	2.514	5.254
		2022	23.20(4.68)	17.56(6.67)	15.701	<.001	0.978	4.935	6.344
	Court type	Outdoor	22.73(5.35)	17.36(6.65)	10.525	<.001	0.890	4.372	6.378
		Indoor	22.68(5.62)	18.07(6.50)	15.670	<.001	0.758	4.034	5.188
Women	Set	First	20.36(5.14)	9.44(3.88)	12.642	<.001	0.909	4.464	6.105
		Second	20.90(4.97)	15.07(6.41)	13.518	<.001	0.971	4.734	6.343
		Third	20.24(5.73)	16.95(6.73)	3.995	<.001	0.527	1.667	4.921
	Round	Round of 32	19.88(4.54)	13.63(6.39)	8.333	<.001	1.129	4.773	7.731
		Round of 16	20.72(3.31)	12.79(5.81)	11.896	<.001	1.678	6.618	9.248
		Quarterfinals	20.50(5.25)	15.43(7.11)	9.345	<.001	0.810	4.001	6.130
		Semi-finals	20.38(5.57)	16.43(5.95)	7.993	<.001	0.685	2.981	4.923
		Finals	21.55(5.58)	16.80(5.67)	7.107	<.001	0.843	3.432	6.061
	Season	2018	21.03(5.69)	14.43(6.32)	8.094	<.001	1.096	4.990	8.203
		2019	20.95(4.79)	15.37(5.75)	8.437	<.001	1.055	4.282	6.890
		2020	18.50(6.41)	17.96(6.52)	0.639	.543	0.084	-1.131	2.217
		2021	20.89(5.78)	17.73(6.79)	4.064	<.001	0.502	1.633	4.703

	2022	20.84(4.32)	14.28(6.18)	7.644	<.001	1.229	5.824	7.293
Court type	Outdoor	20.47(5.32)	15.13(6.02)	9.772	<.001	0.938	4.263	6.410
	Indoor	20.62(5.10)	15.54(6.58)	15.813	<.001	0.862	4.446	5.705

Note. $\overline{X}$: mean; SD: standard deviation; t: student t-test for independent samples; p: p-value; d: effect size MD: Mean differences; CI: Confidence interval; p < .05: Bold.

Results showed that the players who won the set made significantly more winners than the players who lost the set (p<.001), regardless of the set number, tournament round, season or court type. Except in men's and women's padel in the 2020 season (p=.059 and p=.543).

Figure 1. Evolution of winners of the winning pairs in men's professional padel until the year 2027 (UCL: upper confidence limits; LCL: lower confidence limits).

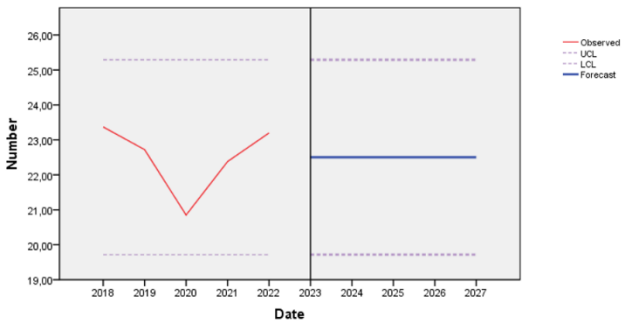

Figure 1 illustrates that the number of winners remained consistently random throughout 2018-2022 for the men's winning pairs (between 20 and 24 winners per set). Furthermore, during the successive seasons (between 2023 and 2027, both included), the number of winners will continue to remain consistently random between 20 and 24 winners per set, without a decreasing or increasing pattern, which is known as ARIMA (0,0,0) or "white noise", where the mean and covariance are zero and the variance is constant.

Figure 2. Evolution of winners of the losing pairs in men's professional padel until the year 2027 (UCL: upper confidence limits; LCL: lower confidence limits).

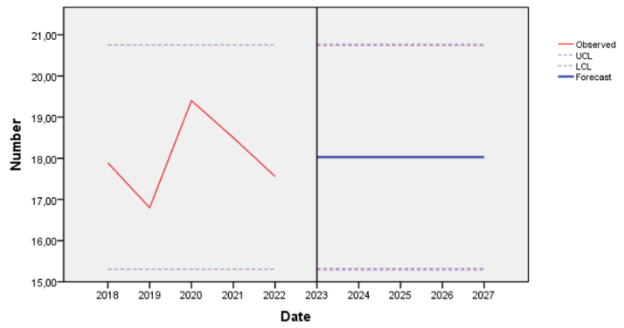

Figure 2 illustrates that the number of winners remained consistently random throughout 2018-2022 for the men's losing pairs (between 16 and 20 winners per set). Furthermore, during the successive seasons (between 2023 and 2027, both included), the number of winners will continue to remain consistently random between 16 and 20 winners per set, without a decreasing or increasing pattern, which is known as ARIMA (0,0,0) or "white noise", where the mean and covariance are zero and the variance is constant.

Figure 3. Evolution of winners of the winning pairs in women's professional padel until the year 2027 (UCL: upper confidence limits; LCL: lower confidence limits).

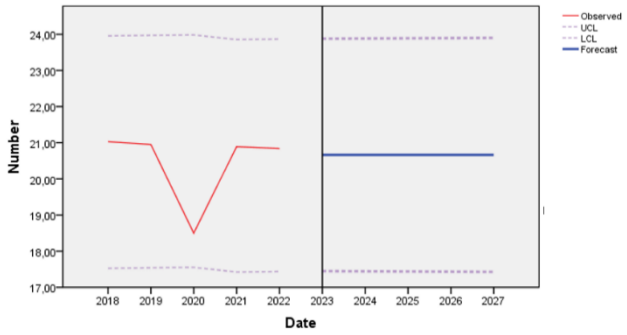

Figure 3 illustrates that the number of winners remained consistently random throughout 2018-2022 for the women's winning pairs (between 18 and 21 winners per set). Furthermore, during the successive seasons (between 2023 and 2027, both included), the number of winners will continue to remain consistently random between 18 and 21 winners per set, without a decreasing or increasing pattern, which is known as ARIMA (0,0,0) or "white noise", where the mean and covariance are zero and the variance is constant.

Figure 4. Evolution of winners of the losing pairs in women's professional padel until the year 2027 (UCL: upper confidence limits; LCL: lower confidence limits).

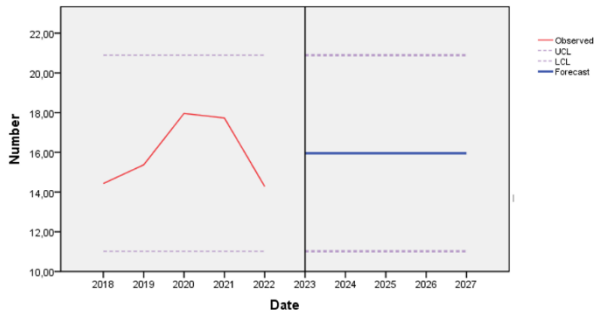

Figure 4 illustrates that the number of winners remained consistently random throughout 2018-2022 for the women's losing pairs (between 14 and 18 winners per set). Furthermore, during the successive seasons (between 2023 and 2027, both included), the number of winners will continue to remain consistently random between 14 and 18 winners per set, without a decreasing or increasing pattern, which is known as ARIMA (0,0,0) or "white noise", where the mean and covariance are zero and the variance is constant.

Discussion

The aims were to assess the differences in winners between male and female professional padel players, to assess the differences in winners between the winning and the losing pair of the sets played during 5 seasons, and to analyze the evolution of winners. The main findings indicate that men make more winners than women in professional padel and that winning pairs produce more winners than losing pairs. Besides, the novelty of this study stems from its comprehensive analysis of data, making it the pioneer, to our knowledge, in predicting the trends in the number of winners in both men´s and women´s professional padel. The study suggests that the number of winners over time will remain consistently random.

As an initial hypothesis, it was established that in men's professional padel, the number of winners would be higher than in women's. This hypothesis was accepted. The results of this study showed that the number of winners is greater in men than in women's padel, regardless of the set number, tournament round, season and court type (outdoor or indoor). Previous studies analyzing winners in male and female professional players (Conde-Ripoll, Martín-Miguel et al., 2024; Escudero-Tena et al., 2024; Pozo-

Ayerbe et al., 2024; Sánchez-Alcaraz, Jiménez et al., 2021) reported similar results, despite the notably smaller sample size. In our study, there was an exception for the losing pairs: in the third set (p=.154) and in the 2020 (p=.077) and 2021 (p=.330) seasons. In all these circumstances, the number of winners was still higher in men than in women's padel. Nevertheless, these differences were not significant. Anyhow, it can be stated that the game profile in professional padel varies depending on the athletes' gender, since the men's game profile is more offensive (greater number of winners), while women's professional padel is characterized by being more conservative (fewer number of winners). Even though in the present study technical-tactical actions were not measured, other studies suggest that male players tend to employ more flat and topspin smashes, especially in finishing actions (Escudero-Tena et al., 2023), and generally execute more shots from areas close to the net (Sánchez-Alcaraz, Courel-Ibáñez et al., 2020; Sánchez-Alcaraz, Pérez-Puche et al., 2020), where the likelihood of producing winners is greater. Conversely, female players tend to employ more lobs and bandejas, considered actions of continuity (Escudero-Tena et al., 2022; 2024), and typically execute more shots from the back areas of the court, where the frequency of winners is lower (Escudero-Tena et al., 2023; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020; Sánchez-Alcaraz, Pérez-Puche et al., 2020). This discrepancy may be linked to the prevailing technical-tactical actions in men's and women's professional padel. Furthermore, the biometric and physical characteristics of male and female players could also be a key factor in achieving more winners. Although this information was not reported in the present study, males are characterized by greater height, higher absolute and relative muscle mass, and superior levels of physical performance compared to females (Pradas et al., 2019, 2021; Muñoz, Toro-Román, Courel-Ibáñez et al., 2022). This could lead to potential advantages in executing more aggressive technical-tactical gestures which could lead to produce winners (Pradas et al., 2019, 2021; Muñoz, Toro-Román, Courel-Ibáñez et al., 2022).

Another hypothesis was that the winning pairs, irrespective of the gender, would produce more winners than the losing pairs. This hypothesis was accepted. The winning pairs achieved significantly more winners than the losing pairs, regardless of the game context. Therefore, the importance of generating winners seems to be a fundamental factor and performance indicator in both, male and female professional padel players. These results are supported by previous studies, although characterized by smaller sample sizes (Escudero-Tena et al., 2022; Sánchez-Alcaraz, Courel-Ibáñez et al., 2020). In our study, there was an exception for male (p=.059) and for female players (p=.543) in the 2020 season. Although the winning pairs made more winners than the losing pairs, these differences were not significant. A possible explanation is that most of the tournaments of the 2020 season followed the lockdown period because of COVID-19. During the lockdown, players were unable to train on padel courts. Consequently, the lack of prior training may have led players to adopt a more conservative playing style to avoid errors, resulting in less offensive play. In other sports, such as football, COVID-19 had a negative impact on attacking players' match technical performance, particularly in indicators related to scoring (Luo et al., 2024).

As a final hypothesis it was established that, over the next seasons, the number of winners would be predicted to increase in the winning pairs, regardless of the gender, while it would be predicted to decrease in the losing pairs. This was not accepted at all. As illustrated in Figures 1 to 4, the number of winners is predicted to remain consistently random over the next few seasons (seasons 2023 to 2027). Specifically, in men's padel the number of winners in the winning pairs will remain between 20 and 24, while in the losing pairs it will remain between 16 and 20. On the other hand, in women's padel the number of winners in the winning pairs will remain between 18 and 21, while in losing pairs it will remain between 14 and 18. Thus, it seems that, at professional levels, there is a clear tendency to maintain, or even increase, the number of winners produced during tournaments. This tendency is supported by a previous study (Conde-Ripoll, Muñoz, Sánchez-Alcaraz et al., 2024) that showed a decline in unforced errors over time. This tendency highlights the professionalization of this emerging sport, with players showing higher technical/tactical skills.

Even though it was not measured in the present study, a possible justification would be that, given the observed enhancement in player's skills (Conde-Ripoll, Muñoz, Sánchez-Alcaraz et al., 2024; Ungureanu et al., 2024), it is reasonable to anticipate their heightened ability to effectively defend against more challenging shots. What currently constitutes a winner, in the future it may evolve into a generator of forced error. Therefore, athletes are advised to collaborate closely with their coaches to devise strategic approaches aimed at optimizing the production of winners and opportunities for inducing forced errors. For example, coaches and players could study competitive matches to pinpoint moments of winners and

generators of forced error. This analysis helps identify patterns and strategies to replicate these outcomes more often during gameplay, enhancing athletes' competitive performance (García-González et al., 2014). Furthermore, coaches could design exercises where winners and generators of forced error are assessed and incentivized; for example, awarding two points for executing a winner (Low et al., 2023; Stoker et al., 2016).

However, it is crucial to acknowledge a limitation in interpreting the results, since the data recorded for the round of 32 and round of 16 exclusively pertains to the 2022 season. Historically, the WPT had not supplied this data for these or prior rounds, including qualification rounds. In addition, other contextual variables such as the side of play or the laterality of the player may influence the number of winners. As a future perspective, and in alignment with the analysis of unforced errors (Conde-Ripoll, Muñoz, Sánchez-Alcaraz et al., 2024), future investigations should delve into forced errors and winning smashes. Furthermore, these studies should be expanded to include other categories like juniors or recreational players.

Conclusions

The game profile in professional padel varies according to the gender of the athletes, since the men's game profile is more offensive (the number of winners is higher), while women's professional game profile is more conservative (fewer number of winners), regardless of the set number, the round of the tournament, the season and the court type. Therefore, coaches must adapt the way they train according to the gender of their athletes, giving priority to winning points directly (winners) when their players are men and to winning points directly (winners) and indirectly (not making errors and passing the ball) when their players are women.

Producing winners is a fundamental factor in professional padel to win sets. Pairs that win make more winners than those that lose, irrespective of the game context. Therefore, players should look to win the point and not wait for their opponent to commit error.

Finally, the number of winners is expected to remain consistently random over the coming seasons. So, winners will continue to be an important factor in professional padel in the coming seasons.

Practical implication

Given the observed variances in game profiles between genders in padel competitions, it is imperative to tailor training sessions aimed at improving technical-tactical proficiency to suit the specific attributes of male and female players. Equally, professional padel athletes are encouraged to concentrate on honing their skills to increase their rate of winners through customized on-court and off-court exercises designed to enhance decision-making and execution. The authors suggest that coaches could propose on-court exercises in which padel players are rewarded (i.e., positive reinforcement feedback) if a winner is achieved, or at least tried, when an easy situation arises during the game (in other words, under a low-risk situation to make a winner). Nonetheless, if a winner is attempted in a difficult situation (in other words, under a high-risk situation to make a winner), players are penalized (i.e., negative consequence). Regarding off-court training, the coach could prepare video feedback with open questioning sessions to promote the understanding and later occurrence of winners in matches.

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