Psychological factors in padel players: a systematic review

Factores psicológicos en jugadores de pádel: una revisión sistemática

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Abstract

Introduction: Psychological factors are essential to understanding and enhancing padel performance, as they influence how players cope with the sport's physical and emotional demands.
Objective: This systematic review aimed to identify and analyze the main psychological variables studied about padel, including frustration, anxiety, stress, self-confidence, and mental fatigue.
Methodology: The review followed the PRISMA guidelines and involved a thorough search of four major databases: PubMed, Web of Science, Scopus, and SPORTDiscus, up to August 2024. After applying inclusion and exclusion criteria, 12 studies were selected from 1,384, comprising 1,021 participants. Most studies were descriptive, cross-sectional, and comparative, with only one adopting an experimental design.
Results: The review revealed that the most researched psychological variables in padel are anxiety, self-confidence, and stress-induced mental fatigue. A consistent finding across studies was that players often experience high levels of anxiety and stress before competitions, while also maintaining elevated levels of self-confidence. Additionally, players with greater experience and higher competitive levels tend to manage psychological demands more effectively than less experienced peers.
Discussion: These findings suggest that psychological preparation and mental training may be crucial for improving performance in padel.
Conclusion: This review highlights the importance of psychological factors in sport and recommends continued research to develop strategies that support mental well-being and performance optimization in padel players. Understanding how these variables interact can contribute to more comprehensive athlete development programs and better outcomes in both recreational and competitive contexts.

Keywords

Sports, padel players, mental health, anxiety, frustration, stress.

Resumen

Introducción: Los factores psicológicos son esenciales para comprender y mejorar el rendimiento del pádel, ya que influyen en la forma en que los jugadores afrontan las exigencias físicas y emocionales de este deporte.
Objetivo: Esta revisión sistemática pretende identificar y analizar las principales variables psicológicas estudiadas en relación con el pádel, incluyendo la frustración, la ansiedad, el estrés, la autoconfianza y la fatiga mental.
Metodología: La revisión siguió las directrices de PRIS-MA e implicó una búsqueda exhaustiva en cuatro bases de datos principales: PubMed, Web of Science, Scopus y SPORTDiscus, hasta agosto de 2024. Tras aplicar criterios de inclusión y exclusión, se seleccionaron 12 estudios de un total de 1.384, con 1.021 participantes. La mayoría de los estudios fueron descriptivos, transversales y comparativos, y sólo uno adoptó un diseño experimental.
Resultados: La revisión reveló que las variables psicológicas más investigadas en el pádel son la ansiedad, la autoconfianza y la fatiga mental inducida por el estrés. Un hallazgo consistente en todos los estudios fue que los jugadores a menudo experimentan altos niveles de ansiedad y estrés antes de las competiciones, mientras que también mantienen niveles elevados de confianza en sí mismos. Además, los jugadores con mayor experiencia y niveles competitivos más altos tienden a gestionar las demandas psicológicas de manera más eficaz que sus compañeros con menos experiencia.
Discusión: Estos resultados sugieren que la preparación psicológica y el entrenamiento mental pueden ser cruciales para mejorar el rendimiento en el pádel.
Conclusión: Esta revisión destaca la importancia de la preparación psicológica y el entrenamiento mental para mejorar el rendimiento en el pádel.

Palabras clave

Deportes, jugadores de pádel, salud mental, ansiedad, frustración, estrés.

Introduction

In the sports field, psychological variables (frustration, anxiety, and stress) significantly impact athletic performance (Lochbaum et al., 2022). These factors can particularly influence competitive outcomes, especially in padel (Castillo-Rodriguez et al., 2022), the focus of this systematic review. Padel is a racket sport that has grown in popularity, drawing increased scientific attention in recent years (Denche-Zamorano et al., 2024). The sport is played in pairs on a 20×10-meter enclosed court surrounded by glass walls, with a net dividing the playing area (Courel-Ibáñez, Sánchez-Alcaraz, Martínez, and Muñoz Marín 2019). On average, padel players cover approximately 6225 meters per match, moving at an average speed ranging from 0.75 to 0.81 meters per second (Ramón-Llín et al., 2021). According to Pradas et al. (2021), padel involves high-intensity phases, during which the phosphagen system (ATP-PC) predominantly supplies energy. In contrast, the aerobic system becomes essential during longer, moderately intense matches owing to the reliance on multiple physical components and both anaerobic and aerobic metabolic pathways. The strength and conditioning profile for padel players includes short sprints, direction changes, upper-body strength and power, and intermittent recovery endurance (Sáez de Villarreal et al. 2023). Strength and power testing are critical for monitoring and assessing neuromuscular performance factors related to keystrokes. Padel physical demands and workload contribute positively to health (Armstrong et al., 2023). However, the intensity and physical condition required vary depending on the players' skill level (Armstrong et al., 2023).

For some athletes, engaging in sports can present significant challenges and lead to adverse effects due to intense physical exertion and considerable psychological burdens, particularly in competitive settings (Morales-Sánchez et al., 2020; Balaguer, 2012). This issue is exacerbated when high-level padel players must compete in two consecutive matches in a single day, resulting in a significant accumulation of cognitive fatigue and an increase in perceived mental exhaustion (Díaz-García et al., 2023). Consequently, racket sports impose various physical, physiological, and psychological demands, including intermittent sprints with incomplete recovery periods (Courel Ibáñez et al., 2017), as well as constant decision-making that requires processing large amounts of information in a short time. This leads to high levels of anxiety and stress due to competitive pressure (Castillo-Rodríguez et al., 2014). The ability to manage frustration, anxiety, and stress is crucial in determining athletic performance (Ghildiyal, 2015; Gimeno Marco, 2007; Marsillas-Rascado et al., 2014).

During competitions, stressful situations often lead to psychological changes, manifesting as reduced concentration, loss of attentional focus, increased state anxiety, or, somatically, greater muscle tension (Brown & Fletcher, 2017; Guerrero et al., 2017). In racket sports, motivation and anxiety can either enhance or impair performance during a match (Crespo & Reid, 2007), and concentration also plays a key role in these types of sports (Starzak et al., 2024).

Psychological factors such as frustration, anxiety, and stress play a crucial role in padel performance. Frustration arises when an athlete's expectations are not met, leading to emotional distress and decreased motivation (Gabrys & Wontorczyk, 2023). Frustration is described as a sense of unfulfilled desire when a goal cannot be accomplished (Yazdi et al., 2024). Anxiety is characterized by increased physiological activity, which occurs in situations of high emotional and physical demand, along with activation of the autonomic nervous system (Castro-Sánchez et al., 2018; Rodríguez Salazar et al., 2015). It is typically associated with restlessness, muscle tension, concentration problems, and fatigue (Ayuso-Moreno et al., 2020; Mehrsafar et al., 2021). Stress, in turn, is a psychophysiological reaction to threatening situations, which arises due to a lack of effective coping strategies that allow the athlete to reinterpret the situation as non-threatening (Alonso-Arbiol et al., 2005; Jiménez, Aguilar, y Alvero-Cruz, 2012). These psychological factors can significantly influence performance by affecting concentration, emotional regulation, and decision-making processes during competition.

The concept of anxiety can be divided into two components: cognitive and somatic (Andrade Fernández, Lois Río, y Arce Fernández 2007). Cognitive anxiety is characterized by intrusive thoughts, anticipatory worries, and a negative self-assessment. These cognitive processes often lead to negative emotions, such as fear, uncertainty, and frustration (Ford et al., 2017; Martens, Vealey, and Burton, 1990). On the other hand, somatic anxiety is linked to the activation of the autonomic nervous system, manifesting as increased heart rate or muscle tension. This triggers negative sensations, including nervousness, difficulty

breathing, elevated blood pressure, dry throat, muscle tension, accelerated heart rate, and sweaty palms (Ford et al., 2017; Martens et al., 1990; Olafiranye et al., 2011).

It is important to define state anxiety, which is described as an immediate emotional state that arises when an athlete experiences anxiety in response to specific situations characterized by fear, tension, and increased physiological arousal (Cox, 2008).

Regarding motivation, Candela et al. (2014) describe it as a hypothetical construct that encompasses the internal and/or external forces responsible for initiating, directing, intensifying, and persisting in behaviour. Similarly, Escartí and Cervelló (1994) (Cervelló et al., 2007) view motivation as a set of personal, social, and environmental factors (Sallis et al., 1992; Vallerand & Thill, 1993) that, through interaction, determine the choice of a specific sport activity, the intensity with which it is practiced, perseverance, and the level of performance achieved. According to this definition, motivation consists of two elements: a) the energy or intensity of the drive (which explains why individuals dedicate time and effort to a particular activity) and b) directionality (which explains why individuals pursue one goal over another).

Furthermore, stress, understood as a psychophysiological reaction of the athlete to threatening situations, arises due to a lack of effective coping strategies that allow the athlete to reinterpret the situation as non-threatening (Alonso-Arbiol et al., 2005). Research on the psychological aspects of padel has been limited, although it has increased in recent years. Currently, there are no systematic reviews addressing the psychological aspects of padel. This review aims to answer the following question: What studies have analyzed the psychological and mental characteristics of padel players? To answer this question, rigorous inclusion and exclusion criteria will be employed to select relevant and high-quality studies.

While psychological traits have been extensively studied in other racket sports such as tennis and badminton, research on padel remains scarce. Unlike individual sports where athletes bear full responsibility for performance, padel introduces unique psychological challenges due to its paired competition format. The need for continuous cooperation, synchronized decision-making, and strategic adaptation under pressure distinguishes padel from other racket sports, making it a valuable case for psychological research.

The rationale for this systematic review stems from the need to explore the psychological and mental characteristics of padel players, a sport that has experienced significant growth in popularity in recent years. Despite this increasing relevance, comprehensive studies, particularly systematic reviews, that focus on the specific psychological traits of these athletes are lacking. Therefore, the objective of this review is to examine and describe the psychological factors associated with padel practice, such as frustration, anxiety, and stress, to gain a clearer understanding of their role in players' experiences and performance.

Methods

Design and Methodology

This systematic review was conducted following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Figure 1) (Page et al., 2021). The review was organized into six phases: (1) database searches, (2) elimination of duplicate studies, (3) screening of titles and abstracts, (4) full-text review, (5) review of references cited in the included studies, and (6) citation of included studies (Wright et al., 2007). The Web of Science, PubMed, Scopus, and SPORTDiscus databases were searched up to August 2024. Only peer-reviewed scientific studies published in English were considered. There were no restrictions on age or sex; however, clinical conditions were excluded. Two search families were developed: one containing terms related to padel (padel, paddle, paddle tennis, paddle-tennis, and padel players) and another related to psychological aspects (mental health, psychology, psychophysiology, confidence, self-confidence, stress, anxiety, somatic anxiety, and depression). Boolean operators (AND, OR) were used to combine the search terms and families (Table 1a and 1b). Following the application of the search strategy, 12 studies were included in this review. The studies were classified and analyzed based on the psychological conditions identified.

Figure 1. Flow diagram (PRISMA) of item selection process

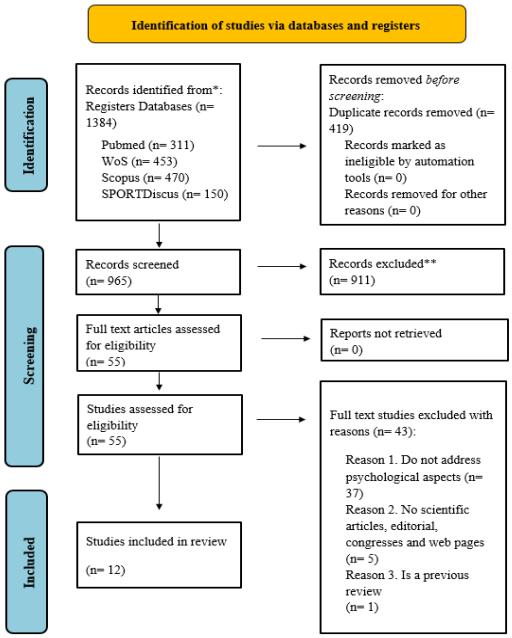


Table 1a. Search strategy

	Search Query	Records retrieved
#1	Padel OR Paddle OR "Paddle Tennis" OR "Paddle Tennis" OR "Padel players"	4,318
#2	Anxiety OR Depression OR Stress OR "Self-confidence" OR "Somatic anxiety" OR Psychology OR Psychophysiology OR Confidence OR "Mental Health"	4,932,174
#3	#1 AND #2	311

Table 1b. Search strategy step by step.

Search	Family Pádel
1	Padel
2	Paddle
3	Paddle Tennis
4	Paddle-Tennis
5	Padel players
6	Padel OR Paddle OR Paddle Tennis OR Paddle-Tennis OR Padel Players
	Family psychological factors
7	Anxiety
8	Depressión
9	Stress
10	Self confidence
11	Somatic anxiety
12	Psychology
13	Psychophysiology
14	Confidence
15	Mental health
16	Anxiety OR Depression OR Stress OR Self confidence OR Somatic anxiety OR Psychology OR Psychophysiology OR Confidence OR Mental Health
17	6 AND 16

Eligibility criteria

The PICOS strategy (population, intervention, comparison, outcomes, and study design) was used to define the eligibility criteria. The following criteria were considered:

Table 1c.

PICOS	Inclusion Criteria
Population	Padel players, both men and women, with no age restrictions.
Intervention	Padel matches and games.
Comparison	Intragroup, control group, and between-group comparisons.
Outcome	Psychological variables (e.g., anxiety, stress, and others).
Study Design	Clinical trials, cross-sectional, longitudinal, and case studies.

The inclusion criteria were as follows: (1) manuscripts published in peer-reviewed journals, (2) studies available in English, (3) studies investigating psychological variables (e.g., anxiety, stress, self-confidence) in padel players, and (4) studies reporting quantitative or qualitative data on these psychological traits. There were no restrictions on geographical location, age, or sex.

The exclusion criteria included: (1) conference proceedings, book chapters, editorials, and opinion pieces, (2) studies that did not focus on psychological aspects or that primarily assessed physiological parameters without psychological measures, (3) studies involving interventions with ergogenic aids and/or medication, and (4) systematic reviews or meta-analyses. This approach ensured that only original empirical research was included, enhancing the relevance and applicability of the findings.

Data Extraction, Quality Assessment and Risk of Bias

Based on the methodological considerations and eligibility criteria, the investigators (AA-R and IL) independently selected and analyzed the scientific studies using Rayyan software. In the case of disagreements among the selected studies, a third investigator (RY-S) acted as a mediator in the selection process. Furthermore, the same review authors independently extracted data using piloted data extraction forms, focusing on population, intervention or exposure, and outcome characteristics. The studies are presented in tables, including details such as author names, year of publication, country, study type, study objective, participants, methodology used, and key results regarding the psychological variables of padel players.

Two other researchers (GC-A and JO-A) conducted methodological quality assessment using the quality assessment tool for observational cohort and cross-sectional studies (Gordon et al. 2013). Two authors (jg-A and JO-A) evaluated the risk of bias in the included studies independently using several tools depending on each study's design.

The reviewed studies presented several methodological limitations despite adhering to rigorous inclusion criteria. Many of the studies included relatively small sample sizes, which may limit the generalizability of their findings. Additionally, a significant proportion of the studies relied on self-report measures to assess psychological traits, which introduces the possibility of response bias. The cross-sectional nature of most studies also restricts the ability to determine causality between psychological factors and padel performance. These limitations should be considered when interpreting the results, highlighting the need for future research employing larger, more diverse samples and longitudinal or experimental designs to understand the psychological demands of padel better

The Risk of Bias In Nonrandomized Studies of Interventions (ROBINS-I) tool was used to assess the risk of bias for nonrandomized studies. This tool evaluates seven domains: confounding, participant selection, classification of interventions, deviations from intended interventions, missing data, outcome measurement, and selective reporting (Sterne et al. 2016). A study is rated as having a low risk of bias if all domains are judged to be at low risk. If even one domain is rated as high risk, the study is considered to have a critical risk of bias. Quasiexperimental studies were evaluated via the Risk of Bias in Nonrandomized Studies of Exposure (ROBINS-E) tool, which is designed for follow-up studies (Higgins et al. 2024). The seven domains assessed are i) confounding, ii) exposure measurement, iii) participant selection, iv) postexposure interventions, v) missing data, vi) outcome measurement, and vii) selective reporting. Each domain was assessed through signalling questions, with risk ratings categorised as low, some concerns, high, or very high.

For cross-sectional studies, the Joanna Briggs tool for analytical cross-sectional studies was applied (Munn et al. 2020). The risk of bias was rated as follows: high if two or more domains were rated high, moderate if one domain was rated high or if multiple domains were unclear, and low if no domains were rated high. Case reports were evaluated via the Joanna Briggs Institute Critical Appraisal Checklist for case reports (Moola et al. 2015), following the same criteria.

Results

A total of 1384 studies were identified through searches in PubMed (n= 311), WOS (n= 453), Scopus (n= 470), and SPORTDiscus (n= 150). After removing duplicate studies, 965 articles remained. After screening the titles and abstracts, 55 studies were selected for full-text review. Following this review, 43 studies were excluded: 37 did not address psychological aspects, 5 were not peer-reviewed scientific articles, and 1 was a systematic review. Ultimately, 12 articles were included in the systematic review.

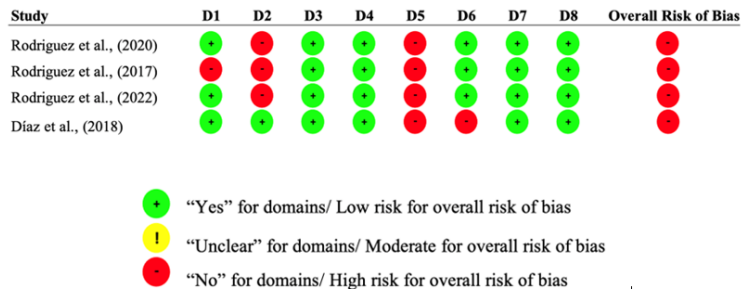
Participants

12 studies involving a total of 1021 participants (61,02% males) met our inclusion criteria. Of which 47 were professional padel players. All studies examined exclusively padel players, except for one study that included as a comparator tennis player.

Risk of Bias

Table 2 presents the findings from the risk of bias assessment using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for analytical cross-sectional studies. Table 3 presents the assessment using the risk of bias in nonrandomized studies of exposures (ROBINS-E). Table 4 presents the assessment using the risk of bias in nonrandomized studies of interventions (ROBINS-I), and Table 5 presents the findings from the JBI Critical Appraisal Checklist for case reports. In the cross-sectional studies group, all studies were assessed as having a high risk of bias, primarily due to issues with participant selection criteria and the identification of confounding variables. Among the observational/longitudinal studies, three studies were assessed as having a high risk of bias, mainly because confounding variables were not identified, whereas two studies were assessed as having a low risk of bias. Quasi experimental studies were judged to have serious and moderate risks of bias. Finally, the case report studies were considered to have a high risk of bias.

Figure 2. The Joanna Briggs Institute (JBI) critical appraisal checklist for analytical cross-sectional studies



D1: Were the criteria for inclusion in the sample clearly defined? ; D2: Were the study subjects and the setting described in detail? ; D3: Was the exposure measured in a valid and reliable way? ; D4: Were objective, standard criteria used for measurement of the condition? ; D5: Were confounding factors identified? ; D6: Were strategies to address confounding factors stated? ; D7: Were the outcomes measured in a valid and reliable way? ; D8: Was appropriate statistical analysis used?.

Figure 3. The Risk of Bias in Nonrandomized Studies – of Exposures (ROBINS)

Study	D1	D2	D3	D4	D5	D6	D7	Overall Risk of Bias
Conde-Ripoll et al., (2023)	High	Low	Low	Low	Low	Low	N/I	High
Conde-Ripoll et al., (2024)	High	Low	Low	Low	Low	Low	N/I	High
Conde-Ripoll et al., (2024)	High	Low	Low	Low	Low	Low	N/I	High
Diaz et al., (2023)	Low	Low	Low	Low	Low	Low	N/I	Low
Diaz et al., (2021)	Low	Low	Low	Low	Low	Low	N/I	Low

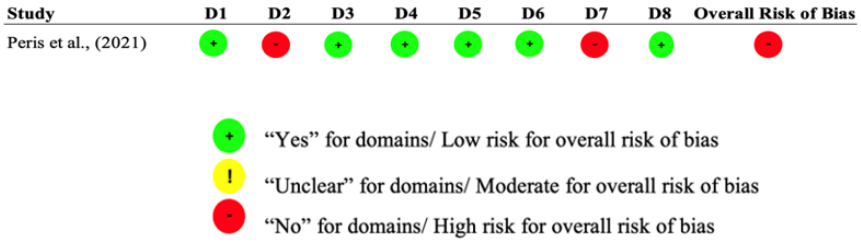
D1: Risk of bias due to the confounding domain, D2: risk of bias arising from measurement of the exposure domain, D3: risk of bias in the selection of participants into the study (or analysis) domain, D4: risk of bias due to the postexposure intervention domain, D5: risk of bias due to the missing data domain, D6: risk of bias arising from measurement of the outcome domain, D7: risk of bias in the selection of the reported result domain.

Figure 4. The risk of bias in nonrandomized studies of interventions (ROBINS-I)

Study	D1	D2	D3	D4	D5	D6	D7	Overall Risk of Bias
Diaz et al., (2024)	Moderate	Low	Low	Moderate	Low	Low	N/I	Moderate
Diaz et al., (2021)	Moderate	Low	Low	Serious	Low	Low	N/I	Serious

D1: Confounding domain, D2: Selection of participants domain, D3: Classification of interventions domain, D4: Deviations from intended intervention domain, D5: Missing data domain, D6: Measurement of outcomes domain, D7: Selection of reported result domain.

Figure 5. The Joanna Briggs Institute (JBI) critical appraisal checklist for case reports



D1: Were patient's demographic characteristics clearly described? ; D2: Was the patient's history clearly described and presented as a timeline? ; D3: Was the current clinical condition of the patient on presentation clearly described? ; D4: Were diagnostic tests or assessment methods and the results clearly described? ; D5: Was the intervention(s) or treatment procedure(s) clearly described? ; D6: Was the postintervention clinical condition clearly described? ; D7: Were adverse events (harm) or unanticipated events identified and described? ; D8: Does the case report provide takeaway lessons?.

In Table 2, the results of the methodological quality assessment of the 12 selected studies are presented based on the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. The studies scored between 8 and 13 points on the scale.

Table 2. Quality assessment tool for observational cohort and cross-sectional studies

Authors	Item															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Score	Quality
Conde-Ripoll et al., (2024)	√	√	√	√	!	×	√	√	√	√	√	√	√	√	12	Strong
Conde-Ripoll et al., (2024)	√	√	√	√	√	×	√	√	√	√	√	√	√	√	13	Strong
Díaz-García et al., (2024)	√	√	√	√	√	×	√	√	√	√	√	√	√	√	13	Strong
Conde-Ripoll et al., (2023)	√	√	√	!	!	×	√	√	√	√	√	√	√	√	11	Good
Díaz-García et al., (2023)	√	√	√	√	√	×	√	√	√	√	√	√	√	√	13	Strong
Rodriguez-Cayetano et al., (2022)	√	√	√	√	√	×	√	√	√	√	√	√	√	√	13	Strong
Peris-Delcampo (2021)	√	√	×	!	!	×	√	√	√	√	√	√	√	√	11	Good
Díaz-García et al., (2021)	√	√	√	√	×	×	√	√	√	√	√	√	√	√	12	Strong
Díaz-García et al., (2021)	√	√	√	√	√	×	√	√	√	√	√	√	√	√	13	Strong
Rodriguez-Cayetano et al., (2020)	√	√	√	×	×	×	!	√	√	!	√	√	!	√	8	Poor
Diaz et al., (2018)	√	√	√	√	×	×	!	√	√	√	√	√	!	×	9	Fair
Rodriguez-Cayetano et al., (2017)	√	√	√	×	×	×	!	√	√	!	√	√	!	√	8	Poor

√: Yes; ×: No; !: not applied

The quality scores were as follows: poor (<60%), fair (60–69%), good (70–79%), and strong (>80%).

1. Was the research question or objective clearly stated in the document?
2. Was the study population specified and clearly defined?
3. Was the participation rate of eligible individuals at least 50%?
4. Were all subjects selected or recruited from the same population or from similar populations (including the same time period)? Were the inclusion and exclusion criteria clearly defined and uniformly applied to all participants?
5. Was a justification for the sample size provided, including a description of the study's power or estimates of variance and effect?
6. For the analyses in this document, were the exposures of interest measured prior to the outcomes being measured?
7. Was the time period sufficient to reasonably expect an association between exposure and outcome if it existed?
8. For exposures that could vary in quantity or level, did the study examine different exposure levels in relation to the outcome (e.g., exposure categories or exposure measured as a continuous variable)?
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all participants in the study?
10. Were the exposures measured more than once over time?
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all participants in the study?
12. Were the outcome assessors blinded to the exposure status of participants?
13. Was the follow-up loss after the start of the study 20% or less?
14. Were key potential confounding variables measured and adjusted statistically to determine their impact on the relationship between exposures and outcomes?

Table 3 shows the 12 studies addressed in the systematic review, the characteristics, design, intervention and exposures, outcomes and main psychological results obtained.

Table 3. General description of the selected studies (n= 12).

Study	Participant characteristics			Design/Aim	Intervention, exposure or independent variable	Outcomes	Results
	Country	Population	Age				
Rodriguez et al., (2020) (Cayetano et al. 2020)	Spain	146 adolescents and adults padel players (56.16% males)	39.46 ± 11.60	Cross sectional/analyze the reasons for sports participation and intrinsic satisfaction in padel players during the year. 2018 according to sex, age and side on which they play regularly.	Side in which the participants usually played	• Reasons for sports participation (Participation Motives Questionnaire for Exercise and Sport). • Intrinsic satisfaction in sport (Sport Satisfaction Instrument).	The biggest reason why players of padel they choose to practice this sport is friendship (Mean= 4.53 ± .64).
Rodriguez et al., (2022) (Rodríguez-Cayetano et al. 2022)	Spain	423 padel and tennis players (291 padel players and 132 tennis players) (65.25%males)	15.40 ± 3.43	Cross sectional/analyze the level of anxiety and precompetitive self-confidence of tennis and padel players.	Sport (tennis and padel)	• Cognitive anxiety, somatic anxiety and self-confidence. (The Spanish version of the Competitive State Anxiety Inventory-2R.	Tennis players showed a significantly lower level of self-confidence than padel players.
Rodriguez et al., (2017) (Rodríguez Cayetano et al. 2017)	Spain	221 adolescents padel players (54.75% males)	Not described in the text	Cross sectional/analyze the level of precompetitive anxiety in female	Category in which the players compete (U12, U14, U16)	• Cognitive anxiety, somatic anxiety and self-confidence. (The Spanish version of	There were significant differences in the U12 category and the U16 category

				paddle players and male paddle players of Castilla y León in the categories U12, U14 and U16.		the Competitive State Anxiety Inventory-2R).	with respect to the cognitive anxiety factor and between the U12 and U14 and U12 and U16 categories with respect to the self-confidence factor.
Díaz et al., (2019) (Díaz et al. 2018)	Spain	60 padel players (women)	66 40.43 ± 5.73	Cross sectional/analyze the perception of the level of quality of life and determine the emotional profile of athletes who practice padel and compare it with the results obtained by sedentary women.	Level of physical activity	• Mood state (Profile of mood state POMS) • Quality of life (EuroQol-5D)	The practice of padel tennis seems to improve the mood in adult women in all their dimensions
Conde-Ripoll et al., (2023) (Conde-Ripoll et al. 2023)	Finland	28 padel players (men)	Not described in the text	Longitudinal, prospective and observational study/to assess precompetitive anxiety and self confidence in high level men's padel players from Finland.	Ranking and round	• Cognitive anxiety, somatic anxiety and self-confidence. (The Competitive State Anxiety Inventory-2R) • State anxiety (STAI-S)	Anxiety was affected by the variables analyzed (ranking, seed, result, and round). The seeded athletes presented lower levels of cognitive anxiety than the unseeded ones, the losers presented more state anxiety than the winners in the first round and, the state anxiety was also higher before the first round (round of 16) than before the second round (quarterfinals).
Conde-Ripoll et al., (2024) (Conde-Ripoll, Escudero-Tena, y Bustamante-Sánchez 2024b)	Finland	11 padel players (men)	27.9 ± 5	Longitudinal, prospective and observational study/analyze the variations in pre- and postcompetitive anxiety and self-confidence considering match outcomes, the performance according to the result and the correlation among performance and psychological variables	Competition (padel match)	• Cognitive anxiety, somatic anxiety and self-confidence. (The Competitive State Anxiety Inventory-2R) • State anxiety (STAI-S) • Technical-tactical performance variables • Effectiveness of the last shot • Forced error generator	Losing players demonstrated elevated cognitive, somatic, and state anxiety, along with reduced self-confidence, while winning players experienced an increase in state anxiety postmatch compared to their prematch levels.
Conde-Ripoll et al., (2024) (Conde-Ripoll, Escudero-Tena, y Bustamante-Sánchez 2024a)	Finland	10 padel players (men)	28.60 ±4.1	Longitudinal, prospective and observational study/analyze the differences in the precompetitive anxiety and self-confidence according to the side of play, the ranking and the match outcome, under different competitive scenarios, in high level men's padel	Type of padel match (Training or competition)	• Cognitive anxiety, somatic anxiety and self-confidence. (The Competitive State Anxiety Inventory-2R) • State anxiety (STAI-S)	Somatic anxiety and self-confidence levels are higher before competition compared to training matches.

				players from Finland who trained under pressure prior to the competition			
Díaz et al., (2023) (Díaz-García et al. 2023)	Spain	23 padel players (65.22% males)	Men= 24 ± 6. Women=21 ± 5	Longitudinal, prospective and observational study/to assess, how self-reported sleep, mental toughness, and reaction time are impacted by a professional padel tournament. In addition, we evaluated whether sex, age, and/or ranking play a role in this possible effect of a tournament on these variables.	Type of padel match (Training or competition)	• Perception of sleep. (Pittsburgh Sleep Quality Index) • Mental toughness (MT Questionnaire) • Reaction time (Psychomotor Vigilance Task)	Self-reported sleep was worse during competition; when playing a competition, the reported MT was lower; and reaction time was impaired compared with a week without competition.
Diaz et al., (2021) (Díaz-García, González-Ponce, et al. 2021)	Spain	14 padel players (64.29% males)	Men= 25.5 ± 6.7 Women=21.7 ± 3.8	Longitudinal, prospective and observational study/to quantify the effects of successive professional matches on mental fatigue.	Round (number of matches)	• Mental fatigue (Visual Analog Scale) • Motivation (How motivated • are you to play padel?) • Reaction time (Psychomotor Vigilance Task) • Self-performance satisfaction (How satisfied do you feel with your performance in the last match?), and teammate's performance satisfaction (How satisfied do you feel with your teammate's performance in the last match?)	Mental fatigue significantly increased after a professional padel match.
Diaz et al., (2024) (Díaz-García et al. 2024)	Spain	48 padel players (men)	18 ± 2	Quasi experimental/to investigate the effects of mental fatigue on padel-specific performance	Mental fatigue	• Mental fatigue (Visual Analog Scale) • Response inhibition (45-s incongruent Stroop performed on a computer. Specifically, we recorded the number of words read during these 45 s.) • Reaction time (Psychomotor Vigilance Task) • Padel strokes (Groundstroke Accuracy Assessment in Padel Players)	Acute mental fatigue impairs the accuracy of padel-specific strokes such as drive, drive volley, tray and drive attack stroke after the use of the glass in youth-elite male players.
Diaz et al., (2021) (Díaz-García, López-Gajardo, et al. 2021)	Spain	36 padel players (61.1% males)	Men= 17.4 ± 2.16 Women=17.9 ± 3.21	Quasi experimental/to test the effects of increased motivation on mental efforts and fatigue during padel training matches.	Incentive (Players who win more sets after the two constraint-matches win a free lesson with a World Padel Tour player).	• Motivation toward padel trainings (the Spanish version of the Situational Motivation Scale) • Heart-rate variability (Polar RS800CX.) • Mental fatigue (Visual Analog Scale) • Mental load (Questionnaire to Quantify Mental Load)	Subjective feelings of mental load and fatigue were significantly enhanced in the presence of higher values of motivation.

						• Reaction time (Psychomotor Vigilance Task)	
Peris et al., (2021) (Peris Delcampo 2021)	Spain	1 male padel player	23	Case report/Not described in the text.	Psychological training	• Psychological characteristics for sport performance • Variables psychological tools used during the game • Analysis of ideas enhancers	Psychological training was effective in improving the psychological performance and enjoyment of the paddle tennis player.

Discussion

This review provides insights into how precompetitive anxiety manifests among padel players. Younger and less experienced players tend to experience higher levels of anxiety, whereas more experienced athletes seem to develop better stress management strategies. Additionally, mental fatigue was shown to impair specific psychomotor performance, particularly in youth elite players, with negative effects on reaction time and stroke accuracy. The review also highlighted notable sex differences, with female tennis players exhibiting higher levels of anxiety than padel players do and revealed that winning athletes generally reported higher postcompetitive self-confidence than those who lost. Overall, most studies were cross-sectional and descriptive in nature, with only one experimental study examining the effects of mental fatigue on padel performance.

Since Ruiz-Barquín and Lorenzo-García (2008) analyzed the psychological characteristics of 18 high-performance padel players (10 women and 8 men) in junior, under23, and senior categories using the Psychological Characteristics Related to Sports Performance Questionnaire (CPRD) by Gimeno et al. (2007), several key conclusions have been drawn: (1). The CPRD is suitable for padel players, (2) there are no significant gender differences, and (3) there is a specific profile of high-performance padel players who score above average compared with athletes in general. Later, Castillo-Rodríguez et al. (2022) reported that factors such as playing category, body mass index (BMI), and experience can influence precompetition anxiety and self-confidence in padel players. Their findings revealed a correlation between higher categories in padel and increased self-confidence, as well as reduced somatic anxiety. These results suggest that psychological factors could have as significant an impact as physical abilities in determining sports performance. More recently, in the study conducted by Conde-Ripoll et al. (2024b), it was observed that players who lost these players presented high levels of cognitive, somatic, and state anxiety, along with lower self-confidence. Conversely, players who won experienced an increase in state anxiety after the match compared with their prematch levels, and their self-confidence was greater after the match. This evolving body of research highlights the crucial role that psychological factors play in padel performance, showing that both precompetition and postcompetition states are essential to understanding the mental dynamics that contribute to success or failure on the court.

Anxiety and stress

The results of anxiety and stress levels in padel players, as shown in this systematic review, aligns with existing findings in sports psychology (Castillo-Rodriguez et al., 2022). Precompetitive anxiety was notably greater among younger and less experienced athletes, a trend also observed in other individual sports, such as tennis and boxing. For example, younger padel players, particularly those under 16 years old, presented elevated levels of anxiety before matches, confirming that younger athletes are more prone to anxiety due to their limited competitive experience (Rodríguez Cayetano et al., 2017). This is aligned with other research, which pointed out that younger tennis players experienced greater somatic and cognitive anxiety than older athletes did, affecting their performance (Castillo-Rodriguez et al., 2022). In contrast, experienced athletes had greater control of both anxiety and stress, a finding that was consistent across multiple studies (Zeller et al., 2024). In the study by Conde et al. (2023), higher-ranked players presented significantly lower levels of cognitive anxiety than their less experienced counterparts. This is in line with broader research in sports psychology, where more experienced athletes have been shown to develop more effective coping mechanisms for anxiety, which helps them maintain performance under competitive pressure (Kemarat et al., 2022). Furthermore, experienced athletes, particularly those who have undergone psychological skills training, tend to exhibit greater

self-confidence, which further reduces their anxiety levels and enhances their ability to perform (Gardner & Moore, 2004).

We also identified notable sex differences. Compared with their counterparts in padel, female tennis players presented higher levels of precompetitive anxiety, which is consistent with studies across different sports (Bugaevsky et al., 2020; Gardner & Moore, 2004; Kemarat et al., 2022; Zeller et al., 2024). Research has shown that female athletes, particularly in individual sports, often face greater anxiety due to societal pressures and higher levels of scrutiny (Correia y Rosado 2019). This review's findings support these conclusions, indicating that team-based dynamics in padel might help alleviate some of these pressures by distributing responsibility among players, thus reducing anxiety. Rodriguez-Cayetano et al. (2017) noted that in tennis, female players in the U14 category reported particularly high levels of anxiety, suggesting that the individual nature of the sport exacerbates this issue. Younger and less experienced players tend to experience higher levels of anxiety, whereas more experienced athletes develop coping mechanisms that help mitigate these effects. Gender also plays a significant role, with female athletes in individual sports reporting higher levels of anxiety than those in team-based sports such as padel. These findings underscore the importance of tailored psychological interventions for athletes, taking into account both experience and gender to increase performance and mental well-being. Coaches and sports psychologists should consider implementing individualized training programs to support athletes in managing the psychological demands of competition (Cayetano et al., 2020; Conde-Ripoll et al., 2024a; Díaz et al., 2018).

The psychological parameters identified in this review, such as anxiety, stress, and self-confidence, exhibit notable differences when compared to other racquet sports. Unlike individual sports such as tennis or badminton, where athletes bear full responsibility for their performance, padel involves a cooperative dynamic that may influence psychological responses. Studies in tennis have shown that players often experience heightened levels of cognitive and somatic anxiety due to the solitary nature of competition, where all decision-making and performance outcomes rest on the individual (Rodríguez-Cayetano et al., 2022). In contrast, padel players must develop interpersonal coordination and communication with their partners, which may serve as both a protective factor against stress and a potential source of frustration if team dynamics are not well managed (Rodríguez Cayetano et al., 2017). Furthermore, self-confidence levels in padel players tend to be more variable based on experience and match conditions, whereas elite tennis players often develop more consistent confidence levels across competitions (Díaz et al., 2018). Additionally, the fast-paced nature of padel, with its shorter rallies and frequent tactical adjustments, may lead to increased cognitive fatigue, a factor less emphasized in traditional tennis but more comparable to table tennis (Conde-Ripoll et al., 2023). Future research should explore these psychological differences in greater depth, as understanding the distinct mental demands of padel compared to other racquet sports could lead to tailored psychological training strategies for athletes.

Psychological Fatigue

We observed significant changes in the psychological fatigue variables, particularly within the context of padel competitions. Postmatch assessments indicated that psychological fatigue increased notably among players who participated in multiple matches in a single day. This finding is consistent with previous research, which highlights how the accumulation of physical and psychological demands during intense tournaments could lead to mental fatigue, negatively affecting both psychomotor performance and decision-making. For example, Díaz et al. (2023) reported that padel players in high-level competitions experience increased psychological fatigue due to the constant cognitive demands imposed by the sport and the limited recovery time between matches. Similarly, Andrade Fernández et al. (2007) reported that athletes with high levels of cognitive anxiety are more prone to mental fatigue, which could compromise their concentration and performance on the court. These findings align with the general trend observed in racket sports, where the need for quick decision-making and continuous tactical adjustments contributes to higher levels of psychological stress and fatigue (Martens et al., 1990). However, some differences exist when comparing psychological fatigue across different sports. In team sports such as football, there is often a lower incidence of severe mental fatigue, likely due to the distribution of competitive pressure among several players (Lederle et al., 2021). This stands in contrast to individual or paired sports such as tennis and padel, where players bear greater individual responsibility, which may exacerbate stress and fatigue levels (Jiménez et al., 2012). Despite these variations, the findings of the present study confirm that psychological fatigue is a significant factor in racket sports

and that its impact on performance is well documented. Martens (1990) noted that the interaction between physical and mental fatigue during prolonged matches reduces players' ability to make quick and accurate decisions. The increased fatigue levels observed in this study are in line with those reported by Mehrsafar et al. (2021), who reviewed the effects of competitive anxiety and mental fatigue in professional athletes and reported that psychological factors play a critical role in overall athletic performance. The need for psychological interventions tailored to padel players is evident, as mental fatigue not only affects immediate performance but can also hinder long-term recovery. Therefore, future research should explore strategies to mitigate psychological fatigue and help athletes maintain optimal performance throughout tournaments.

Padel and psychological well-being

This review highlights the potential role of padel in promoting psychological well-being, particularly through its social and physical components. Studies have consistently highlighted the benefits of physical activity in enhancing mental health, and padel is no exception (Sánchez-Alcaraz & Courel-Ibáñez, 2022). As a racket sport that emphasizes coordination, strategy, and teamwork, it provides an ideal environment for improving psychological states, especially in terms of stress reduction, mood enhancement, and increased self-esteem (Martín-Rodríguez et al., 2024). One of the key elements contributing to the well-being of padel players is the social interaction inherent in the sport. Players engage in both competitive and cooperative dynamics that foster social bonds, which, according to Castillo-Rodríguez et al. (2014), could significantly increase their psychological resilience and overall satisfaction with life. These social interactions are crucial, as they provide emotional support, help reduce feelings of isolation, and contribute to a sense of belonging, all of which are central to well-being (Martín-Rodríguez et al., 2024). Additionally, engaging in padel can mitigate anxiety and stress, as observed by Díaz et al. (2023), who reported that padel players, particularly at the competitive level, experience significant reductions in anxiety postcompetition. This stress reduction is linked to both the physical exertion required by the sport and the endorphin release that follows (Conde-Ripoll et al., 2024a). Moreover, the structured nature of padel, with its clear rules and goals, can offer psychological benefits by providing players with a sense of control and accomplishment. This aligns with findings from Ghildiyal and Rodríguez-Salazar et al. (2015), who emphasize that sports participation helps individuals develop coping mechanisms for stress and anxiety, thereby promoting psychological well-being.

The competitive aspect of padel also plays a role in enhancing self-confidence. As players advance in terms of skill and experience, their confidence in their abilities increases, which in turn positively impacts their mental state. In this sense, findings by Mehrsafar et al. (2021) (Mehrsafar et al., 2021) supports this notion, indicating that the sense of achievement and mastery gained from sports such as padel contributes to a more positive self-image and greater psychological resilience. In high-level competition, as players develop better stress and anxiety management skills, they exhibit higher levels of self-confidence, which further reduces their susceptibility to stress during matches (Conde-Ripoll et al., 2023).

Furthermore, the psychological benefits of padel extend beyond individual well-being, influencing interpersonal relationships and fostering a strong sense of community among players. For instance, Edwards (2006) (Edwards, 2006) highlighted that regular participation in sports, such as padel, enhances social networks and communication skills, which significantly contributes to emotional well-being. This sense of belonging and mutual support is crucial in mitigating issues such as social anxiety and feelings of isolation, which are increasingly prevalent in modern society (Zeller et al., 2024). Additionally, the structured competitive environment of padel, where constant interaction with both teammates and opponents plays a pivotal role, not only enhances physical performance but also facilitates emotional regulation (Sánchez-Alcaraz & Courel-Ibáñez, 2022). This observation aligns with the findings of Vallerand and Losier (1999) (Vallerand y and Losier 1999), who suggest that engagement in racket sports helps players develop effective emotional self-regulation strategies, enabling them better to manage negative emotions such as frustration and competitive stress. Thus, padel could not only serve as a tool for physical and mental development but also foster a positive social environment, thereby broadening the psychological benefits for players in a comprehensive manner.

One of the primary limitations of our study was the limited body of existing research on padel, which constrains the ability to draw broader conclusions and make comparisons with previous findings. Another significant limitation was that the majority of the studies included were conducted with male participants, leaving a gap in understanding the psychological experiences of female players. Additionally,

this study focused exclusively on variables such as anxiety and stress, overlooking other crucial psychological factors that may also influence performance and well-being in this sport, such as motivation, self-confidence, and emotional resilience. Future research should aim to address these gaps by including more diverse populations and expanding the range of psychological variables under consideration. Exploring the psychological dimensions of padel across genders and examining factors such as emotional regulation, team dynamics, and mental toughness will provide a more comprehensive understanding of the psychological demands of the sport. Such studies could also investigate how these variables interact and contribute to performance, potentially offering insights into tailored psychological interventions that enhance player development and well-being.

Future lines of research should aim to address the limitations identified in this review by employing more robust study designs and diverse methodologies. One key limitation of the current literature is the predominance of cross-sectional studies, which limit the ability to establish causal relationships between psychological factors and performance outcomes. Future research should incorporate longitudinal designs to track changes in psychological traits over time, particularly as athletes progress through different stages of their careers. Additionally, experimental and intervention-based studies are needed to evaluate the effectiveness of specific psychological training programs for padel players. Randomised controlled trials (RCTS) could be used to test the impact of cognitive-behavioural interventions, mindfulness techniques, and stress management strategies on anxiety, self-confidence, and cognitive fatigue during matches.

Given the reliance on self-report measures in most existing studies, future research should incorporate objective psychophysiological assessments, such as heart rate variability (HRV) monitoring, cortisol level analysis, and EEG recordings, to gain deeper insights into the biological correlates of stress and anxiety in padel players. These methods could provide a more comprehensive understanding of the interaction between physiological and psychological responses in competitive settings. Another critical area for future research is the comparative analysis of psychological demands across different racquet sports. While this review highlights some distinctions between padel and other sports, further studies using matched-sample comparisons and mixed-method approaches (quantitative and qualitative) could provide more nuanced insights into the unique mental demands of padel. Finally, research should focus on developing and validating sport-specific psychological assessment tools tailored to padel players. While general sports psychology questionnaires exist, they may not fully capture the interpersonal and strategic cognitive demands unique to padel. The creation of padel-specific psychological scales could improve the accuracy of future assessments and interventions.

Practical Implications for Coaches, Players, and Sports Psychologists

The findings of this review highlight several key psychological factors—anxiety, stress, self-confidence, and mental fatigue—that have direct implications for training programs and mental conditioning in padel.

For Coaches: Given that anxiety and stress levels tend to be higher in less experienced players, coaches should incorporate progressive exposure to high-pressure scenarios during training. Simulation of competitive conditions, such as decision-making drills under time constraints and controlled stress environments, may help players develop better emotional regulation strategies. Additionally, team dynamics training should be emphasized, as effective communication and synchronization with a partner play a critical role in padel performance.

For Players: Individual players can benefit from incorporating mental conditioning exercises such as mindfulness techniques, controlled breathing, and visualization strategies to enhance focus and reduce cognitive fatigue. Given the cooperative nature of padel, players should also engage in partner-based psychological training, including pre-match communication strategies and emotional regulation techniques to minimize frustration during matches.

For sports psychologists working with padel athletes, it is essential to focus on tailored interventions that address both individual and team-based psychological challenges. The fluctuating self-confidence levels observed in padel players suggest that cognitive-behavioral approaches could be beneficial in reinforcing positive self-talk and resilience strategies. Furthermore, stress management protocols such as biofeedback training and relaxation techniques could help mitigate pre-competition anxiety and improve on-court adaptability. Additionally, incorporating mindfulness practices or relaxation techniques

into athletes' routines may further reduce anxiety and improve focus during matches (Rogowska & Tataruch, 2024).

By integrating these psychological strategies into regular training routines, coaches, players, and sports psychologists can work together to enhance mental resilience, stress management, and overall athletic performance in padel. Future research should explore the effectiveness of such interventions to further optimize mental conditioning for padel players.

Despite the relevant findings obtained in this systematic review, some limitations should be considered. Firstly, the number of studies included (n=12) is relatively low compared to the total number initially identified, which may limit the generalizability of the results. Additionally, most of the selected studies were descriptive, cross-sectional, and comparative, which restricts the possibility of establishing causal relationships between psychological variables and padel performance. Only one study adopted an experimental design, reflecting a paucity of research with more robust methodologies. Furthermore, there is significant heterogeneity in the instruments used to assess psychological variables, making direct comparison between studies difficult. On the other hand, most of the research focused on high-performance players or players with competitive experience, which limits the applicability of the results to amateur or novice players. Finally, the review only included studies published up to August 2024 and in the selected databases, potentially leaving out relevant research not indexed or published in languages other than English and Spanish.

Conclusions

This review identifies anxiety, self-confidence, and mental fatigue as key psychological factors associated with padel practice. This review suggests that precompetitive psychological responses, including stress and anxiety, are common among padel players. Findings indicate that experience and performance level may influence how players cope with these psychological challenges during matches. The findings confirm that these variables significantly affect player performance, with higher levels of stress and anxiety affecting decision-making during matches. Finally, this review highlights padel's potential to contribute positively to both mental and social well-being, underscoring the sport's capacity to promote psychological development.

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