



International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Operating Publisher
SciFormat Publishing Inc.
ISNI: 0000 0005 1449 8214

2734 17 Avenue SW,
Calgary, Alberta, T3E0A7,
Canada
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ARTICLE TITLE	THE IMPACT OF PADEL ON CARDIOMETABOLIC AND PSYCHOSOCIAL HEALTH: EVALUATING CLINICAL BENEFITS AGAINST THE RISK OF MUSCULOSKELETAL INJURIES
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DOI	https://doi.org/10.31435/ijitss.3(51).2026.6000
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RECEIVED	23 May 2026
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ACCEPTED	18 August 2026
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PUBLISHED	21 August 2026
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THE IMPACT OF PADEL ON CARDIOMETABOLIC AND PSYCHOSOCIAL HEALTH: EVALUATING CLINICAL BENEFITS AGAINST THE RISK OF MUSCULOSKELETAL INJURIES

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ABSTRACT

Background. Padel currently ranks among the fastest-growing racket sports worldwide, mainly thanks to its social accessibility and relatively low technical entry barrier. However, there is a growing need to look at both sides of its health profile: the documented clinical benefits versus the considerable risk of musculoskeletal injury.

Aim. This narrative review aimed to synthesise the existing literature comparing the cardiometabolic and psychosocial benefits of padel with the prevalence and patterns of musculoskeletal injuries.

Material and methods. A narrative review was conducted using PubMed, Scopus, and Web of Science. The analysis focused on studies examining physiological demands, mental health outcomes, and injury patterns among amateur and professional padel players.

Results. The evidence shows that regular padel practice tends to improve cardiovascular fitness and produces favourable acute changes in metabolic biomarkers, although the evidence for sustained changes in lipid profile is still mixed. Padel also seems to bring psychosocial benefits, including enhanced social engagement and reduced perceived stress. On the other hand, the sport's biomechanical demands, with rapid decelerations and repetitive overhead strokes, carry a substantial injury burden, predominantly affecting the elbow (epicondylitis), knee, ankle, and shoulder.

Conclusions. Padel is a useful tool for promoting health; but practitioners need to be aware of the injury burden it carries. Targeted prevention and proper physical conditioning matter, particularly for recreational participants.

KEYWORDS

Padel, Racket Sports, Cardiometabolic Health, Musculoskeletal Injuries, Sports Medicine, Physical Fitness

CITATION

Jerzy Buszko, Adrianna Buż, Damian Danilczuk, Marta Bajkowska-Piterak, Monika Szlachta-Gubernat, Michał Dyś, Nicol Baran, Przemysław Piterak, Wiktor Adamiec. (2026). The Impact of Padel on Cardiometabolic and Psychosocial Health: Evaluating Clinical Benefits Against the Risk of Musculoskeletal Injuries. *International Journal of Innovative Technologies in Social Science*. 3(51). doi: 10.31435/ijitss.3(51).2026.6000

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1. Introduction

Padel has experienced rapid global growth, growing from a niche doubles racket sport into one with millions of players worldwide, ranging from casual players to elite professionals competing on the World Padel Tour (García-Giménez et al., 2022). The sport is played on an enclosed 10 × 20-metre court, where surrounding walls facilitate ball rebounds and contribute to high-intensity intermittent play (Dahmen et al., 2023).

This rapid expansion has prompted scientific interest in the dual aspects of padel. Evidence indicates that regular participation improves cardiovascular endurance and psychological well-being (Sánchez-Alcaraz & Courel-Ibáñez, 2022). Conversely, the sport imposes significant mechanical stress on the musculoskeletal system (Dahmen et al., 2023). For clinicians, the main challenge is to get the most out of the health benefits while keeping injury risk down, which calls for weighing both sides carefully (Dahmen et al., 2023; Demeco et al., 2022).

1.1. Dynamics of Padel Play

The game demands explosive actions, including sprinting, jumping, and rapid direction changes (Latino et al., 2025). Actual playing time makes up roughly 40 to 45.9% of total match duration (Pérez et al., 2023; Pradas de la Fuente et al., 2023), a figure that puts padel ahead of most other racket sports. Because the walls keep the ball in play, rallies tend to be longer and the number of technical actions per match is higher (Pérez et al., 2023).

1.2. Cardiometabolic Benefits

During competitive play, mean heart rates range from approximately 127 bpm in amateur men to 154 bpm in professionals, which represents roughly 74 to 85% of individual maximum (Martín-Miguel, Escudero-Tena, et al., 2025). This is a meaningful training stimulus. Even amateur players show aerobic capacities around 51.15 mL/kg/min, while professionals reach considerably higher values (Martín-Miguel, Escudero-Tena, et al., 2025). Padel participation has also been linked to favourable changes in body composition and motor coordination (Demeco et al., 2022; Sánchez-Alcaraz & Courel-Ibáñez, 2022).

1.3. Impact on Mental Health and Brain Function

Padel also presents a noteworthy mental health component (Pradas, Cádiz, et al., 2021). Post-match blood analyses present a significant acute increase in brain-derived neurotrophic factor (BDNF) among female players, while levels of irisin and leukemia inhibitory factor remain unchanged (Pradas, Cádiz, et al., 2021). Although the BDNF finding is intriguing, it is sex-specific and should be interpreted cautiously due to reliance on a single study. More consistently supported is the social benefit: as a team sport, padel stimulates social engagement, which likely contributes to reduced stress, improved mood, and, from a public health perspective, greater long-term adherence to physical activity (Sánchez-Alcaraz & Courel-Ibáñez, 2022).

1.4. Musculoskeletal Injury Risks

These health benefits must be considered alongside the sport's injury burden. The high intensity and repetitive movement patterns inherent to padel are associated with a substantial risk of musculoskeletal injury (Dahmen et al., 2023). The most commonly affected anatomical sites include the elbow (lateral epicondylitis), knee, and ankle (Castillo-Lozano & Casuso-Holgado, 2017; Dahmen et al., 2023), with the majority of injuries involving tendinous or muscular tissue. Player experience, racket weight (particularly exceeding 350 g), and playing surface type have been identified as significant risk factors (Dahmen et al., 2023; Rocamora-López & Mateo-Orcajada, 2025). From a clinical perspective, ankle sprains are worth highlighting because, as the broader orthopaedic literature notes, poorly rehabilitated sprains can progress to chronic instability or premature osteoarthritis (Morawa et al., 2026; Pachana et al., 2025).

1.5. Objective

Despite the expanding body of research, no review has directly compared the health benefits of padel with its associated injury risks (Dahmen et al., 2023). This review addresses that gap by synthesizing current evidence on cardiometabolic and psychosocial outcomes alongside injury epidemiology, thereby enabling clinicians and coaches to make more informed decisions in practice (Demeco et al., 2022).

2. Methodology

We conducted a narrative review of the scientific literature on padel and its health effects, with the specific aim of evaluating how the documented clinical benefits compare to the known injury risks. We searched PubMed, Scopus, Web of Science, and Google Scholar using the terms "padel" or "paddle tennis" combined with "injury", "physiology", "fitness", and "epidemiology". We restricted inclusion to peer-reviewed publications in English.

We included studies that provided original data or systematic reviews on padel players, provided they addressed at least one of the following: physiological load, injury rates, physical fitness, or mental health. We excluded papers published before 2000 and those dealing with other forms of "paddle tennis", which differ substantially from modern padel.

Twenty-one padel-specific publications met our criteria, covering everything from World Padel Tour professionals to recreational amateurs and seniors. We also cited two references on general ankle sprain management (Morawa et al., 2026; Pachana et al., 2025) to provide clinical context for the injury discussion; however, we acknowledge that these were not identified through our systematic search and their inclusion as supplementary material should be interpreted accordingly. We grouped the padel-specific studies into four categories: injury epidemiology ($n = 8$), physiological and metabolic responses ($n = 5$), physical fitness ($n = 4$), and mental health and brain function ($n = 4$).

The main variables we tracked included injury rates per 1000 hours, heart rate responses, and biomarkers such as BDNF and creatine kinase (CK). Because of the heterogeneity in study designs and populations, a formal meta-analysis was not feasible. We therefore synthesised the findings qualitatively. All original studies adhered to the Declaration of Helsinki.

3. Results

3.1. Physical Effort and Internal Load Dynamics

An important consideration is the substantial variability among studied populations, which range from top-50 World Padel Tour professionals to recreational amateurs and youth players (U-14, U-16). Aerobic capacity, creatine kinase, and BDNF levels differ according to age, sex, and competitive experience. Population-specific data are reported where available, with ranges provided otherwise. These differences should be considered, particularly when comparing elite and recreational cohorts.

Physiological data characterise padel as a high-intensity intermittent sport. Aerobic metabolism constitutes the primary energy base, supplemented by explosive anaerobic actions (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020). Real Playing Time (RPT) typically accounts for 40% to 45.9% of total match duration, yielding a work-to-rest ratio of approximately 0.84 (Pérez et al., 2023; Pradas de la Fuente et al., 2023). During competitive play, mean heart rates range from 127 to 154 beats per minute (bpm), depending on competitive level and sex, representing approximately 74% to 85% of the individual's maximum heart rate (Pradas de la Fuente et al., 2023; Martín-Miguel, Escudero-Tena, et al., 2025). During the most intense phases of exertion, heart rates may reach 177 to 188 bpm (Martín-Miguel, Escudero-Tena, et al., 2025).

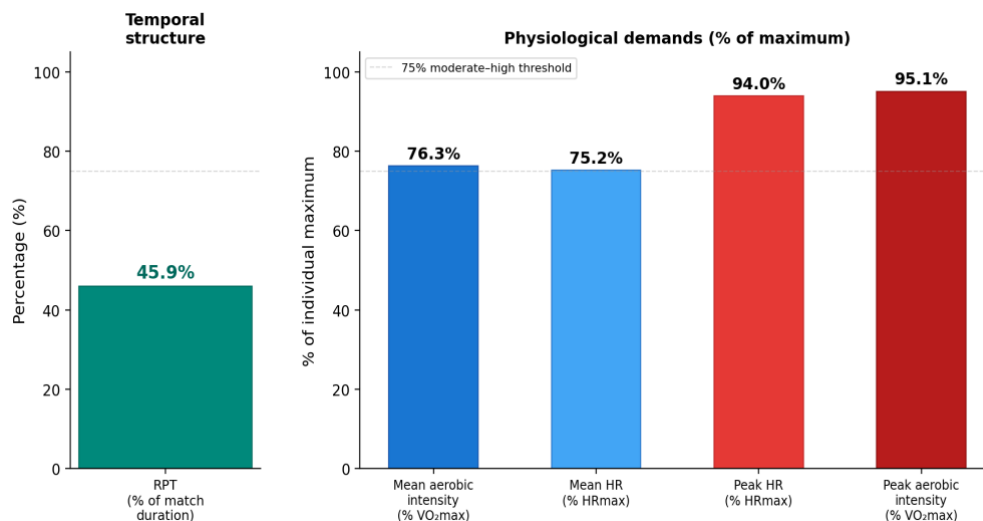
On average, players maintain an intensity of 76.3% of maximal aerobic power, which may increase to 95.1% during the most demanding rallies (Martín-Miguel, Escudero-Tena, et al., 2025). Laboratory tests indicate that amateur players exhibit aerobic capacities of approximately 51.15 mL/kg/min, with professional athletes achieving significantly higher values (Martín-Miguel, Escudero-Tena, et al., 2025). The anaerobic component appears to rely predominantly on the phosphagen system (ATP-PCr), as evidenced by relatively low post-match blood lactate concentrations averaging 2.40 mmol/L in women and 2.87 to 3.38 mmol/L in men (Martín-Miguel, Escudero-Tena, et al., 2025). The key physiological and anthropometric parameters are consolidated in Table 1, while Figure 1 illustrates the distribution of match demands.

Table 1. Key physiological and anthropometric parameters of padel match play. HR = heart rate; VO₂max = maximal aerobic capacity; CK = creatine kinase; RPT = Real Playing Time; WPT = World Padel Tour. Developed using Claude 4.6 Sonnet by Anthropic.

Parameter	Value	Notes	Source
Mean heart rate during match	127 to 154 bpm	74 to 85% HRmax	(Martín-Miguel, Escudero-Tena, et al., 2025)
Peak heart rate during match	177 to 188 bpm	~94% HRmax	(Martín-Miguel, Escudero-Tena, et al., 2025)
Mean aerobic intensity	76.3% VO ₂ max	n/d	(Martín-Miguel, Escudero-Tena, et al., 2025)
Peak aerobic intensity	95.1% VO ₂ max	Most intense rallies	(Martín-Miguel, Escudero-Tena, et al., 2025)
Real Playing Time (RPT)	40 to 45.9% of match	Work:rest ≈ 0.84	(Pérez et al., 2023; Pradas de la Fuente et al., 2023)
Blood lactate (women)	2.40 mmol/L	Mean post-match	(Martín-Miguel, Escudero-Tena, et al., 2025)
Blood lactate (men)	2.87 to 3.38 mmol/L	Mean post-match	(Martín-Miguel, Escudero-Tena, et al., 2025)
VO ₂ max (amateurs)	~51.15 mL/kg/min	n/d	(Martín-Miguel, Escudero-Tena, et al., 2025)
Body fat % (men, Top 1 to 50)	10.6%	World Padel Tour	(Pradas de la Fuente et al., 2023; Martín-Miguel, Escudero-Tena, et al., 2025)
Body fat % (women, Top 1 to 50)	17.6%	World Padel Tour	(Pradas de la Fuente et al., 2023; Martín-Miguel, Escudero-Tena, et al., 2025)
Post-match CK (men)	308.22 U/L	↑ significant	(Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020)
Post-match CK (women)	147.23 U/L	↑ significant	(Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020)

Source: Systematic review by Martín-Miguel et al. (2024) (Martín-Miguel, Escudero-Tena, et al., 2025); Pradas et al. (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020); Pérez et al. (Pérez et al., 2023).

Figure 1 illustrates the relative physiological demands imposed during match play, expressed as proportions of individual maximum values.

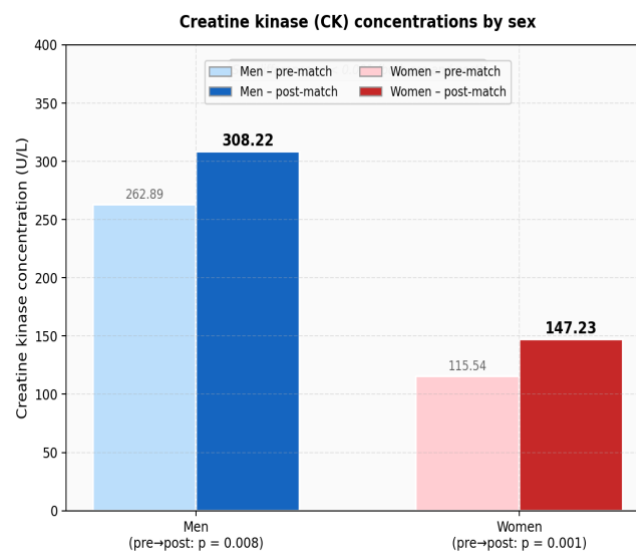


Source: Martín-Miguel et al. (2024) (Martín-Miguel, Escudero-Tena, et al., 2025); Pradas et al. (2021, 2020) (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Ochiana, et al., 2021).

Figure. 1. Physiological load parameters recorded during padel match play, expressed as percentages of individual maximum values. Real Playing Time (RPT) is shown separately (left panel) as it represents temporal match structure rather than physiological intensity. The dashed line at 75% denotes the threshold for moderate-to-high intensity exercise.

3.2. Metabolic and Muscle Damage Markers

A single padel match is enough to shift several plasma biomarkers in a direction consistent with protein catabolism and muscle microtrauma (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020). Creatinine, urea, and creatine kinase (CK) all rise significantly after play (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020). The sex difference is striking: post-match CK in men reached 308.22 U/L, more than double the 147.23 U/L recorded in women (Pradas de la Fuente et al., 2023). We attribute this primarily to the greater absolute muscle mass and higher exercise intensity in male players, though the role of endocrine factors cannot be excluded (see Figure 2).



Source: Pradas et al. (2020, 2023) (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020).

Figure. 2. Post-match creatine kinase (CK) concentrations (U/L) by sex, shown alongside pre-match baseline values. The statistically significant elevation in male players (308.22 U/L vs. 147.23 U/L in women; men pre-to-post $p = 0.008$, women pre-to-post $p = 0.001$; sex difference $p < 0.001$ at both time points) reflects greater absolute muscle mass and exercise intensity. Pre-match values are included to demonstrate that the sex difference is present at baseline.

Elevated levels of lactate dehydrogenase (LDH) and fatty acid-binding protein 3 (FABP-3) indicate acute muscular micro-trauma following match play (Pradas de la Fuente et al., 2023). With respect to lipid parameters, a slight, non-significant decrease in triglycerides was observed, alongside electrolyte shifts in potassium and magnesium, reflecting the high metabolic cost of prolonged rallies (Pradas de la Fuente et al., 2023).

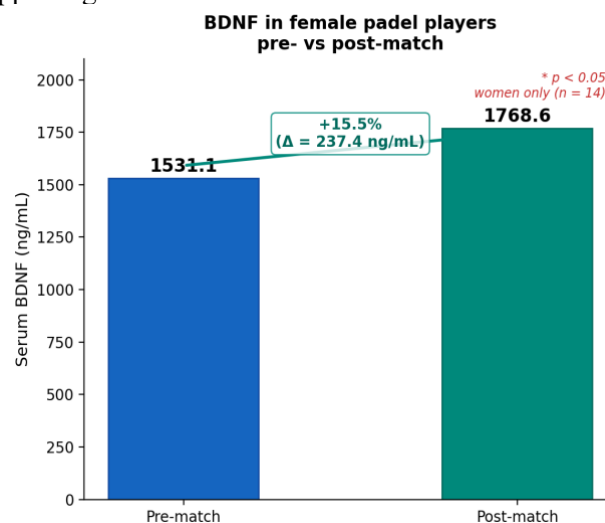
3.3. Anthropometry and Neuromuscular Output

Elite World Padel Tour players demonstrate specific physical adaptations. Average height is 1.80 m for men and 1.67 m for women, with height showing a positive correlation with overhead stroke effectiveness (Pradas, Muñoz, et al., 2025; Martín-Miguel, Escudero-Tena, et al., 2025). Body fat percentages among top-50 professionals average 10.6% for men and 17.6% for women (Pradas, Muñoz, et al., 2025; Pradas de la Fuente et al., 2023; Martín-Miguel, Escudero-Tena, et al., 2025). These profiles are comparable to those reported in squash and tennis (8 to 13% for men, 18 to 23% for women), suggesting that elite padel requires a similar body composition (Martín-Miguel, Escudero-Tena, et al., 2025).

Regarding neuromuscular performance, substantial sex-based differences were identified. Male players achieve 13 to 15 cm higher scores in vertical jump tests (CMJ and Abalakov) compared to female players (Pradas, Muñoz, et al., 2025; Courel-Ibáñez & Llorca-Miralles, 2021; Pradas, García-Giménez, Toro-Román, Ochiana, et al., 2021). Pradas et al. also (Pradas, Muñoz, et al., 2025) demonstrated that right-side players achieve higher jump scores than left-side players, while left-side players exhibit greater maximal strength, suggesting position-specific physical demands. This has clinical implications, as greater jump heights generate higher landing forces, increasing the load on knee and ankle joints during the rapid decelerations characteristic of padel. In younger players (U-14, U-16), an 8-week padel training programme was associated with improved handgrip strength within the training group ($p = 0.004$) and significant gains in sprint speed (Pereira et al., 2025; Martín-Miguel, Muñoz, et al., 2025), although the between-group interaction for handgrip did not reach statistical significance ($p = 0.06$). Even so, these data imply that padel may serve as an effective stimulus for motor development. Gains in forearm extensor strength are clinically relevant here, since stronger extensors may offer some protection against lateral epicondylitis (Dahmen et al., 2023; Demeco et al., 2022).

3.4. Mental Health and Cognitive Response

One of the more interesting findings in this literature concerns the brain. In female players, a single competitive match was enough to raise serum BDNF from 1531.12 to 1768.56 ng/mL, which represents a 15.5 % increase (Pradas, Cádiz, et al., 2021). That is a striking effect for a single bout of exercise. On a different but related note, over 62% of padel players surveyed by Alhammad et al. (Alhammad et al., 2025) reported high satisfaction with the sport, which fits with the lower stress and anxiety levels reported in other padel cohorts (Sánchez-Alcaraz & Courel-Ibáñez, 2022; Rocamora-López & Mateo-Orcajada, 2025). The neurotrophic data (Figure 3) are preliminary, but they raise the possibility that padel could serve as a non-pharmacological tool for supporting brain health.



Source: Pradas et al. (2021) (Pradas, Cádiz, et al., 2021). Total sample $N = 24$ (14 women, 10 men); BDNF increase was significant only in the female subgroup ($n = 14$); * $p < 0.05$.

Figure. 3. Serum BDNF levels in female padel players before and after competitive match play (ng/mL). The significant post-match increase (+15.5%, $\Delta = 237.4$ ng/mL) supports the neuroprotective potential of padel in women. No significant changes were observed in male players.

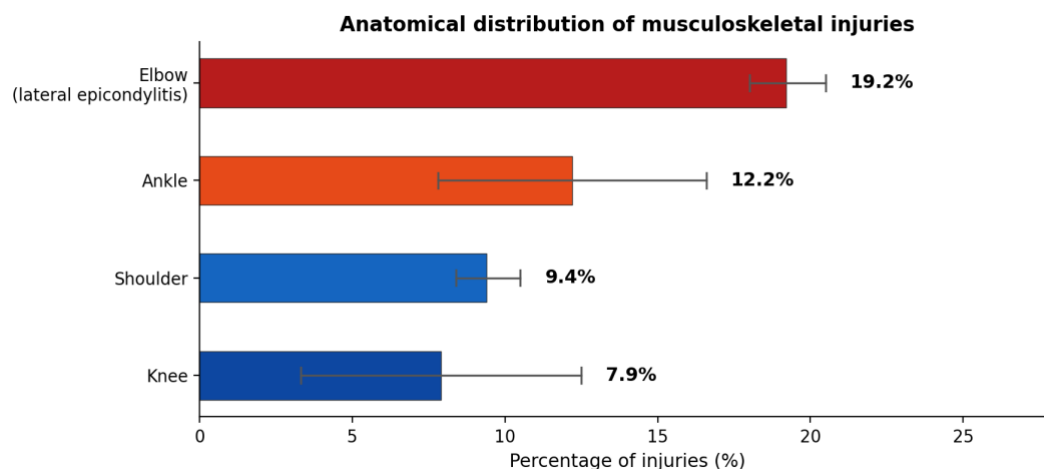
That said, mental fatigue is a real concern (Demeco et al., 2022). Playing several matches in one day takes a cognitive toll: reaction times slow and alertness drops (Demeco et al., 2022). An interesting age effect also emerged: younger athletes generally report higher self-confidence and less somatic anxiety than their senior counterparts (Martín-Miguel, Muñoz, et al., 2025; Rocamora-López & Mateo-Orcajada, 2025).

3.5. Injury Epidemiology and Patterns

The injury burden in padel is high, though data vary between populations. According to the systematic review by Dahmen et al. (Dahmen et al., 2023), career injury prevalence ranges from 40% to 95% across populations, with the lower end observed in Portuguese recreational players (Ferreira et al., 2025) and the upper end in senior recreational cohorts (Castillo-Lozano, 2017; Dahmen et al., 2023). In Swedish youth players, Ryman Augustsson and Durdal (Ryman Augustsson & Durdal, 2025) reported a prevalence of 0.53 injuries per player during a one-week recall. These should be viewed as population-specific estimates rather than a single range. Incidence rates range from 3 to 3.4 injuries per 1000 hours of exposure (Dahmen et al., 2023; Ferreira et al., 2025) and from 10.5 to 15.1 injuries per 1000 matches in professional players (Pérez et al., 2023), with higher rates seen in professional competitions (Pérez et al., 2023; Dahmen et al., 2023).

In terms of anatomical distribution, the elbow was the most commonly affected site (18.0 to 20.5%, predominantly lateral epicondylitis) (Dahmen et al., 2023; Ferreira et al., 2025), followed by the ankle (7.8 to 16.6%, predominantly sprains), knee (3.3 to 12.5%), and shoulder (8.4 to 10.5%) (Pérez et al., 2023; Dahmen et al., 2023; Ferreira et al., 2025).

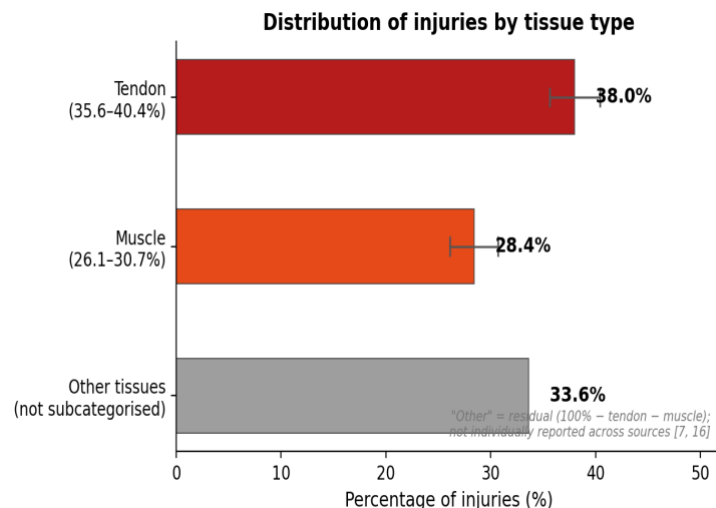
For ankle sprains, the general orthopaedic literature supports conservative management for grade I and II injuries, with surgical intervention reserved for complex grade III cases (Morawa et al., 2026; Pachana et al., 2025). Figure 4 summarises these patterns.



Source: Pérez et al. (2023) (Pérez et al., 2023); Dahmen et al. (2023) (Dahmen et al., 2023); Ferreira et al. (2025) (Ferreira et al., 2025). Error bars indicate reported range.

Figure. 4. Anatomical distribution of musculoskeletal injuries in padel players (%). Values represent midpoints of ranges reported in the literature; error bars denote the reported minimum-maximum range. The elbow predominates (18.0 to 20.5%), consistent with the biomechanical demands of overhead and lateral strokes.

Tendinous (35.6 to 40.4%) and muscular injuries (26.1 to 30.7%) represent the most prevalent tissue categories (Dahmen et al., 2023; Ferreira et al., 2025). Professional players tend to sustain overload strains, whereas amateur players more frequently present with tendinopathies, likely attributable to technical deficiencies (Dahmen et al., 2023). The tissue distribution is illustrated in Figure 5.



Source: Dahmen et al. (2023) (Dahmen et al., 2023); Ferreira et al. (2025) (Ferreira et al., 2025).

Figure 5. Distribution of padel-related musculoskeletal injuries by tissue type. Tendinuous pathologies account for 35.6 to 40.4% and muscular injuries for 26.1 to 30.7% of all injuries. The remaining proportion (other tissues including ligament, bone, cartilage) was not consistently subcategorised across the source studies and is shown as a combined residual category.

On top of that, Rocamora-López and Mateo-Orcajada (Rocamora-López & Mateo-Orcajada, 2025) found that rackets weighing 350 to 370 g ($p = 0.029$) and sand-coated courts ($p = 0.037$) were both associated with a significantly higher incidence of muscle and ligament injuries. A decline in heart rate variability (HRV) has also been reported as a predictor of overuse injuries, showing its potential utility as a preventive monitoring tool (Latino et al., 2025).

4. Discussion

The data, taken together, present a paradox: while padel offers substantial cardiovascular and mental health benefits, it is also associated with a higher injury burden than is commonly recognized by practitioners and players. The following discussion addresses the practical outcomes of these findings.

4.1. Cardiometabolic and Neurotrophic Benefits

The cardiovascular stimulus provided by padel is substantial, with players reaching up to 95.1% of their maximal aerobic power during peak rallies (Martín-Miguel, Escudero-Tena, et al., 2025). The observed BDNF response in female players (Pradas, Cádiz, et al., 2021) suggests potential exercise-induced muscle-brain interactions; however, this finding is based on a single study with 24 participants and was significant only among the 14 women, limiting its generalizability (Pradas, Cádiz, et al., 2021). The evidence is stronger for high satisfaction rates (62.3%) among participants (Alhammad et al., 2025), which is a key clinical asset, as enjoyment of the activity promotes sustained adherence, which in turn supports long-term health benefits (Sánchez-Alcaraz & Courel-Ibáñez, 2022).

4.2. Recovery and Muscle Damage Markers

Biomarker data indicate that padel is physically demanding, often in ways not immediately apparent to participants (Pradas de la Fuente et al., 2023; Pradas, García-Giménez, Toro-Román, Sánchez-Alcaraz, et al., 2020). A post-match creatine kinase (CK) level of 308.22 U/L in men (Pradas de la Fuente et al., 2023) reflects significant muscle fiber damage, and inadequate recovery may lead to cumulative stress. Monitoring tools such as heart rate variability (HRV) and rating of perceived exertion (RPE) scales warrant broader implementation in padel training, particularly for young athletes, who frequently underestimate recovery requirements (Ryman Augustsson & Durdal, 2025).

4.3. Injury Prevention and Equipment Considerations

A career injury prevalence approaching 95% in some cohorts (Dahmen et al., 2023) is difficult to ignore. Lateral epicondylitis alone accounts for roughly 20% of all reported injuries, and much of this seems preventable (Demeco et al., 2022). Heavier rackets (above 350 g) essentially act as a longer lever arm, increasing the load on the forearm extensors (Rocamora-López & Mateo-Orcajada, 2025). This biomechanical

reality likely explains why tendinopathies dominate the data at 35.6 to 40.4% (Dahmen et al., 2023; Ferreira et al., 2025).

Court surface matters too. Sand on synthetic grass increases the grip-and-twist forces that act on knees and ankles (Rocamora-López & Mateo-Orcajada, 2025), and this is where ankle sprains become a real clinical problem. Although no padel-specific data on long-term sprain outcomes exist, the general sports medicine literature suggests that up to 40% of patients with poorly rehabilitated ankle sprains develop chronic instability (Morawa et al., 2026; Pachana et al., 2025). In our view, this makes early functional rehabilitation a priority for any padel player presenting with an ankle sprain.

4.4. Heart Rate Variability as an Injury Predictor

Can we catch overtraining before the player feels it? HRV data suggest we might (Latino et al., 2025). Unlike the traditional approach, which relies on the athlete reporting symptoms, HRV captures subclinical autonomic stress objectively. Latino et al. (Latino et al., 2025) followed 66 female padel players over 13 weeks and found that declining HRV tracked with rising overuse injuries. It is a single study, and we need replication in larger, mixed-sex cohorts before making it a clinical standard. But the logic is compelling, and we believe HRV monitoring deserves serious consideration as part of training load management in padel (Latino et al., 2025).

5. Conclusions

Our review confirms what many practitioners already suspect: padel is good for health, but it comes at a cost. The cardiovascular and psychosocial benefits are well supported across both amateur and professional populations. Regular play improves endurance and body composition, and the acute BDNF elevations in female players (Pradas, Cádiz, et al., 2021) hint at a neuroprotective dimension, though we emphasise that this evidence is still preliminary. Perhaps most importantly from a public health standpoint, over 62% of players report high satisfaction with the sport (Alhammad et al., 2025), and the social format naturally encourages sustained participation (Sánchez-Alcaraz & Courel-Ibáñez, 2022).

The other side of the coin is harder to dismiss. Career injury prevalence reaches 40% in recreational players and climbs to 95% in some competitive groups (Pérez et al., 2023; Dahmen et al., 2023). Tendinopathies and muscle strains predominate, suggesting that the sport's demands routinely outstrip the body's ability to recover, particularly when load management is neglected. HRV monitoring shows early promise as a way to detect overuse risk before it becomes clinical (Latino et al., 2025), but we are not yet at the point where we can recommend it as standard practice.

Several limitations must be acknowledged. The reviewed studies are heterogeneous, encompassing diverse populations, competitive levels, and varying definitions of injury, which precluded a formal meta-analysis. The absence of randomized controlled trials limits any firm causal inference. On top of that, the data come mostly from male professionals and elite youth, restricting generalizability to older recreational players, women, or para-athletes.

What is needed next is straightforward: long-term prospective studies with standardised injury tracking, and controlled trials testing whether specific prehabilitation programmes reduce injury rates. HRV-guided training periodisation is a particularly promising way that remains largely unexplored in padel.

Author Contributions:

Conceptualization, J.B.; methodology, J.B., D.D., M.D., W.A., P.P., M.B-P., M.S., N.B., A.B.; formal analysis, J.B., D.D., M.D., W.A., P.P., M.B-P., M.S., N.B., A.B.; investigation, J.B., D.D., M.D., W.A., P.P., M.B-P., M.S., N.B., A.B.; resources, J.B., D.D., M.D., W.A., P.P., M.B-P., M.S., N.B., A.B.; writing: original draft preparation, J.B., D.D., M.D.; writing: review and editing, D.D., M.D.; visualization, J.B.; supervision, D.D., M.D.; project administration, J.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process: In preparing this work, the authors used ChatGPT (OpenAI) exclusively for language editing and grammatical correction of the manuscript. Tools were not involved in data collection, analysis, interpretation of results, or the formulation of conclusions. All substantive content was generated, reviewed, and approved by the human authors, who accept full responsibility for the integrity of the publication.

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