International Journal of Physical Education, Exercise and Sports
www.physicaleducationjournal.com
Online ISSN: 2664-9896, Print ISSN: 2664-9888
Received: 10-11-2025, Accepted: 09-12-2025, Published: 24-12-2025
Volume 7, Issue 2, 2025, Page No. 82-86

Injuries And Injury Prevention In Pickleball For Beginners

To Thi Huong
Faculty of National Defense Education and Physical Education, Saigon University, Vietnam

Abstract
Background: Pickleball is the fastest-growing sport globally, with a parallel boom observed in Vietnam. This rise in participation is accompanied by a significant injury burden, particularly among novice players.
Methods: A narrative review of the medical literature (sports medicine, epidemiology, biomechanics) was conducted to synthesize existing evidence on injury epidemiology, risk factors, and effective preventive intervention strategies.
Results: Data indicate a high injury prevalence (e.g., 68.5% of players reporting annual injuries). Novice players (<5 years experience) exhibit a higher risk of injury (OR 1.50), with the strongest predictor being a low perception of the importance of prevention (OR 2.02). Biomechanical analysis identified three critical, preventable faults in beginners: (1) Inappropriate footwear (e.g., running shoes) increases the risk of ankle sprains due to a lack of lateral support; (2) Improper technique (e.g., excessive "wrist flick") leads to upper extremity overuse injuries (e.g., "pickleball elbow"); and (3) The footwork error of "backpedaling" is a primary mechanism for falls, resulting in wrist fractures via a FOOSH (Fall On an Outstretched Hand) mechanism.
Conclusion: Injuries among novice pickleball players are prevalent but highly preventable. A multimodal prevention strategy combining education (modifying risk perception), equipment optimization (particularly court-specific footwear), dynamic warm-ups, and targeted strength and balance training is critical to mitigate risk and ensure safe, sustainable long-term participation.

Keywords: Biomechanics, injury prevention, pickleball, sports science, sports injuries

Introduction

Pickleball, a sport that combines elements of tennis, badminton, and table tennis, has been recognized as the fastest-growing sport in North America for several consecutive years. In the United States, participation numbers have soared to nearly 20 million players in 2024, and are projected to reach 22.7 million by mid-2025. This growth is bolstered by a global market expected to reach 3.86 billion USD by 2032.

Conversely to popular belief, the sport is undergoing a significant 'rejuvenation'. The average player age has dropped to 35, and the largest demographic cohort is now 25–34 years old. This forecasts a shift in injury epidemiology, moving from risks primarily associated with falls in older adults to high-intensity and overuse injuries in younger athletes.

Vietnam has emerged as one of Asia's fastest-growing pickleball markets. With a DUPR player growth rate of +184% in 2025 [1] and unofficial estimates of approximately 30,000 players, the sport's potential has been recognized by the Vietnam Sports Administration and incorporated into its professional development plans.

The Vietnamese context presents a unique feature: the prevalence of badminton. Players with a badminton background can rapidly acquire techniques (e.g., the smash), but often lack the physical conditioning for the distinct biomechanical demands of pickleball (e.g., a low stance, lateral movements). This creates a "risk asymmetry," where playing intensity may outpace their musculotendinous preparation, resulting in an elevated injury risk.

Pickleball is often marketed as "easy to learn," but this conceals a paradox: novice players frequently underestimate the sport's physical demands. They often lack the muscular preparation for rapid, abrupt movements and are prone to the "too much, too soon" phenomenon. This scenario, combined with emerging reports of pickleball-related orthopedic cases in Vietnam, underscores the need for a prevention-focused review.

Epidemiological studies have quantified this risk. The strongest predictors of injury are not physical, but behavioral: a low perception of the importance of prevention (OR 2.02) and a lack of experience (<5 years) (OR 1.50). The objective of this review is to analyze the primary biomechanical risk factors for novice players and to propose an evidence-based prevention framework.

Methods

This article is a narrative review. We conducted a systematic literature search across medical and sports science databases (e.g., PubMed, Google Scholar) and industry reports. Search terms included "pickleball," "injury," "epidemiology," "biomechanics," "prevention," and "novice." Studies were selected based on their relevance to common injury mechanisms, modifiable risk factors, and intervention strategies for novice players.

Results

Epidemiology of Pickleball Injuries

The injury prevalence in pickleball is significant. A large cross-sectional study of 2,054 players revealed that 68.5% had experienced at least one injury in 12 months, and 35.9% reported continuing to play while injured (playing "in pain").

There is a critical discrepancy in the data sources

Emergency Department (ED) Data: This source tends to capture acute, severe injuries. ED-based studies report fractures (32.7%) and strains/sprains (30.8%) as the most common diagnoses.

Player Surveys: This source reflects a greater burden of chronic conditions. Player surveys identified "overuse/chronic" conditions (35.3%) as the "most severe" injury type, and fractures were reported as uncommon. This suggests that the true medical burden of pickleball is a dual burden, comprising both acute injuries and a high prevalence of chronic pain and tendinopathies that players are self-managing.

Table 1: Epidemiological Overview of Pickleball Injuries by Data Source

Diagnosis Type	Prevalence / Reported Significance	Primary Body Location	Typical Mechanism	Data Source (Example)	Citation
Overuse / Chronic Conditions	35.3% (reported as "most severe")	Knee (29.1%), Shoulder (22.2%)	Repetitive, Poor Technique, Overload	Player Survey	(Morpeth *et al*., 2024) [3]
Fractures	32.7% (of all ED diagnoses)	Wrist (29.2% of fractures)	Falls (65.5% of all mechanisms)	National ED Data (NEISS)	(Weinberg *et al*., 2024)
Strains / Sprains (General)	40.5% - 47.9%	Lower Extremity (Calf), Upper Extremity (Shoulder)	Twisting, Sudden Change of Direction	ED Data, Single-center study	(Weinberg *et al*., 2024; Slenker *et al*., 2024)
Achilles Tendon Injuries	32.2% - 39.4% (of foot/ankle injuries)	Achilles Tendon	Planting and lunging, Sudden Change of Direction	Specialty Clinic Study	(Case *et al*., 2024; Seaview Orthopaedic, 2023) [32]
Ankle Sprains	21.7% (of lower extremity injuries)	Ankle	Sudden Change of Direction, Inversion	Specialty Clinic Study	(Case *et al*., 2024)

Quantitative Risk Factors in Novice Players

As stated, behavioral factors are key. Players with a "low/medium perception of the importance of prevention" had twice the odds of injury (OR 2.02). Those with <5 years of experience had 50% higher odds of injury (OR 1.50). These factors lead directly to predictable biomechanical errors.

Table 2: Quantitative Risk Factors for Pickleball Injury (Odds Ratios)

Risk Factor	Comparison Group	Outcome (Injury Type)	Odds Ratio (OR) [95% CI]	Citation
Playing Experience < 5 years	vs. ≥ 5 years	Any Injury	1.50 [1.19 – 1.90]	(Morpeth *et al*., 2024) [3]
Prevention Perception (Low/Medium)	vs. High Perception	Any Injury	2.02 [1.52 – 2.67]	(Morpeth *et al*., 2024) [3]
Age (60-79)	vs. younger groups	Falls	2.10	(Rodrigues *et al*., 2024)
Age (60-79)	vs. younger groups	Fractures	1.75	(Rodrigues *et al*., 2024)
Female	vs. Male	Fractures	3.03	(Rodrigues *et al*., 2024)
Female	vs. Male	Falls	2.08	(Rodrigues *et al*., 2024)
Male	vs. Female	Strains / Sprains	1.87	(Rodrigues *et al*., 2024)
Male	vs. Female	Lower Extremity Injury	1.71	(Rodrigues *et al*., 2024)

Biomechanical Analysis of Common Novice Errors

Fault 1 (Equipment): Wearing Running Shoes

This is the most dangerous equipment fault. Running shoes are designed for forward (linear) motion and feature a soft, cushioned midsole. In contrast, pickleball is a lateral movement sport. When a player makes a lateral cut, the soft, flared sole of the running shoe grips the court surface. The foot stops abruptly while the body's momentum continues to move, creating a pivot point that causes the ankle to roll. This is the direct mechanical cause of ankle sprains.

Fault 2 (Upper Extremity Technique): "Wrist Flicking"

Novices often try to generate power by "flicking the wrist" instead of using rotation from the shoulder and torso (trunk). This repetitive motion overloads the wrist extensor muscles at their insertion points, leading to lateral epicondylitis, commonly known as "Pickleball Elbow." Other contributing factors include gripping the paddle too tightly and using an improper grip size (often too small). The elbow pain is essentially a symptom of a breakdown in the kinetic chain, originating from weakness in the core and hips.

Fault 3 (Footwork Technique): "Backpedaling"

When faced with a lob, the novice's untrained reflex is to backpedal while keeping their eyes on the ball. This technique—moving backward with a high center of gravity—is inherently unstable and is identified as one of the leading mechanisms for falls. When falling backward, the natural reflex is to extend the arm to brace the fall (a FOOSH - Fall on Outstretched Hand). The entire body weight is transmitted through the wrist, resulting in a wrist fracture, which is the most common fracture site reported in ED data.

Discussion

Based on the identified risk factors and biomechanical mechanisms, a multimodal prevention strategy for novice players is essential.

Behavioral and Equipment Interventions

Education (Addressing OR 2.02): The most critical intervention is perception modification. Novice players must understand that pickleball is a physically demanding sport and that prevention is an integral component of participation.

Equipment (Addressing Fault 1): Mandating the use of "court shoes" (e.g., tennis or pickleball-specific shoes) is crucial. These shoes feature stiff sidewalls and a flatter outsole, which are engineered to support lateral movements and mitigate the risk of ankle sprains.

Physical Interventions (Body Preparation/Conditioning)

Dynamic Warm-up: Players frequently skip warm-ups [32]. A 10–15 minute dynamic warm-up is critical. Movements should include arm circles, leg swings, and walking lunges.

Strength Training (Addressing Fault 2): Resistance training is vital. Exercises must target core and hip strength. Research indicates that stronger hips correlate with faster change-of-direction (COD) speed, which may in turn reduce fall risk during movement.

Balance Training (Addressing Fault 3): Improving balance is the most effective fall prevention method. Simple exercises like single-leg balance (progressing to unstable surfaces) can significantly improve neuromuscular stability.

Technical Interventions (Learning Proper Technique from the Start)

Technical Training: Learning correct form (technique) from the outset is a primary preventive strategy.

(Fall Prevention): Coaches must prioritize teaching the "Drop Step" technique (a hip turn and step back) to handle lobs, and explicitly prohibit "backpedaling."

(Elbow Prevention): Teach novices to generate power from the large muscles of the shoulder and hip/trunk rotation, rather than relying on wrist flicking.

Load Management: Novices must avoid sudden spikes in playing volume (the "too much, too soon" phenomenon). Interspersed rest days are required to allow musculotendinous tissues time for adaptation.

Table 3: Prevention Intervention Framework (PIF) for Novice Pickleball Players

Prevention Category	Risk / Injury Addressed	Evidence-Based Intervention	Specific Example(s)	Citation(s)
1. Dynamic Warm-up	Acute strains (calf, hamstrings), Tendon ruptures (Achilles)	10–15 min dynamic warm-up to increase blood flow and tissue readiness.	Walking Lunges, Leg Swings, Arm Circles, Thoracic Rotations.	(Lee Health, 2024; Wu, 2024; Orthopaedic Foundation, 2023) [31, 32]
2. Equipment (Footwear)	Ankle Sprains, Meniscus Tears	Prohibit running shoes. Mandate use of "Court Shoes".	Tennis, pickleball, or volleyball shoes with lateral support.	(Santa Barbara, n.d.; Midwest Racquet, 2023; Wen, 2019) [23, 29]
3. Equipment (Paddle)	Pickleball Elbow, Wrist Tendinitis	Ensure proper grip size.	Measure grip size; avoid gripping the paddle too tightly ("death grip").	(NCOA, 2024; Wellness Ln, 2024; All-Star PT, n.d.) [26]
4. Training (Hip/Core)	Low Back Pain, Pickleball Elbow, Knee Injuries, Falls	Strengthen the kinetic chain (hip/core) to offload the joints.	Pallof Press, Side-Lying Leg Lifts, Single-Leg Deadlifts.	(Make a Wave, 2024; Notto *et al*., 2024; HSS, 2022) [7, 28]
5. Training (Balance)	Falls, Wrist Fractures	Neuromuscular training to improve stability.	Single-leg balance (eyes open/closed), progressing to unstable surfaces.	(HSS, 2022; NCOA, 2024)
6. Technical Training	Falls (Fractures), Pickleball Elbow	Correct common, high-risk biomechanical faults.	Teach the "Drop Step" (vs. backpedaling). Teach shoulder/hip rotation (vs. wrist flicking).	(Bondi, 2024; The Empower U, 2024; South Shore, 2023) [36]
7. Load Management	Overuse Injuries (e.g., tendinopathies, stress fractures)	Avoid sudden spikes in playing volume.	Gradually progress weekly playing time; integrate rest days.	(Wu, 2024; Cedars-Sinai, 2023; Physio & Sole, 2024) [35, 37]

Conclusion

Pickleball offers tremendous physical and psychosocial benefits. However, the injury risk, particularly for novice players, is significant and predictable. The greatest risk factors (low prevention perception and lack of experience) are directly addressable. A proactive, multifaceted approach—combining education (to modify perception), proper equipment mandates (particularly footwear), and physical preparation (dynamic warm-ups, hip/core strengthening, and balance training)—is key to ensuring safe and sustainable long-term participation in the world's fastest-growing sport.

References

1. DUPR. Malaysia and Vietnam are leading Asia's pickleball market [Internet], 2025. Oct 23 [cited 2025 Nov 12]. Available from: https://www.dupr.com/post/malaysia-and-vietnam-are-leading-asia-pickleball-market
2. vPickleball, 2024: Pickleball Vietnam is the world's second fastest-growing market [Internet], 2024. [cited 2025 Nov 12]. Available from: https://vpickleball.com.vn/vi/news/119 [Vietnamese]
3. Morpeth S, O'Donoghue G, Johnston M. A cross-sectional study of 2054 pickleball players to describe the prevalence, characteristics, and predictors of pickleball injuries. Clin J Sport Med,2024:34(5):455–63.
4. Pickleball Central. Running shoes vs. court shoes: What's the difference? [Internet]. [date unknown] [cited 2025 Nov 12]. Available from: https://pickleballcentral.com/blog/running-shoes-vs-court-shoes-whats-the-difference
5. All-Star Physical Therapy. Pickleball technique: Preventing tennis elbow [Internet]. [date unknown] [cited 2025 Nov 12]. Available from: https://all-starpt.com/pickleball-technique-preventing-tennis-elbow/

6. South Shore Health. Common pickleball injuries and how to prevent them [Internet], 2023. May 11 [cited 2025 Nov 12]. Available from: https://www.southshorehealth.org/wellness/blog/common-pickleball-injuries-and-how-prevent-them
7. Notto B, Hensley C, Olson H. Hip strength, change of direction, and falls in recreational pickleball players. Int J Sports Phys Ther,2024:19(6):808–15.
8. Sports Fitness Industry Association (SFIA). As pickleball continues unprecedented growth... [Internet], 2024. Nov 14 [cited 2025 Nov 12]. Available from: https://sfia.org/resources/as-pickleball-continues-unprecedented-growth-in-every-age-group-and-region-for-third-straight-year-significant-investments-still-needed-for-court-and-facility-demand/
9. Hawaii Pickleball. Pickleball by the numbers: U.S. growth in 2025 [Internet], 2025. [cited 2025 Nov 12]. Available from: https://hawaiipickleball.com/pickleball-growth-2025/
10. Market.us. Pickleball statistics [Internet], 2024. [cited 2025 Nov 12]. Available from: https://www.news.market.us/pickleball-statistics/
11. Pickle Rage. Pickleball statistics: Growth, demographics, and trends (2025) [Internet], 2025. [cited 2025 Nov 12]. Available from: https://picklerage.com/pickleball-statistics/
12. Pickleheads. Pickleball statistics (May 2024) [Internet], 2024. [cited 2025 Nov 12]. Available from: https://www.pickleheads.com/guides/pickleball-statistics
13. Tuoi Tre News. Rapid rise of pickleball in Vietnam marked by growing pains in organization [Internet], 2024. [cited 2025 Nov 12]. Available from: https://www.news.tuoitre.vn/rapid-rise-of-pickleball-in-vietnam-marked-by-growing-pains-in-organization-10385232.htm
14. Sports Authority of Vietnam. Promoting the systematic and professional development of Pickleball in Vietnam [Internet], 2025, 6. [cited 2025 Nov 12]. Available from: https://tdtt.gov.vn/the-thao-trong-nuoc/id/89370/day-manh-phat-trien-pickleball-tai-viet-nam-theo-huong-bai-ban-chuyen-nghiep [Vietnamese]
15. The Kitchen Pickle. Pickleball in Vietnam: Is this Asia's next pickleball hub? [Internet], 2024. [cited 2025 Nov 12]. Available from: https://thekitchenpickle.com/blogs/news/pickleball-growth-vietnam-asia
16. Mass General Brigham. Common pickleball injuries [Internet]. [date unknown] [cited, 2025,12]. Available from: https://www.massgeneralbrigham.org/en/about/newsroom/articles/pickleball-injuries
17. UT Health Austin. Common pickleball injuries and how to prevent them [Internet]. [date unknown] [cited, 2025,12]. Available from: https://uthealthaustin.org/blog/common-pickleball-injuries-and-how-to-prevent-them
18. Wu C. What doctors wish patients knew about preventing pickleball injuries [Internet]. American Medical Association (AMA), 2024,11. [cited 2025 Nov 12]. Available from: https://www.ama-assn.org/public-health/prevention-wellness/what-doctors-wish-patients-knew-about-preventing-pickleball
19. Pham QP. Rising musculoskeletal conditions in pickleball: Many Vietnamese players are making the same common mistake [Internet]. CafeF, 2025, 25. [cited 2025 Nov 12]. Available from: https://cafef.vn/gia-tang-ca-benh-xuong-khop-khi-choi-pickleball-nhieu-nguoi-viet-dang-mac-chung-1-loi-188251025160921936.chn [Vietnamese]
20. Jones C, Hammig B. The role of age as a risk factor for pickleball-related injuries. Health, 2024.
21. Santa Barbara Pickleball Shop. Running shoes vs pickleball shoes: Why you should make the switch [Internet]. [date unknown] [cited 2025 Nov 12]. Available from: https://sbpickleballshop.com/blog/running-shoes-vs-pickleball-shoes/
22. Reddit. PSA-Do not wear running shoes for pickleball. You will roll your ankle [Internet]. r/Pickleball, 2023. [cited 2025 Nov 12]. Available from: https://www.reddit.com/r/Pickleball/comments/1facsaf/psado_not_wear_running_shoes_for_pickleball_you/
23. Midwest Racquet Sports. Pickleball shoes: Why you shouldn't wear running shoes to play pickleball [Internet], 2023. [cited 2025 Nov 12]. Available from: https://www.midwestracquetsports.com/pickleball-shoes/a/why-you-shouldnt-wear-running-shoes-to-play-pickleball/
24. Back in Motion. The #1 mistake that leads to pickleball injuries: Ignoring the root cause of pain [Internet], 2024, 25. [cited 2025 Nov 12]. Available from: https://backinmotionsspt.com/the-1-mistake-that-leads-to-pickleball-injuries-ignoring-the-root-cause-of-pain/
25. The Empower U. How to prevent tennis elbow in pickleball [Internet], 2024. [cited 2025 Nov 12]. Available from: https://theempoweru.com/how-to-prevent-tennis-elbow-in-pickleball/
26. Wellness Ln. Pickleball wrist pain: Causes, fixes, and how to protect your game [Internet], 2024, 16. [cited 2025 Nov 12]. Available from: https://www.wellnessln.com/blog/pickleball-wrist-pain-causes-fixes-and-how-to-protect-your-game
27. National Council on Aging (NCOA). Staying strong and injury-free on the pickleball court [Internet], 2024, 15. [cited 2025 Nov 12]. Available from: https://www.ncoa.org/article/staying-strong-and-injury-free-on-the-pickleball-court
28. Make a Wave. Understanding pickleball injuries: The role of mobility, biomechanics, and core strength [Internet], 2024, 9. [cited 2025 Nov 12]. Available from: https://makeawavecincy.com/understanding-pickleball-injuries-the-role-of-mobility-biomechanics-and-core-strength/
29. Wen J. Pickleball - A review of a rapidly growing sport. Phys Med Rehabil,2019:11(S1):S19–S24.
30. Vemulapalli H, Mody R, Nasreddine A. Pickleball-related injuries: An analysis of patterns and predictors. Front Public Health, 2024 13.
31. Lee Health. Preparing for pickleball: Injury prevention strategies [Internet], 2024. [cited 2025 Nov 12]. Available from: https://www.leehealth.org/health-and-wellness/healthy-news-blog/exercise-and-nutrition/preparing-for-pickleball-injury-prevention-strateg
32. Orthopaedic Foundation (OTRF). Pickleball warm-up stretching exercise program [Internet], 2023. [cited

2025 Nov 12]. Available from: http://www.otrfund.org/wp-content/uploads/2023/05/OTRF-Pickleball-warm-up_stretching-exercise-program-2023.pdf
33. Terrell K, Ficquette G. Pickleball: Benefits, barriers, and injury prevention. J Phys Act Health,2024:21(9):847–53.
34. Hospital for Special Surgery (HSS). Stretches and exercises to prevent pickleball injuries [Internet], 2022. Nov 15 [cited 2025 Nov 12]. Available from: https://www.hss.edu/health-library/move-better/stretches-exercises-prevent-pickleball-injuries
35. Cedars-Sinai. Pickleball injuries: Causes and prevention [Internet], 2023, 28. [cited 2025 Nov 12]. Available from: https://www.cedars-sinai.org/blog/pickleball-injuries-causes-and-prevention.html
36. Bondi J. A podiatrist's guide to pickleball foot and ankle injuries. Podiatry Management, 2024, 9.
37. Physio Sole. Pickleball injury: Causes, common types treatment [Internet], 2024. [cited 2025 Nov 12]. Available from: https://physioandsole.com.sg/pickleball-injury/