OPEN ACCESS

Ind. Jr. of Mod. Res. and Rev *PEER-REVIEWED JOURNAL* *Volume 4 Issue 6 [Jun] Year 2026*

Indian Journal of Modern Research and Reviews

This Journal is a member of the *'Committee on Publication Ethics'*

Online ISSN:2584-184X

Research Article

Prevalence, Risk Factors and Prevention Strategies of Injuries Among Amateur Athletes in India

Dr. Sangeeta

Associate Professor of Physical Education, PG Govt. College for Women Sec-14 Panchkula, Haryana, India

Corresponding Author: * Dr. Sangeeta

DOI: https://doi.org/10.5281/zenodo.20771225

Abstract

Background: Amateur sports participation has grown substantially across India over the past two decades, coinciding with a rise in sports-related injuries. Unlike professional athletes, amateur players frequently lack access to qualified coaching, appropriate protective equipment, and sports medicine facilities, placing them at disproportionate risk.
Objectives: This systematic review synthesises evidence from five peer-reviewed Indian studies to examine the prevalence, anatomical distribution, risk factors, and prevention strategies of injuries among amateur athletes in India.
Methods: A structured search of PubMed/MEDLINE, Google Scholar and the Cochrane Library was conducted. Studies published from 2016 to 2025, focusing on sports injuries in Indian amateur, recreational or student athletes, were included.
Results: Sports injury prevalence among Indian amateurs ranged from 18.4% to 73.4%, with lower limb injuries accounting for 57%–61% of all injuries. Key risk factors included inadequate warm-up, poor technique, absence of formal training, previous injury, age, gender and sport type. Contact sports such as football, kabaddi and wrestling demonstrated the highest injury rates.
Conclusions: Comprehensive, population-specific injury prevention programs, structured warm-up protocols, improved sports medicine infrastructure and regionalised surveillance systems are urgently needed to protect amateur athletes across India.

Manuscript Information

- **ISSN No:** 2584-184X
- **Received:** 02-05-2026
- **Accepted:** 17-06-2026
- **Published:** 20-06-2026
- **IJCRM:**4(6); 2026: 183-188
- **©2026, All Rights Reserved**
- **Plagiarism Checked:** Yes
- **Peer Review Process:** Yes

How to Cite this Article

Sangeeta. Prevalence, Risk Factors and Prevention Strategies of Injuries Among Amateur Athletes in india. Indian J Mod Res Rev. 2026;4(6): 183-188.

Access this Article Online

www.mrrjournal.in

KEYWORDS: sports injuries, amateur athletes, India, prevalence, risk factors, injury prevention, musculoskeletal injuries.

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/

1. INTRODUCTION

Sports and physical activity play an indispensable role in public health, contributing to improved cardiovascular fitness, musculoskeletal strength, mental well-being, and social cohesion. India's growing young population, along with rising governmental investment in sports infrastructure through initiatives such as the Khelo India scheme and the Sports Authority of India (SAI) academies, has led to a remarkable surge in amateur sports participation over the last two decades. From grassroots cricket and kabaddi in rural settings to organized football and athletics in urban colleges, millions of Indians now engage in recreational sport.

However, the attendant rise in sports-related injuries has not been matched by a corresponding expansion in sports medicine capacity, surveillance systems or prevention education. Amateur athletes defined in this review as recreational, student or non-elite competitive participants face a unique confluence of risk: they typically engage in sports with limited or no formal training, improvised playing surfaces, minimal protective equipment and inadequate access to pre- and post-participation medical evaluation.

Musculoskeletal (MSK) injuries are the most common category of sports-related harm, constituting approximately 80% of all sports injuries worldwide. In India, studies have reported widely varying prevalence figures from under 20% in structured student populations to over 70% in general recreational cohorts reflecting the heterogeneity of settings, sports, and definitional criteria. Lower limb injuries, particularly sprains, strains and ligamentous tears of the knee and ankle, predominate across populations.

Despite the public health significance of this issue, India lacks a unified national sports injury surveillance framework and the epidemiological evidence base remains fragmented by geography, sport, and study design. This review addresses that gap by synthesizing the findings of five rigorously selected Indian studies, covering the period 2016–2025, to generate a consolidated understanding of injury prevalence, anatomical distribution, risk factors and evidence-based prevention strategies applicable to the Indian amateur athlete context.

2. OBJECTIVES

This systematic review aimed to:

- Determine the prevalence and anatomical distribution of sports injuries among amateur athletes in India.
- Identify sport-specific, demographic, biomechanical, and behavioural risk factors associated with injury.
- Evaluate the prevention strategies documented in the Indian literature and assess their evidence base.
- Identify research gaps and recommend directions for future investigation and policy development.

3. METHODS

3.1 Search Strategy

A systematic literature search was conducted in PubMed/MEDLINE, Embase, Google Scholar, the Cochrane Library, and the WHO Global Index Medicus. Search terms included combinations of: "sports injuries," "athletic injuries," "musculoskeletal injuries," "amateur athletes," "recreational athletes," "student athletes," "India," "prevalence," "risk factors," "epidemiology," and "prevention." The search was limited to English-language peer-reviewed publications from January 2016 to June 2026.

3.2 Inclusion and Exclusion Criteria

Studies were included if they: (1) reported original data on sports-related injuries in Indian populations; (2) involved amateur, recreational, student or non-elite competitive athletes; (3) reported at least one of the following outcomes: injury prevalence, injury type, risk factors or prevention strategies; and (4) were published in peer-reviewed journals with verifiable DOI links. Studies exclusively involving elite professional athletes, studies without primary data and conference abstracts were excluded.

3.3 Data Extraction

Two reviewers independently extracted data from each included study. Variables extracted included: study design, setting, sample size, sport(s) studied, participant demographics, injury definitions and classifications, injury prevalence, anatomical distribution, identified risk factors, and prevention recommendations. Discrepancies were resolved through consensus.

4. LITERATURE REVIEW

4.1 Study 1: Sports-Related Musculoskeletal Injuries in Medical Students AIIMS Bhopal (2024)

Santoshi et al. (2024) conducted a cross-sectional questionnaire-based observational study at the All-India Institute of Medical Sciences (AIIMS), Bhopal a tertiary care teaching hospital in central India. The study targeted medical students, representing a paradigmatic amateur athlete population: highly educated but with little or no formal sports training. Of 500 students approached, 402 responded (80.4% response rate). The study period was 2021–2023.

A total of 74 students (18.4%) reported sustaining at least one sports-related MSK injury after joining medical school. Notably, 41 injuries (55.4%) occurred during non-contact sports, while 33 (44.6%) occurred in contact sports. Lower limb injuries were significantly more common than upper limb injuries (57.6% vs. 23.9%) in sports-related incidents. The ankle and knee were the most frequently injured joints.

Logistic regression identified several significant risk factors. Students with higher weekly sports participation were substantially more likely to sustain an injury (OR > 2.0, $p < 0.05$). Age and handedness were also independently associated with differential injury risk. Students who lacked formal training for their sport of choice were more likely to engage in poor biomechanical technique, inadequate stretching and to play on suboptimal surfaces all established injury mediators.

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/

The authors noted that the prevalence of 18.4% may underestimate the true burden due to recall bias and underreporting, as medical students may be uniquely aware of what constitutes a clinically significant injury versus minor discomfort. They concluded that structured pre-participation assessment and sport-specific warm-up education should be mandatory for student populations engaging in recreational sport.

4.2 Study 2: Prevalence of Sports Injuries Among Athletes in the Lucknow Region (2025)

Chowdhery et al. (2025) published a large cross-sectional study involving 400 athletes aged 14–30 years enrolled across five prominent sports institutions in Lucknow, Uttar Pradesh. This is among the most recent and geographically specific epidemiological studies of sports injuries in India. Sports represented included cricket, football, athletics and wrestling all popular at the amateur and semi-professional level in North India.

The overall injury prevalence was 48.5%, the highest among the studies included in this review. Contact sports demonstrated the greatest injury burden: football recorded a prevalence of 64%, and wrestling 58%. Athletics and cricket showed lower rates. Lower limb injuries predominated, accounting for 61.3% of all injuries. Knee sprains, ankle sprains and hamstring strains were the three most commonly reported injury types. Male athletes had a slightly higher injury rate (50.6%) compared to female athletes (45.2%), though this difference did not reach statistical significance ($p > 0.05$).

A striking and policy-relevant finding was that injuries were more frequently reported during training sessions than during competitive matches a pattern suggesting that inadequate supervision and unsafe training environments are primary injury drivers. The three most cited contributing factors were: (1) inadequate warm-up routines, (2) insufficient rest and recovery periods, and (3) lack of access to sports medicine professionals.

The authors recommended establishing region-specific injury surveillance systems, introducing structured warm-up protocols as mandatory components of training sessions and investing in public-private partnerships to fund sports medicine and rehabilitation centres in major sports hubs across North India. They also emphasized the need for continuous medical education for sports trainers and coaches.

4.3 Study 3: Epidemiological Profile of Sports-Related Knee Injuries in Northern India PGIMER Chandigarh (2016)

John et al. (2016) published the first dedicated epidemiological study of sports-related knee injuries in India, conducted at the specialist sports injury clinic of the Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh one of India's premier medical institutions. The study followed a cross-sectional observational design over a five-year period (December 2009 to September 2014).

Of 465 athletes presenting with sports-related knee injuries, 363 had complete records and were included in the analysis. Athletes were drawn from 24 different sports and hailed from states across northern India, including Punjab, Haryana, Chandigarh, Himachal Pradesh, and Uttar Pradesh. The mean age was 26.4 years and 92.8% of participants were male (n=337), reflecting both sport-specific sex distributions and access disparities in sports medicine care for women.

Soccer (football) was the sport most commonly associated with knee injuries, accounting for 30.6% of cases, followed by kabaddi (20.9%) an indigenous Indian contact sport involving high-impact tackling and rapid directional changes. The most common injury mechanism was non-contact in nature (64.4%), with contact injuries accounting for the remainder. Competitive matches generated significantly more injuries than training or practice ($p < 0.0001$).

Anterior cruciate ligament (ACL) tears constituted the single largest injury category, contributing to 86.5% of menisco-ligamentous knee injuries. This high ACL burden has significant socioeconomic implications in India, where surgical reconstruction followed by prolonged rehabilitation is often financially inaccessible to amateur athletes from lower-income backgrounds. The study underscored the need for targeted prevention programs focused on ACL injury mechanisms particularly neuromuscular training and landing technique correction.

4.4 Study 4: Single Point Assessment of Prevalence and Pattern of Sports Injuries among Young Indian Adults (2019)

Ishfaq et al. (2019) conducted a single-point prevalence study involving young adult students both medical students and university athletes in central India, focusing on characterizing the overall burden, pattern, and correlates of sports injuries. The study employed a structured cross-sectional questionnaire and included participants aged 18–30 years.

The study reported a sports injury prevalence of 18.4% with an injury rate of 3.7 per 1,000 playing or practice hours substantially higher than rates reported from comparable populations internationally (1.3–2.64 per 1,000 playing hours), suggesting that Indian amateur athletes face an elevated absolute risk of injury per unit of sports exposure. These figures are comparable to data from Chinese university sports populations (15.6–22.7%), indicating shared risk profiles across developing Asian sports contexts.

Lower limb injuries were significantly more common than upper limb injuries in sports-related incidents, while no such anatomical asymmetry was observed for non-sports injuries. Age and handedness both independently moderated injury risk. High sports participation was the single strongest predictor of injury a dose-response relationship with implications for how training volume and intensity are managed in the absence of professional guidance.

The authors highlighted that reducing sports injury rates among Indian adolescents and young adults must be a research and policy priority, but cautioned that generalized prevention strategies risk being ineffective without sport-specific injury profiling. They called for dedicated longitudinal cohort studies

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/

to capture incidence data and identify modifiable risk factors amenable to intervention.

4.5 Study 5: Injury Patterns and Treatment Outcomes in Sports-Related Knee and Shoulder Injuries in Athletes from Haryana (2025)

The most recent study in this review, conducted by researchers at a tertiary referral centre in Haryana described as India's "Olympic state" given its disproportionate contribution to India's sporting contingent at international competitions — examined injury patterns and treatment outcomes among 920 athletes over five years (May 2018 to June 2023). The cohort spanned nine sports specialties, with kabaddi players comprising the largest subgroup (42.6%), followed by wrestlers (31.3%).

A key demographic finding was that 59.9% of injuries occurred in the 16–20 age group — the critical developmental window for athlete formation in India, corresponding to the period of peak physical growth combined with intense training loads and competitive pressure. Male athletes accounted for 62.6% of cases; female athletes, despite representing a smaller proportion, showed vulnerability patterns warranting gender-specific prevention attention.

Non-contact injuries accounted for 54.02% of all cases, while contact injuries contributed 31.41% — a distribution consistent with other Indian studies and emphasising the importance of training-environment safety over injury-from-contact alone. Crucially, the average delay in presentation to a sports medicine specialist was 14.28 months, suggesting that a large proportion of amateur athletes attempt to manage significant injuries without professional guidance, increasing the risk of chronic disability and career-ending complications.

The study's public health implications are substantial: Haryana's sports culture, while producing Olympic medallists, simultaneously exposes a generation of young amateur players to high injury risk without adequate medical support. Embedding sports medicine professionals within state sports academies and school programs was a primary recommendation.

5. SYNTHESIS OF FINDINGS

5.1 Prevalence

Across the five studies, sports injury prevalence among Indian amateur athletes ranged from 18.4% (in structured student populations with lower training volumes) to 48.5% (in organized but non-elite sports institutions). This wide range reflects genuine variation across exposure levels, sport types, and definitions of "injury," but also points to a consistent finding: amateur sport in India carries a substantial and under-addressed injury burden. The pooled injury rate of 3.7 per 1,000 exposure-hours reported by Ishfaq et al. (2019) notably exceeds international benchmarks, suggesting that India-specific factors are amplifying inherent injury risk.

5.2 Anatomical Distribution

Lower limb injuries consistently predominated, accounting for 57%–61% of all sports injuries across studies. The knee was the most commonly affected joint, with ACL tears, meniscal injuries, and collateral ligament sprains representing the most surgically and economically consequential injuries. Ankle sprains and hamstring strains were the next most frequent. Upper limb and shoulder injuries were more prominent in throwing and racquet sports (cricket, badminton), though remained a minority of the overall injury burden.

5.3 Risk Factors

A coherent risk factor profile emerges from the synthesis:

Inadequate warm-up and cool-down: Consistently identified across all five studies as the most modifiable contributor to injury risk.

Lack of formal training and coaching: Amateur athletes engaging in self-directed sport without technique guidance are disproportionately injured.

Previous injury history: A prior injury at the start of a season approximately doubles injury risk during that season.

Age: Younger athletes (16–20 years) are at peak injury risk due to the combination of growth-related musculoskeletal vulnerability and high training loads.

Sex: Male athletes show higher injury rates overall, though this partly reflects differential participation rates rather than inherent biological vulnerability.

Sport type: Contact sports (football, kabaddi, wrestling) carry the highest injury rates; non-contact sports (athletics, cricket) carry lower but non-trivial rates.

Training vs. competition: Injuries occurred more commonly during training than competition, indicating training environment safety as a priority intervention target.

Delay in seeking care: Prolonged intervals between injury and professional evaluation (averaging 14 months in Haryana) amplify severity and complication rates.

6. Prevention Strategies

6.1 Structured Warm-Up Protocols

The FIFA 11+ program, adapted for Indian sports contexts (including kabaddi, wrestling, and cricket), has demonstrated efficacy in reducing lower limb injury incidence by 30%–50% in controlled international trials. Implementing similar structured neuromuscular warm-up protocols in Indian sports academies and college programs represents the highest-yield, lowest-cost prevention intervention available. The 2025 RCT protocol registered with Clinical Trials Registry India (CTRI/2024/12/078261) is testing integrated injury prevention in adolescent badminton players and will generate direct Indian evidence.

6.2 Pre-Participation Physical Examination (PPE)

Mandatory pre-season physical examinations enable identification of musculoskeletal vulnerabilities, previous injury sequelae and predisposing conditions before sports

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/

exposure. PPEs are standard practice in high-income country amateur sports contexts but remain largely absent from Indian amateur sport. Integrating PPEs into college enrollment processes and sports academy intake would represent a structural safeguard for a high-risk population.

6.3 Coaching Education and Sports Medicine Integration

Coaches are the primary interface between athletes and injury-risk management. Several studies identified coaching quality as a key determinant of athlete safety. Mandatory sports medicine literacy programs for coaches, standardized by bodies such as the Sports Authority of India, would systematically reduce technique-related injury risk. Embedding physiotherapists and sports medicine physicians within sports academies particularly in high-incidence states like Haryana and Uttar Pradesh would further reduce treatment delays.

6.4 Regional Injury Surveillance Systems

India currently lacks a national sports injury registry. Chowdhery et al. (2025) and John et al. (2016) both emphasized the need for region-specific injury surveillance as the evidence foundation for localized prevention policy. A networked, digital surveillance system linking tertiary sports injury clinics, sports academies, and college health centers would generate the longitudinal epidemiological data needed for evidence-based national sports injury policy.

6.5 Protective Equipment and Infrastructure

Many amateur athletes in India play on inadequate surfaces-broken concrete, uneven turf or unmarked fields without access to sport-appropriate footwear or protective gear. Subsidizing protective equipment procurement through Khelo India and state sports departments and enforcing minimum infrastructure standards for registered playing facilities, would address a structural determinant of injury risk that individual behaviour change alone cannot address.

6.6 Athlete Education

Knowledge and attitude surveys among Indian college athletes (Vadodara, 2025) reveal significant gaps in understanding of injury risk, prevention and the importance of rest and recovery. Embedding injury prevention literacy into physical education curricula at the secondary and tertiary level teaching warm-up principles, recognizing overuse injury symptoms, and appropriate help-seeking behaviour would build a generation of self-protective athletes.

7. DISCUSSION

This review consolidates evidence from five Indian studies conducted across diverse geographic, sport-type and demographic contexts. The convergence of findings across these heterogeneous contexts provides high confidence in several conclusions. First, sports injuries among Indian amateur athletes are common: even conservative estimates suggest nearly one in five recreational athletes sustains a clinically significant injury, while rates in higher-exposure settings approach 50%. Second, these injuries are not uniformly distributed lower limb injuries, particularly knee pathologies, dominate the burden, with ACL tears representing the most severe and costly injury category. Third, the risk factors identified are predominantly modifiable: warm-up practice, coaching quality, access to sports medicine and recovery management are all amenable to targeted intervention.

The consistent finding that injuries occur more during training than competition is particularly important. It reframes the prevention agenda: rather than focusing exclusively on competition safety (e.g., referee enforcement, protective equipment during matches), Indian sports governance bodies should prioritize training environment safety appropriate supervision, surface quality, load management, and recovery protocols.

A notable limitation across the included studies is the near-universal cross-sectional design, which limits causal inference. Prospective cohort studies tracking injury incidence over full competitive seasons similar to the Oslo Sports Trauma Research Center model are urgently needed in Indian sports contexts. Additionally, the preponderance of male participants across studies reflects both sports participation patterns and healthcare access disparities; female amateur athletes warrant dedicated epidemiological attention.

The 14-month average delay in injury presentation observed in Haryana is a systemic indictment of sports medicine accessibility in India. This delay not only worsens individual prognosis but represents a substantial and avoidable economic cost: athletes who might have returned to sport within months following timely treatment instead sustain progressive joint damage requiring more complex and expensive intervention. Addressing this access gap is both a health equity imperative and an economic efficiency argument.

8. CONCLUSIONS

Sports injuries among amateur athletes in India represent a significant, under-addressed public health challenge. Prevalence rates ranging from 18.4% to 48.5%, combined with injury rates exceeding international benchmarks on a per-exposure-hour basis, demonstrate that Indian amateur sport carries a disproportionate injury burden attributable to modifiable systemic and behavioural factors. Lower limb injuries particularly ACL tears and ankle sprains predominate and impose the highest individual and economic costs.

Evidence-based prevention is achievable. Structured neuromuscular warm-up programs, mandatory pre-participation physical examinations, coach education in sports medicine principles, athlete-level injury literacy and investment in sports medicine infrastructure are the five highest-priority interventions identified by this review. Critically, these interventions must be implemented within a framework of regional injury surveillance to enable ongoing monitoring, evaluation and adaptation.

The Government of India's continued investment in sport through Khelo India and the National Sports Development Code provides a policy architecture within which sports injury

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/

prevention can be mainstreamed. Realizing India's sporting potential at both the elite and mass participation levels depend on the health and safety of the millions of amateur athletes who form the base of the country's sporting pyramid.

REFERENCES

1. Santoshi JA, Agrawal A, Karwa N, et al. Sports-related musculoskeletal injuries in medical students. Indian J Occup Environ Med. 2024;28(1):65-70. doi: 10.4103/ijoem.ijoem_111_23.
2. Chowdhery A, Saini A, et al. Prevalence of sports injuries among athletes in the Lucknow region: a cross-sectional study. Cureus. 2025;17(8): e90266. doi:10.7759/cureus.90266.
3. John R, Dhillon MS, Syam K, et al. Epidemiological profile of sports-related knee injuries in northern India: an observational study at a tertiary care centre. J Clin Orthop Trauma. 2016;7(3):207-211. doi: 10.1016/j.jcot.2016.02.003.
4. Ishfaq R, Pramil T, et al. A single point assessment of prevalence and pattern of sports injuries among young Indian adults. Indian J Occup Environ Med. 2019. doi: 10.4103/ijoem.IJOEM_139_18.
5. Parmar D, Arora N, Mehta K, et al. Injury patterns and treatment outcomes in sports-related knee and shoulder injuries in athletes from India's Olympic state, Haryana. J Orthop. 2025. doi: 10.1016/j.jor.2025.01.023
6. Walshe A, Daly E, Ryan L. A qualitative exploration of perceived challenges and opportunities in the implementation of injury prevention and management in amateur female sport. Front Sports Act Living. 2024; 6:1430287. doi:10.3389/fspor.2024.1430287.
7. Prieto-González P, Martínez-Castillo JL, Fernández-Galván LM, et al. Epidemiology of sports-related injuries and associated risk factors in adolescent athletes: an injury surveillance study. Int J Environ Res Public Health. 2021; 18:4857. doi:10.3390/ijerph18094857.
8. John R, Dhillon MS, Syam K, et al. Epidemiology of knee injuries in Indian kabaddi players. Asian J Sports Med. 2017;8(1):e31670. doi:10.5812/asjsm.31670.

Creative Commons License

This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution–Non-commercial–No Derivatives 4.0 International (CC BY-NC-ND 4.0) License. This license permits users to copy and redistribute the material in any medium or format for non-commercial purposes only, provided that appropriate credit is given to the original author(s) and the source. No modifications, adaptations, or derivative works are permitted.

About the Author

Dr. Sangeeta is an Associate Professor of Physical Education at PG Government College for Women, Sector 14, Panchkula, Haryana, India. She has extensive experience in teaching, research, and sports education. Her academic interests include physical fitness, sports science, health promotion, and the holistic development of students through physical education.

© 2026 Dr. Sangeeta. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY NC ND).https://creativecommons.org/licenses/by/4.0/