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Original Article

Prevalence of Shin Splints in Recreational Football Players: An Observational Study

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Abstract

Background: Medial Tibial Stress Syndrome (MTSS), commonly known as shin splints, is an overuse injury causing pain along the inner border of the tibia. It commonly occurs in athletes and individuals performing repetitive high-impact activities such as running and jumping. MTSS results from repeated stress on the muscles and connective tissues of the lower leg. If left untreated, it may progress to stress fractures, highlighting the importance of early prevention and management.

Objective: To determine the prevalence, severity, and associated risk factors of shin splints among recreational football players aged 18–30 years.

Methods: A cross-sectional study was conducted among 110 recreational football players using a structured online questionnaire. Data on demographics, playing habits, footwear, and pain severity (VAS) were analyzed using IBM SPSS Statistics (IBM Corp., Armonk, NY, USA). Descriptive and inferential statistical analyses were conducted using the appropriate tests, and a p-value of less than 0.05 was considered statistically significant

Results: Shin pain was reported by 90.8% of participants, with 51% diagnosed with shin splints. Most players experienced moderate pain (VAS 5–7). Sports performance was affected occasionally in 61.1% and frequently in 25% of participants. Although 85.2% reported improvement with rest, only 14.8% sought medical consultation. Physiotherapy (62.6%) and self-care (21.5%) were commonly used management strategies. Significant risk factors included improper footwear, hard playing surfaces, and irregular training patterns ($p < 0.05$).

Conclusion: Shin splints are highly prevalent among recreational football players and significantly impact performance. Despite this, healthcare-seeking behavior remains low. Preventive strategies and awareness programs are essential to reduce injury burden.

Keywords: Shin splints, medial tibial stress syndrome, recreational football, prevalence, risk factors, physiotherapy

Introduction

Medial Tibial Stress Syndrome is an overuse injury causing pain along the inner border of the tibia (shin bone). It commonly occurs in runners, athletes, or people with sudden intense exercise. Repeated stress causes inflammation of muscles and tissues attached to the tibia. Symptoms include aching shin pain, tenderness, and mild swelling during activity.[1]

The discomfort typically arises due to repeated stress and strain on the lower leg, particularly the tissue that connects muscles to the shinbone (the tibial periosteum). The condition is especially common among athletes who regularly perform high-impact activities like running, jumping, or sports that require frequent stopping and starting.[2]

Rather than being a specific injury, shin splints are a symptom complex resulting from cumulative stress on the muscles, bones, and connective tissues of the lower leg. While usually not serious in the early stages, if left unmanaged, the repeated strain can lead to more severe problems such as stress fractures [2].

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If Medial Tibial Stress Syndrome is ignored, continuous stress on the tibia may progress to a Stress Fracture, which is a tiny crack in the bone caused by overuse. Stress fractures produce more severe and localized pain and need a longer recovery period. Early treatment is important and includes rest, avoiding high-impact activities, applying ice to reduce pain and inflammation,

performing stretching and strengthening exercises, wearing supportive footwear, and gradually returning to physical activity. With proper care and adequate rest, most individuals recover completely without permanent complications.[3]

This study focuses on what causes shin splints, how to prevent them, and why awareness matters especially for recreational football players. It offers practical tips to reduce injury risk, like doing proper warm-ups, building strength, and choosing the right footwear. The goal is to help players, coaches, and physiotherapists keep amateur athletes healthy, active, and free from long-term injuries.[3]

Methods

Study design

This was a cross-sectional study conducted among non-professional football players.

Study setting

The study was conducted at the Department of Physiotherapy, Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, a tertiary care teaching institute under Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, Haryana

Study duration

The study was carried out over a period of 11 months, from

August 2024 to June 2025.

Sample size

The sample size was calculated using the formula:

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

Assuming Z = 1.96 (95% confidence level), p = 0.093 (prevalence), and d = 0.05 (margin of error), the estimated sample size was 110. A total of 110 participants were recruited for the study.

Sampling method

Participants were recruited using a convenience sampling technique. Eligible participants were approached through social media platforms, and informed consent was obtained prior to participation.

Inclusion and exclusion criteria

Inclusion Criteria:

- Recreational football players
- Both males and females
- Age group: 18–30 years
- Individuals using internet-enabled devices

Exclusion Criteria:

- Non-internet users
- History of lower extremity fracture
- Presence of any neurological condition affecting the lower limbs

Data collection tool

A structured, self-administered questionnaire developed using Google Forms was used to collect data. The questionnaire consisted of demographic details, football-related exposure variables, and shin splint-related symptoms.

Tool description

Shin splints were identified based on participants' self-reported responses to the questionnaire. Although 90.8% of participants reported experiencing shin pain, only those meeting the study's predefined classification criteria were categorized as having shin splints, resulting in a prevalence of 51%. However, no clinical examination, imaging investigation, or validated diagnostic tool was used to confirm the diagnosis. Therefore, the findings should be interpreted with caution, as the reported prevalence may not reflect clinically confirmed cases of medial tibial stress syndrome (MTSS).

Validation

The questionnaire was reviewed for content validity by experts in physiotherapy and sports rehabilitation. Necessary modifications were made based on their suggestions to ensure clarity and relevance.

Study variables

Independent variables: Age, gender, body mass index (BMI), duration of playing, frequency of play per week, type of playing surface, and type of footwear used

Dependent variables: Presence of shin splint symptoms, pain intensity (VAS (visual analogue scale), frequency and duration of pain episodes and health care consultation.

Data collection procedure

Data were collected through an online Google Forms link shared via social media platforms. Participants completed the questionnaire voluntarily. The questionnaire included two sections:

- **Section A:** Demographic and football-related information including age, gender, height, weight (for BMI calculation), playing experience, frequency, duration, playing surface, and footwear.
- **Section B:** Assessment of shin splint symptoms including location and nature of pain, pain intensity using the Numerical Rating Scale (NRS), frequency and duration of symptoms, relief with rest, self-management strategies, and history of medical consultation.

  The investigator was available online to clarify any queries during the data collection process.

Ethical consideration

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Institutional Committee of Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, Haryana. Written informed consent was obtained from all participants prior to their inclusion in the study. Confidentiality and anonymity of participants were strictly maintained throughout the study. Participation was voluntary, and participants were free to

withdraw at any stage without any consequences.

Statistical analysis

Data were collected using a structured Google Forms questionnaire and exported to Microsoft Excel 2021 for data cleaning and coding. Statistical analysis was performed using SPSS version 2016 (IBM Corp., Armonk, NY, USA). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. The association between categorical variables was analyzed using the Chi-square test. A p-value of less than 0.05 was considered statistically significant.

Results

Section 1: prevalence and severity of Medial Tibial Stress Syndrome among recreational football players aged 18–30 years.

Table 1 presents the distribution of participants according to the presence of shin pain and shin splints among the study participants (N = 110). The findings revealed that the majority of participants, 100 (90.8%), reported the presence of shin pain, whereas only 10 (9.2%) participants did not experience shin pain. Regarding shin splints, slightly more than half of the participants, 56 (51.0%), were found to have shin splints, while 54 (49.0%) participants did not have shin splints. These findings indicate a high prevalence of shin pain among the participants, with approximately half of them experiencing shin splints.

Table 1: Distribution of Participants According to Shin Pain and Shin Splints Status

N = 110

S. N	Variable	Frequency n (%)
1	Shin Pain – Present	100 (90.8%)
2	Shin Pain – Absent	10 (9.2%)
3	Shin Splints – Present	56 (51.0%)
4	Shin Splints – Absent	54 (49.0%)

Table 2 presents the distribution of pain severity among participants diagnosed with shin splints (n = 56). The findings revealed that the majority of participants, 36 (64.3%), experienced moderate pain (VAS score 5–7).
Mild pain (VAS score 1–4) was reported by 12 (21.4%) participants, whereas severe pain (VAS score 8–10) was reported by 8 (14.3%) participants. These findings suggest that moderate pain was the predominant level of pain experienced by participants with shin splints.

Table 3 depicts the impact of shin pain on sports performance among the participants (N = 110). The findings revealed that the majority of participants, 67 (61.1%), reported that their performance was occasionally affected. Additionally, 27 (25.0%) participants indicated that their performance was frequently affected, whereas only 16 (14.5%) participants reported that their performance was not affected. These findings suggest that shin pain had a considerable impact on sports performance, affecting the majority of participants to varying degrees.

Table 2: Distribution of Pain Severity Among Participants with Shin Splints

N = 56

S. N	Pain Severity (VAS)	Frequency (%)
1	Mild (1–4)	12 (21.4%)
2	Moderate (5–7)	36 (64.3%)
3	Severe (8–10)	8 (14.3%)
Total		56 (100.0%)

Table 3: Effect on Performance

N = 110

S.N.	Impact on performance	n (%)
1	Frequently affected	27 (25.0%)
2	Occasionally affected	67 (61.1%)
3	Not affected	16 (14.5%)

Table 4 presents the management and health-seeking behaviors adopted by the participants (N = 110). The findings revealed that the majority of participants, 94 (85.5%), reported improvement in symptoms with rest, whereas 16 (14.5%) did not experience improvement. Regarding management practices, 69 (62.7%) participants underwent physiotherapy, while 24 (21.8%) relied solely on self-care measures. Furthermore, only 16 (14.5%) participants sought medical consultation. These findings indicate that although most participants experienced symptom relief with rest and physiotherapy, healthcare-seeking behavior in terms of medical consultation was relatively low.

Section 2: Aassociated risk factors contributing to the development of shin splints in recreational football players.

Table 5 depicts the association between selected risk factors and the occurrence of shin splints among recreational football players. The findings revealed a statistically significant association between the type of footwear and the presence of shin splints ($\chi^2 = 6.45$, $p = 0.011$), with 67.9% of participants using improper footwear exhibiting shin splints. A significant association was also observed between the type of playing surface and shin splints ($\chi^2 = 7.92$, $p = 0.005$), indicating that 73.2% of participants training on hard playing surfaces developed shin splints. Furthermore, training pattern was found to be significantly associated with shin splints ($\chi^2 = 19.49$, $p < 0.001$), with 78.6% of affected participants reporting irregular training patterns. These findings suggest that improper footwear, hard playingsurfaces, and irregular training patterns are significant risk factors contributing to the development of shin splints.

Table 4: Management and Health-Seeking Behaviour
N = 110

S.N.	Variable	n (%)
1	Improved with rest	94 (85.5%)
2	No improvement with rest	16 (14.5%)
3	Physiotherapy taken	69 (62.7%)
4	Self-care only	24 (21.8%)
5	Medical consultation	16 (14.5%)

medial tibial stress syndrome as activity-induced pain along the medial tibial border. Similar observations have been reported in earlier studies describing overuse injury patterns in athletes.

The study further revealed that **sports performance was affected in more than 80% of participants**, demonstrating the functional impact of shin splints. Pain was commonly experienced during or after activity, suggesting a cumulative overuse mechanism rather than acute injury.

"Improper footwear, hard playing surfaces, and irregular training were significantly associated with shin splints. However, these associations were identified through univariate analysis and should be interpreted with caution, as potential confounding variables were not controlled."

Table 5: Association of Risk Factors with Shin Splints (Chi-square test)

S.N.	Risk Factor	Category	Shin Splints Present n (%)	Shin Splints Absent n (%)	χ^2 Value	p-value
1	**Footwear**	Improper footwear	38 (75.0%)	12 (25.0%)	6.45	0.011*
		Proper footwear	18 (30.0%)	42 (70.0%)		
2	**Playing surface**	Hard surface	41 (73.2%)	15 (26.8%)	7.92	0.005*
		Soft surface	15 (27.8%)	39 (72.2%)		
3	**Training pattern**	Irregular training	44 (68.8%)	20 (31.2%)	19.49	<0.001*
		Regular training	12 (26.1%)	34 (73.9%)		

* Significant at $p < 0.05$

Discussion

This study included a total of **110 recreational football players**, aiming to analyse their anthropometric characteristics, training habits, pain experiences, and responses related to shin splints. the participants had a **mean age of 25 years (±2.9)**, representing a young adult group commonly engaged in recreational sports. The sample showed variability in anthropometric characteristics, which may influence biomechanical loading patterns and susceptibility to injury. The study population was **male-dominated (69%)**, consistent with general participation trends in recreational football, although female participation is gradually increasing.

A major finding of this study was the **high prevalence of shin splints (51%)**, along with a very high prevalence of **shin pain (90.8%)**, indicating a significant burden of lower limb overuse injuries among recreational football players. These findings are consistent with previous research by **Moen MH, Tol JL, Weir A, Steunebrink M, De Winter TC.).**, who reported a high incidence of injuries among amateur football players, emphasizing the need for preventive strategies.[14]

Most participants reported **moderate pain intensity (VAS 5–7)**, which aligns with the typical clinical presentation of

Significant associations were found between shin splints and **modifiable risk factors**, including:

- Improper footwear
- Hard playing surfaces
- Irregular training patterns

These findings are supported by previous literature. **Rodrigues et al. (2023)** highlighted that inappropriate training load and inadequate recovery significantly increase injury risk in football players. [10] Similarly, **Fujitaka et al. (2017)** reported a higher incidence of lower limb injuries on artificial turf and hard surfaces due to altered biomechanics. [11] Additionally, **Moen MH, Tol JL, Weir A, Steunebrink M, De Winter TC.)** noted that a majority of players perceive hard playing surfaces as contributing to discomfort and injury risk.[14]

Despite the high prevalence and impact, **healthcare-seeking behaviour was notably low (14.8%)**, which is a concerning finding. Many participants relied on rest, physiotherapy, or self-care rather than consulting medical professionals. This observation is consistent with findings by **Yıldız et al.**, who reported low rates of medical consultation among recreational athletes, possibly due to lack of awareness or underestimation of injury severity.[9]

LIMITATIONS: -

The assessment of shin splints relied solely on self-reported

questionnaire data, which may be subject to recall and reporting bias. The absence of clinical confirmation represents an important limitation of the study. Future research should incorporate standardized diagnostic criteria and clinical evaluation to improve diagnostic accuracy and validity.

Limitation of Risk Factor Analysis: - The association between shin splints and potential risk factors was evaluated using univariate Chi-square tests. Although improper footwear, hard playing surfaces, and irregular training patterns were found to be significantly associated with shin splints, no multivariate analysis was performed to control for potential confounding variables. Factors such as age, body mass index (BMI), duration of play, training intensity, and interrelationships among the identified risk factors may have influenced the observed associations. Therefore, the findings should not be interpreted as evidence of independent risk factors. Future studies should employ binary logistic regression or other multivariate statistical techniques to estimate adjusted odds ratios and determine the independent contribution of each risk factor. Participants were recruited exclusively through social media platforms using an online survey. This recruitment method may have introduced self-selection bias, as individuals who are younger, more digitally engaged, health-conscious, or currently experiencing musculoskeletal symptoms may have been more likely to participate. Consequently, the study sample may not be fully representative of the broader population of recreational football players. Therefore, the prevalence of shin splints reported in this study should be interpreted with caution and may not be generalizable to all recreational football players.

Strengths of the study

The present study possesses several notable strengths. First, it addresses a clinically relevant and practically important research question in the field of sports physiotherapy by investigating the prevalence and risk factors of medial tibial stress syndrome among recreational athletes. Second, the study employed an adequate sample size, and the sample size calculation was transparently reported using an appropriate statistical formula, thereby enhancing the methodological rigor of the research.

Furthermore, ethical standards were maintained throughout the study, with documented compliance with the Declaration of Helsinki, approval from the Institutional Ethics Committee, and the acquisition of informed consent from all participants. Another strength is the inclusion of a questionnaire validation process through expert review, which helped establish content validity and improve the credibility of the collected data.

Finally, the finding that only 14.8% of participants with symptoms sought medical consultation provides an important public health perspective, highlighting potential gaps in awareness, healthcare utilization, and injury management among recreational athletes. This observation has practical implications for the development of educational and preventive strategies within sports and exercise settings.

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Conflicts of interest

There are no conflicts of interest.

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