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A Study Exploring Prevalence Rate Of Lower Extremities Injury In Football Players Of Delhi

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Abstract
Background: Football, a popular sport in Delhi, poses a high risk of lower extremity injuries. These injuries can significantly affect player performance, team dynamics, and overall career longevity. Understanding the prevalence and nature of these injuries is crucial for developing targeted injury prevention and rehabilitation strategies.
Methods: A cross-sectional study was conducted on 50 football players in Delhi. Participants were selected via stratified random sampling. Data were collected using the Lower Extremity Functional Scale (LEFS), and demographic and anthropometric data were measured. Descriptive and inferential statistics were analyzed using SPSS version 20.
Results: The mean age of participants was 25.24 years, with a BMI of 26.55. The most common injuries involved the lower limbs, with an 83.32% prevalence among professional players and 80.49% among amateurs. Upper extremity injuries followed, while head, face, and neck injuries were rare. Normality tests revealed significant deviations in variables like age, BMI, and weight, indicating the need for non-parametric analyses. Frequency distributions of LEFS responses showed moderate to high functionality among participants.
Conclusion: The study highlights a high prevalence of lower extremity injuries among football players in Delhi, necessitating the development of region-specific injury prevention protocols. Future studies should explore longitudinal designs to better understand injury recurrence and incorporate biomechanical assessments to improve injury prevention strategies.

Keywords: Football, lower extremity injuries, Delhi, prevalence, injury prevention, rehabilitation.

Introduction

Football is a globally celebrated sport, symbolizing unity, passion, and athleticism. In Delhi, its popularity has grown tremendously, with community-driven participation extending to organized leagues. While this growth is commendable, the physical toll on players warrants significant attention (1). The occurrence rate for adult professional and amateur football players was greater during a match than during training. Therefore, in study, the occurrence during a match was 7.8 times higher for professional footballers and 5.4 times higher for amateurs. Additionally, in the case of meta-analyses, the occurrence was 12.2 and 9.7 times higher, respectively. Similar patterns were observed for female football players and youth athletes, with rates 6.4 and 5.8 times higher, respectively.

The lower extremity is the most vulnerable region to injury in football, whether it be in professional male and female players or in young and adult amateurs. According to our systematic review, the prevalence of lower extremity injuries in male professional football players was 83.32% (64.2–94%), while in amateurs, it was 80.49% (69.8–91.0%). These figures are similar to the data reported by previous studies, which showed injury rates between 60 and 91% for the lower extremity. Junge et al. reported a lower extremity injury prevalence of 70%, which is lower than the overall prevalence found in young and adult English elite footballers (85%). Lopez et al. found that the incidence rate of lower extremity injuries in adult male football players was 6.8 injuries per 1000 hours of exposure. Most studies also found that upper extremity injuries were the second most common, followed by injuries to the head, face, and neck. In our analysis, we found that the prevalence of head/face/neck injuries in professional footballers was 3.99% (1–12.5%), while in amateur footballers, it was 4.32% (0.4–8.0%). Fuller et al. reported an incidence of head/face/neck injuries of 3.5 (2.4–4.6) per 1000 hours of exposure for men and 4.1 (2.1–6.1) for women, specifically in cases of time-wasting injuries. They also suggested that female football players may be at a higher risk for head/neck injuries due to factors such as greater peak angular acceleration and neck segment displacement when heading the ball, lower isometric neck strength, neck circumference, and head mass, which may result in lower levels of head-neck stiffness. The most common player actions that can lead to head or neck injuries involve the upper extremity or the head, although these challenges are generally considered to be fair and in line with the rules of the game (5,6).

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Delhi's grassroots football scene has evolved into a dynamic landscape, but gaps in knowledge about localized injury patterns persist. By understanding the prevalence and types of injuries, this study aims to empower players, coaches, and healthcare professionals with evidence-based insights to mitigate risks and improve outcomes (7). The need for this study emanates from several compelling factors, each underscoring the significance of addressing this pervasive issue; athlete well-being and health, community impact, data gaps in Delhi-specific context, evidence-based interventions, sporting infrastructure development, and educational purpose.

Methodology

Study Design

This was a cross-sectional study aimed at identifying the prevalence of lower extremity injuries among football players in Delhi.

Sample and Recruitment

A stratified random sampling method was employed to recruit 50 football players actively participating in organized football leagues or community events. Players were drawn from diverse age groups and playing levels.

Inclusion and Exclusion Criteria

Inclusion criteria:

a) Above 18 years,
b) actively participating football players
c) Players who play regular from last 2 months

Exclusion criteria:

a) Players with pre-existing medical conditions
b) who were unwilling to participate
c) Any recent traumatic injury or history
d) Any recent surgical history

Data Collection Instruments

The **Lower Extremity Functional Scale (LEFS)** was used to assess functional limitations. Demographic and anthropometric data (e.g., age, height, weight, BMI, lower limb length, and Q-angle) were recorded.

Procedure

Participants were recruited through social media platforms, where detailed information about the study, including its purpose, significance, and procedures, was shared. Individuals interested in participating were provided with a link to an online consent form. Consent was obtained electronically, ensuring that participants understood the study's requirements and voluntarily agreed to be part of it. Once consent was secured, participants received a Google Forms link containing the Lower Extremity Functional Scale (LEFS) questionnaire along with comprehensive instructions for accurate and honest reporting. The instructions emphasized the importance of selecting responses that best represented their current functional status without overestimation or underestimation.

The LEFS is a validated, self-reported tool designed to measure the functional status of individuals with lower extremity musculoskeletal conditions. It consists of 20 items that assess various daily activities, such as walking, climbing stairs, and recreational activities, with each item scored on a scale from 0 (extreme difficulty or unable to perform) to 4 (no difficulty). The total score ranges from 0 to 80, with higher scores indicating better functional ability. The LEFS is recognized for its reliability, ease of administration, and sensitivity to changes in lower extremity function over time.
After completing the questionnaire, the responses were securely collected and stored for analysis. Data were analyzed using Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics, including mean and standard deviation, were calculated to summarize participant characteristics and scores. Inferential statistical methods were employed to assess the relationships between variables and test hypotheses. Results were interpreted with a significance level of $p<0.05$, ensuring robust and reliable conclusions. Throughout the study, data confidentiality and participant privacy were strictly maintained.

Statistical Analysis

Descriptive statistics summarized demographic and functional data. Inferential tests assessed relationships between injury patterns and demographic variables.

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Results

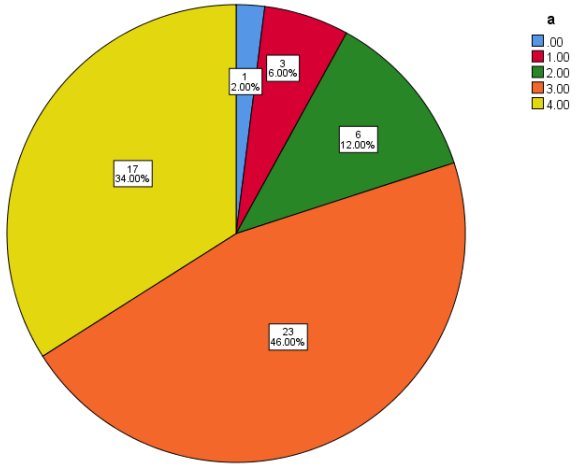
Demographics

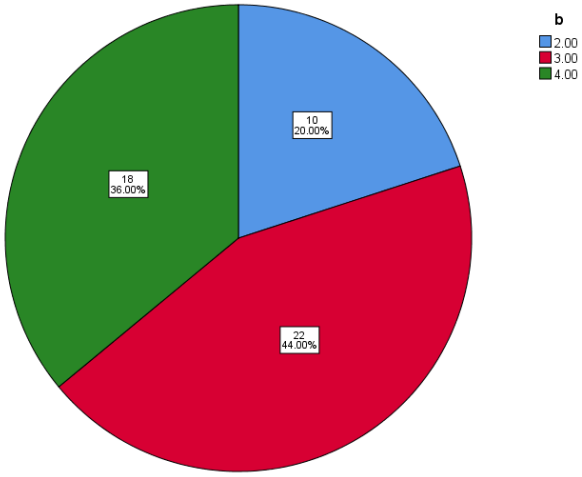
The sample (n=50) had an average age of 25.24 years (SD = 3.72), mean BMI of 26.55 (SD = 5.89), and a mean Q-angle of 15.99° (SD = 1.26). Descriptive data is been added in table 1. The prevalence of lower extremity injuries was high, with the following distribution: Ankle Sprains: 34%, Hamstring Strains: 28%, Knee Injuries: 22%. Results are been tabulated in table 2.

Table 1: Demographic dimensions of the participants recruited for the study

	Minimum	Maximum	Mean	Std. Deviation
Age	19.00	34.00	25.2400	3.71736
Height	123.60	198.34	170.7900	19.41548
Weight	53.10	98.23	77.8296	11.24886
BMI	17.86	52.68	26.5483	5.89229
Lower limb length right	89.00	99.00	94.4220	2.72669
Lower limb length left	89.00	99.00	94.7520	2.77262
Q angle	14.00	18.00	15.9900	1.26366

Figure 1 and 2: These pie charts depicting the responses given by participants for questions





Functional Limitations

LEFS scores indicated that the majority of participants experienced moderate to significant difficulty in high-impact activities such as running and jumping.

Discussion

The study findings align with global trends in football injuries. Lower extremity injuries, particularly in the ankle, hamstring, and knee, are consistent with patterns observed in Forsythe et al. and Lopez et al., who reported similar findings among professional athletes (10,11).

In Delhi, specific factors such as playing conditions, limited access to structured rehabilitation, and lack of preventive training programs may exacerbate these risks. Amateur players often face extended recovery times due to inadequate medical support, heightening the likelihood of re-injury (12).
Table 1 summarizes the levels of difficulty experienced by individuals in various daily, recreational, and physical activities. The majority reported "a little bit" or "no difficulty" in usual work, housework, or hobbies, with 43.4% and 41.5% in these categories, respectively. Activities like getting into or out of the bath showed minimal difficulty for 92.5%, while moderate difficulty was more pronounced in tasks such as putting on shoes or socks (56.6%), squatting (35.8%), and lifting objects (62.3%). Light activities and car entry/exit predominantly elicited moderate to "quite a bit" of difficulty. For more strenuous tasks, such as walking 2 blocks, going upstairs, or standing for an hour, a significant proportion faced moderate (34-67.9%) or "quite a bit" (22.6%) difficulty. Sitting for an hour posed a notable challenge, with 64.2% indicating "quite a bit" of difficulty. Running activities were particularly challenging, with over half reporting "extreme" or "quite a bit" of difficulty on uneven ground (94.3%) and during sharp turns (84.9%). Hopping also proved highly difficult, with 92.5% encountering "extreme" or "quite a bit" of difficulty. Lastly, rolling over in bed presented moderate difficulty for 35.8%, while 58.5% reported "a little bit" of difficulty.
The observed functional limitations further emphasize the need for targeted interventions. While many participants recognized the value of warm-up exercises, inconsistencies in implementation highlight gaps in awareness and practice (13).

Comparison with Previous Studies
This study's findings are consistent with Walden et al., who documented high injury rates in European leagues. However, differences in infrastructure, environmental conditions, and training regimens contribute to unique injury dynamics in Delhi (14).

Strengths
The study provides region-specific insights that are directly applicable to Delhi's football ecosystem (15). The use of LEFS ensured reliable measurement of functional limitations (16). Stratified sampling captured a wide range of players, enhancing the generalizability within Delhi (17).

Limitations
The findings are limited to Delhi and may not generalize to other regions with varying conditions. Cross-Sectional Design approach limits causal inferences and prevents tracking of injury progression. Reliance on self-reporting introduces the potential for recall bias, affecting accuracy.

Future Recommendations:
In future, researcher should Include participants from other regions to identify comparative injury patterns. Follow players over time to monitor injury recurrence and assess intervention efficacy. Evaluation of environmental and equipment-related factors influencing injury mechanisms should be done. Develop tailored warm-up and conditioning programs for amateur and professional players.

Conclusion
This study highlights the significant prevalence of lower extremity injuries among football players in Delhi, with ankle, hamstring, and knee injuries being the most common. Findings underscore the need for region-specific preventive measures and robust rehabilitation strategies to enhance player safety and performance.

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