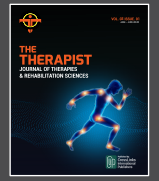




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## Original Article



## Sports Injury and Sport Safety Practices among Undergraduate Sports Participants

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## ABSTRACT

Low back pain (LBP) is one of the most prevalent musculoskeletal disorders worldwide, significantly affecting women's daily activities, functional capacity, and quality of life. Occupational status may play an important role in influencing pain perception and disability outcomes. **Objectives:** To compare the scores of the VAS and OID between working and non-working women with low back pain. **Methods:** This study involved 356 participants, particularly women with LBP, of whom 178 were employed and 178 were unemployed. Subjects were included if they were women with non-specific LBP and met the required age range and employment status criteria. Exclusion criteria were being male, having a particular medical condition, deformities, or having undergone recent surgery. The subjects were recruited from offices and different homes in Karachi. All the participants were informed and provided written consent before participating in the study. The institutional review board or ethics committee gave the study ethical approval. **Results:** The average age of the participants was 31.16 years for both the working and the non-working women. Two groups did not differ significantly ( $p=0.826>0.05$ ) in terms of VAS score. The ODI score, however, proved that there was a statistically significant difference ( $p=0.034<0.05$ ), indicating that there was more functional restriction in one group. **Conclusions:** The study concluded that both working and non-working women experience functional limitations and pain due to low back pain, with significant differences in disability levels measured by ODI.

## INTRODUCTION

Sports are competitive team or individual physical activities or games that are organized with defined rules and goals. They may be played at amateur or professional levels and include a wide variety, such as individual sports like tennis, badminton, and golf, as well as team sports like basketball, cricket, football, and volleyball. Participation in sports promotes exercise, improves cardiovascular health, muscle strength, flexibility, and overall fitness. Beyond physical health, sports participation enhances mental wellness by reducing stress, anxiety, and depression through the release of endorphins, while also fostering cooperation, communication, teamwork, discipline, and

time management skills [1, 2]. Engagement in sports offers extensive benefits for students. Contrary to the belief that sports may distract from academics, research shows that active participation positively influences academic performance. Students engaged in sports demonstrate improved focus, problem-solving skills, and cognitive function, along with better time management between athletic and academic responsibilities. Such activities contribute not only to improved academic achievement but also to self-control, cooperation, and resilience [3]. In addition, sports foster personal development by improving self-confidence, teamwork, leadership, social skills,



discipline, brain power, and emotional regulation. They also provide career opportunities for students who pursue athletics professionally or transition into roles such as coaches, referees, or trainers [4]. Despite the wide-ranging benefits, participation in sports carries the risk of injuries. Sports injuries occur due to accidents, poor training practices, or failure to use protective equipment. They can be sudden or develop over time and are particularly common among individuals who neglect warm-up and cool-down routines or engage in high-intensity contact sports. Common sports injuries include fractures, cartilage tears, concussions, dislocations, tendinitis, sprains, and strains [5]. Such injuries can affect academic performance, cause long-term health issues, and even hinder career opportunities for student-athletes [6]. The importance of adopting safety practices in sports has therefore gained increasing attention. Adolescents and young adults, who are at a crucial stage of lifestyle formation, require education and awareness about safe participation. Recognizing risks, adhering to rules, and using appropriate safety gear such as helmets, shin guards, protective eyewear, and knee braces are critical preventive strategies [7, 8]. Warm-up and cool-down routines are equally essential to prevent musculoskeletal injuries and aid recovery. Sports safety gear helps protect against both minor and severe injuries, ensuring continuity in participation while safeguarding long-term health [9]. Essential equipment, such as helmets, mouthguards, protective goggles, shin guards, and elbow or knee pads, plays a vital role in minimizing risks, while emerging tools such as kinesiotape provide additional support and stability for athletes [10, 11]. Despite awareness of warm-up and cool-down practices, adherence to safety measures and use of protective equipment remains low. Most previous studies focus on professional athletes, leaving a gap in understanding injury patterns and safety practices among undergraduate participants. Assessing these factors is clinically significant, as it can guide universities in implementing preventive strategies, promoting safe sports participation, and reducing the risk of long-term. Given the increasing participation of undergraduate students in various sports and the potential risk of injury, it is important to evaluate their awareness and practices related to sports safety.

This study aims to focus on sports injuries and safety practices among undergraduate sports participants in Karachi, providing insights into existing gaps and highlighting the need for preventive measures and education.

## METHODS

This study was a cross-sectional design conducted for six months in different universities of Karachi with a sample size of 377 participants, selected through a convenience sampling technique. The study duration was June to November 2024. Undergraduate students aged 18–25 years who had been actively participating in university-level sports for at least the past year and were willing to provide consent were included. Students outside this age range, not engaged in regular sports, with pre-existing major musculoskeletal disorders, or unwilling to participate, were excluded. Data collection was carried out using a self-administered questionnaire distributed to students, which they completed and returned; informed consent was obtained before participation Kitayama et al. [12]. Confidentiality was maintained by coding the data. The expected budget for the study was 15,000 Rupees. Ethical approval was obtained from the Institutional Ethical Review Committee of Isra University, Karachi Campus, and all participants were volunteers.

## RESULTS

The study included 377 participants, with a higher proportion of male (59.2%) compared to female (40.8%). The majority of students (65.0%) were aged between 22 and 25 years, while 35.0% were in the 18–21 years' age group, reflecting the typical age distribution of university students. Regarding academic year, the highest representation was from third-year students (22.5%), followed by fifth year (21.5%), and second year (19.9%). These demographic characteristics provided a balanced sample across different age groups and study levels (Table 1).

**Table 1:** Demographic Characteristics of Participants

Variables	Category	Frequency (%)
Gender	Male	223 (59.2%)
	Female	154 (40.8%)
Age (Years)	18–21	132 (35.0%)
	22–25	245 (65.0%)
Study YearMale	1 <sup>st</sup> Year	66 (17.5%)
	2 <sup>nd</sup> Year	75 (19.9%)
	3 <sup>rd</sup> Year	85 (22.5%)
	4 <sup>th</sup> Year	70 (18.6%)
	5 <sup>th</sup> Year	81 (21.5%)

A wide range of sports was reported by participants, with cricket (45.6%) being the most frequently played, followed by football (19.1%) and badminton (14.9%). Less commonly played sports included throwball (7.4%), volleyball (4.0%), and other activities such as athletics and swimming (9.0%). These results highlight the predominance of team-based field sports among university students, particularly cricket and football, which accounted for nearly two-thirds of all

participation (Table 2).

**Table 2:** Sports Participation of Participants

Type of Sport	Frequency (%)
Cricket	172 (45.6%)
Football	72 (19.1%)
Throwball	28 (7.4%)
Volleyball	15 (4.0%)
Badminton	56 (14.9%)
Others	34 (9.0%)

Out of the 377 participants, 193 (51.2%) reported experiencing at least one sports-related injury. The most frequently reported injuries were hand (20.7%), ankle (19.7%), and muscle injuries (19.2%), followed by shoulder (15.0%) and knee injuries (12.4%). Less common injuries included elbow (5.7%), fractures (4.7%), and head injuries (2.6%). These findings suggest that extremities, particularly hands and ankles, are the most vulnerable body regions during sporting activities (Table 3).

**Table 3:** Sports-Related Injuries Among Participants

Type of Injury	Frequency (%) of Injured (n=193)
Shoulder	29 (15.0%)
Elbow	11 (5.7%)
Hand	40 (20.7%)
Knee	24 (12.4%)
Ankle	38 (19.7%)
Muscles	37 (19.2%)
Head Injury	5 (2.6%)
Fractures	9 (4.7%)

The majority of participants (59.9%) reported not using any safety equipment during sports activities. Among those who did, helmets (17.0%) and knee pads (9.0%) were the most commonly used, followed by gloves (6.4%) and elbow pads (3.7%). Mouth guards (1.9%) and shin guards (2.1%) were used only rarely. These findings indicate a concerning lack of protective measures among university athletes, potentially increasing their risk of injuries (Table 4).

**Table 4:** Use of Safety Equipment During Sports

Safety Equipment	Frequency (%)
Helmet	64 (17.0%)
Mouth Guard	7 (1.9%)
Knee Pads	34 (9.0%)
Elbow Pads	14 (3.7%)
Shin Guards	8 (2.1%)
Gloves	24 (6.4%)
Nothing at All	226 (59.9%)

The majority of participants reported performing warm-up (70.8%) and cool-down (61.5%) exercises during sports. However, a notable proportion of students (29.2% and 38.5%, respectively) admitted to neglecting these

practices. Since warm-up and cool-down routines are essential for preventing injuries and enhancing recovery, these results highlight a partial adherence to safe sporting practices, with room for improvement (Table 5).

**Table 5:** Warm-up and Cool-down Practices of Participants

Activity	Yes, n (%)	No, n (%)
Warm-up	267 (70.8%)	110 (29.2%)
Cool-down	232 (61.5%)	145 (38.5%)

## DISCUSSION

The present study explored sports-related injuries and safety practices among undergraduate sports participants in Karachi. A total of 377 students aged 18–25 years were included, with males representing a larger proportion (59.2%) compared to females (40.8%). This gender distribution is consistent with previous studies reporting higher male participation in sports, particularly in competitive activities such as cricket and football [13]. The age and study year distribution also reflected typical undergraduate populations, supporting the representativeness of the sample. In terms of sports participation, cricket emerged as the most commonly played sport (45.6%), followed by football (19.1%) and badminton (14.9%). This finding aligns with earlier research reporting cricket and football as the most popular sports among South Asian university students [14]. The predominance of these sports may explain the relatively high rate of musculoskeletal injuries observed in the current study, as both involve frequent sprinting, tackling, and high physical contact. The prevalence of sports-related injuries in the present study was 51.2%, with hand (20.7%), ankle (19.7%), and muscle (19.2%) injuries being the most frequently reported. These results correspond with earlier studies on medical and high school students, which documented injury rates between 30% and 50% per season, with sprains and strains being the most common injuries [11, 13]. Similarly, ankle and knee injuries have consistently been reported as high-risk areas in youth and collegiate athletes, indicating a shared pattern across different age groups and sports disciplines [14, 15]. Compared to the 38% prevalence of sports injuries among medical students reported previously [13], the current study demonstrates an even greater injury burden among undergraduate athletes, likely reflecting their more frequent engagement in competitive sports. Safety practices in the present study revealed concerning trends. More than half of the participants (59.9%) reported not using any protective equipment during sports, while only 41.6% used gear such as helmets (17.0%) or knee pads (9.0%). This is consistent with earlier findings that inadequate safety practices are a major contributor to injury risk [7, 9]. The lack of equipment use underscores the

urgent need for intervention, as universities with comprehensive safety protocols and training programs have been shown to report significantly lower injury rates compared to those without structured safety measures [16, 17]. On a more positive note, warm-up and cool-down practices were widely adopted, with 70.8% of participants performing warm-ups and 61.5% engaging in cool-down exercises. Previous research has highlighted the importance of such practices in reducing sports injuries, and inadequate routines were linked to nearly 60% of injuries among medical students [18]. Other studies have similarly emphasized that structured warm-up and cool-down routines significantly reduce the risk of musculoskeletal injuries in athletes across various sports [19, 10]. The relatively higher compliance with warm-up and cool-down in the current study reflects some awareness of injury prevention; however, the high injury prevalence despite these practices suggests that additional protective strategies, including equipment use and structured safety education, are essential. When compared with previous studies highlighting the role of sports safety awareness in influencing safety education intentions among adolescents [21], the findings of the current study suggest a different challenge. While student-athletes in Karachi appeared aware of some preventive practices, their actual compliance with protective equipment use remained low. This indicates that awareness alone may not be sufficient to drive behavioral change; institutional efforts, policy reinforcement, and structured education programs are needed to translate awareness into consistent safe practices. Overall, both previous and current studies converge on the conclusion that sports-related injuries remain highly prevalent, and effective safety interventions are underutilized. The findings of the present study call for universities in Pakistan to develop and enforce safety protocols, improve access to protective equipment, and integrate injury prevention education into sports programs to ensure the well-being of student-athletes. This study has limited demographics and focuses only on certain sports, excluding factors like ethnicity, past injuries, and socioeconomic status, which could provide valuable insights. Participants with severe injuries and reasons for not using safety equipment were not explored. Expanding data collection on injury types, frequency, routines, and equipment, along with larger, more diverse samples, and assessing psychological and academic impacts, would offer a deeper understanding of athlete safety.

## CONCLUSIONS

The conclusion of the study highlights the pressing need for improved safety practices among undergraduate sports participants. Results show a significant number of

students experiencing sports-related injuries; there is a concerning lack of use of protective equipment during sports activities. The majority of participants reported engaging in warm-up and cool-down routines, indicating an awareness of the importance of injury prevention. However, the relatively high incidence of injuries, especially in popular sports like cricket and football, underscores the need for universities to implement more effective safety protocols and education on injury prevention. Ultimately, the findings call for a collaborative effort to enhance the safety environment for student-athletes, ensuring their health and well-being while balancing academic and athletic commitments.

## Authors Contribution

Conceptualization: KB

Methodology: MTK, MJB

Formal analysis: AF

Writing review and editing: RSA

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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