ORIGINAL ARTICLE

FREQUENCIES OF SPORT-SPECIFIC INJURIES IN PESHAWAR'S SPORTS COMPLEX

Zulekha Nasar[1], Muhammad Adnan[2], Maria Zia[3], Hafiza Sara Qundeel[4], Abdullah[5], Mujeeb Rahman[6]

ABSTRACT

Introduction: Athletes are more vulnerable to sports injuries, that's why International Sporting Agencies are very concerned about the health and injury prevention of athletes. The key to delivering crucial epidemiological data is a standardized estimation of sports injuries. It also includes the nature of the injury and its contributing factors. At the national team level, Asia has a greater injury rate than Europe. It is important to know the frequency of injuries in sports like football, hockey, karate, cricket, table tennis, badminton and volleyball as they are common sports within Pakistan.

Material & Methods: This was a cross-sectional study involving 313 athletes (aged 10 to 30) from the Peshawar Sports Complex. The convenience sampling strategy was used to collect data. A questionnaire that has been self-modified was used. SPSS version 20 was used to analyze the data.

Results: Overall, 65.2 percent of injuries were reported; football (20.1%) had the largest proportion of injuries, followed by hockey (17.2%) and cricket (14.2%). Lower limb injuries accounted for 36.1 percent of the total. A total of 22.7 percent of the upper limb injuries were recorded. Shoulder injuries were the most common among all players (12.8 percent), regardless of the game.

Conclusion: Football, followed by hockey and cricket, had the highest proportion of injuries. Lower limb injuries were more common than upper limb injuries combined, while the shoulder had the largest proportion of injuries overall.

Key Words: ankle injuries, hockey, shoulder injuries, sports injuries

Authors' Declaration: The authors declared no conflict of interest and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors contributed substantially to the planning of research, question designing, data collection, data analysis and write-up of the article.

Authors' Affiliation

[1]Physiotherapist, South Worwickshire NHS Foundation Trust
[2]Director Physiotherapy and Rehabilitation , Department of Health Sciences City University
[3]Sports physiotherapist, Czech Rehabilitation Hospital
[4]Lecturer, Allied Health Sciences, Mehboob Medical Institute
[5]PhD. Scholar, Chulalongkorn University (PhD)
[6]Assistant Professor, Khyber Medical University

Corresponding Author

Muhammad Adnan
Director Physiotherapy and Rehabilitation,
Department of Health Sciences City University
Email: adnan.kmu.445@gmail.com

This article may be cited as: Nasar Z, Adnan M, Zia M, Qundeel HS, Abdullah, Rahman M. Frequencies of sport-specific injuries in Peshawar's sports complex. Rehman J Health Sci. 2024;6(1). 49-55

Submitted: Nov 28, 2022 Revisions Submitted: May 24, 2024 Accepted: June 30, 2024

INTRODUCTION

Regular sports and physical activities can promote health, but they are also one of the most common causes of injury.[1] Sports injuries are linked with the type of sport and amount of engagement. Due to the psychological stress of being dropping from the team, athletes engage in intensive training sessions in order to qualify for selection to compete, which can lead to injury.[2]

Sports injuries are on par with violence, work injuries, and traffic accidents in terms of severity. Even sports-related injuries are twice as common as traffic accidents.[3] Loss of play, pain, and financial strain also are some of the important factors of sports injuries, while physical injuries leading to disability, reduction of movement, and functional impairment, fractures, dropping out from sports participation, emotional and psychological issues are other significant consequences of severe sports injuries.[4] Injury to key players in high-profile and commercial sports, such as football teams, can result in game-changing defeats and significant financial loss.[5]

Except for athletics, volleyball, handball, ice hockey, rugby, karate, and football, the available data on research on injury surveillance in single sports tournaments is limited, and the list is considerably shorter for multisport.[6]

Shoulder injuries are a major risk in almost all throwing sports, mostly due to overuse.[7] Throwers' shoulder problems are more common because of shoulder joint internal rotation weakness, scapular dyskinesia, and greater lateral rotation.[8] The "Oslo Sports Trauma Research Centre" (OSTRC) studied 45 handball teams throughout a seven-month season, finding that 17% of the intervention group and 23% of the control group sustained injuries.[9]

The lower extremity, particularly the knee joint, is constantly stressed throughout normal activities, but this load is amplified when participating in sports.[10] Knee injuries are common in skiing and soccer, with 26 percent and 35 percent, respectively.[11] When the knee injury of active members of regional sports clubs' athletes were compared, American footballers (1.46) and squash athletes (2.39) had high incidence rates.[12]

Groin pain is frequent in football players, having an impact on the team and individual performance.[13] In football, injury rates are higher during competition than during training.[14] Furthermore, unilateral injuries are more common on the dominant side than on the non-dominant side.[15] The most common cause of groin pain in football players is the adductor musculature, followed by the iliopsoas and pelvis.[16] Furthermore, regardless of gender, the ankle is the most usually injured body area in soccer.[17]

Ice hockey players are at a high risk of injury due to the high amount of contact they make while playing.[18] According to a study during the 2010 Olympics, ice hockey had the highest injury rate (13-35%), as well as the highest rate of player-to-player contact trauma.[19] Knee injuries accounted for 13.5 percent of all injuries recorded during games, while acromioclavicular (AC) joint injuries accounted for 8.9 percent.[20] Over nine years, 633 injuries were registered in 1326 games in the junior ice hockey tournament. The most often wounded sites were found to be the head and face.[21]

Judo is a sport with over 20 million active participants; mostly reported damaged areas in Judo are the upper extremity shoulder and lower extremity knee.[22] Ankle injuries are the most common reported injuries in badminton.[23]

Football, handball, athletics, hockey, BMX, mountain biking, weightlifting, taekwondo, and badminton had the highest proportion of injuries, in the London Olympics (2012) where 1361 among 10568 athletes who participated got injured; while shooting, track cycling, canoe slalom, archery, equestrian, and sprint had the lowest.[24] In the Rio de Janeiro 2016 Olympic Summer Games, 11274 athletes participated from 207 countries, 1101 injuries were reported; Cycling and BMX had the highest injury rate, followed by boxing, motorbike cycling, taekwondo, water polo, and rugby; nevertheless, diving, open water marathon, sailing, and canoe slalom, equestrian, and synchronized swimming had the lowest injury rate.[25]

In Pakistan, there is a lack of comprehensive studies on sports injuries, with only one known study reporting football as the most common sport of injury.[26] At the national team level, Asia experiences a higher injury rate compared to Europe.[27] This study aims to investigate the frequency of overall and sport-specific injuries at the Peshawar Sports Complex, aiming to aid policymakers in addressing a key factor

contributing to players' and teams' poor performance nationally and internationally. Understanding the types, frequency, and severity of injuries is crucial for injury prevention and improving athletic performance.

MATERIAL AND METHODS

From January to April 2018, a cross-sectional study was carried out in Peshawar's Sports Complex. Based on sports-specific injuries, the study comprised athletes (ages 10 to 30). A questionnaire that has been self-modified was used. In order to validate the questionnaire, 5 athletes took part in a pilot study. Following the pilot's evaluation, the study's 16 questions were finalized. There were three sections to this questionnaire. The athletes' demographics were listed in the first part, which included their name, age, weight, and height. The athletes' athletic careers were described in detail in the second section. The final portion covered the history of athletic injury. The severity of the injury was determined using the following criteria: 1) time loss of 1-7 days was considered a mild injury, 2) time loss of 7-28 days was considered moderate injury, and 3) time loss of >28 days was considered a severe injury. After an injury, performance was divided into four categories: 1) same level, 2) somewhat reduced, 3) severely reduced, and 4) no longer practicing. The number of hours per day and days per week that the athletes practiced was used to determine their consistency. Players were divided into five levels: 1) local, 2) regional, 3) provincial, 4) national, and 5) international. The study included players who were willing to participate, were members of the sports complex and were trained to compete in any game at any level of competition. Any systemic disease (such as rheumatoid arthritis, asthma, cardiovascular disease, or diabetes mellitus), as well as injuries incurred in activities other than playing games or training sessions, were excluded. Athletes' injuries were classified based on the type of game they were playing and the part of their bodies that had been partially or fully harmed during an athletic event. Epi info was used to compute the sample size for this study. The data was collected using convenience sampling as a sample strategy due to some to limited availability of the athletes. The data was analyzed with SPSS 20.

RESULTS

Data was collected from 313 athletes out of which only 3 were females. As a whole Injuries were recorded in 65.2 percent of cases (Table 1). Karate had the highest percentage of head and neck injuries (4%) while volleyball had the highest percentage of facial injuries (5.3%). Table tennis had the highest percentage of shoulder injuries (30.5%), followed by cricket 30 percent and volleyball 15.8 percent, respectively. Surprisingly, football had the highest rate of elbow injuries (10.7%). Volleyball had 21.1 percent of wrist injuries, followed by hockey 14.8 percent, and cricket 12 percent. Volleyball had 5.3 percent of groin injuries, cricket had 2.0 percent, and hockey had 1.9 percent. Karate had 28 percent of the thigh injuries, squash had 20.7 percent, and football had 10.7 percent. Hockey was responsible for 24.1 percent of all knee injuries, followed by football 14.3 percent and squash 10.3 percent. Athletics reported the most shin injuries (25%), followed by badminton (13.9%) and karate 12 percent. Football had 16.1 percent ankle and foot injuries, volleyball had 10.5 percent, and hockey had 9.3 percent. Spine injuries were the most common in athletics, accounting for 20.8 percent, 10.5 percent in volleyball, and 6% in cricket (Table 2).

Football had the highest percentage of injuries (20.1%), followed by hockey (17.2%) and cricket (14.2%). Squash and karate both had an injury rate of 8.8%. A total of 8.3 percent of badminton players were injured. Injury rates among athletics were 7.8 percent. Volleyball injuries accounted for 7.4 percent of all reported injuries. Table tennis injuries accounted for 5.4 percent of all reported injuries (Figure 1).

The total number of lower limb injuries was 36.1 percent. The total number of upper limb injuries was 22.7 percent. The shoulder was the most commonly damaged body part, accounting for 12.8 percent of all injuries. This is most likely owing to the fact that the majority of the games in this study involved active and continuous shoulder use. See table 1 for the Injuries in athletes and table 2 for the area of injury in each sport. For injuries rate if different sport see Figure 1.

DISCUSSION

Results showed that common injuries that occur during football are ankle injuries. According to Kai-Ming Chan et al., 80 percent of football injuries occur in the lower extremities, with

ankle injuries being the most common.[28] This is likely due to the fact that the injury defined in this study and the study conducted by Kai-Ming Chan et al. were nearly identical; they defined injury as occurring during a game or training session and resulting in the player ceasing to play the next day; they did not count the first day as time loss, whereas this study did.

Cristiano Eirale et al. found that the thigh was the most common site of injuries in a study of professional football players in Qatar.[27] According to Majewski M et al. soccer has the highest proportion of knee injuries.[12] However, the study in question was just gathering data on knee injuries in various sports; they did not include any injuries other than knee injuries in their analysis.

According to a comprehensive analysis of the prevalence of ankle injuries in 70 different sports. Volleyball was the third most common sport in which an ankle injury occurred. Hockey was ranked 8th, while badminton was ranked 18th. Cricket came in at number 28th on the list, while football came in at number 30th. Squash came in at number 38th on the list. Volleyball was the most common sport of injury for ankle injuries, whereas, in this study, football was the most common sport of injury for ankle injuries, ranking 30th on the list of the mentioned systemic review.[28]

In hockey, the most common injuries were knee injuries. In contrast, Markku Tuominen et al. found that face injuries were the most common injury in a nine-year study of world junior ice hockey.[21]

Football had the highest percentage of injuries in this survey, followed by hockey and cricket. The shoulder is the most common anatomical site for injury. According to a study conducted in Pakistan, the ankle and knee are the most commonly injured anatomical locations. Football, on the other hand, has the greatest injuries of all the sports.[26] Taekwondo, BMX, football, and handball were found to be the most injury-prone sports in a study conducted at the London Olympics.[24] The disparity in results could also be due to the fact that these studies included players who were all competing at the highest levels, but this contradicts the fact that in this study, the proportion of players who were injured was lower in those who were representing their country at the international level than in those who were competing at the national or provincial levels. As a result, it is strongly recommended that more studies be conducted to determine the relationship between competitive level and injury incidence and prevalence.

There isn't much research on the epidemiology of sports injuries that are both sports-specific and injury-specific at the same time. The majority of research focuses on a single injury type and its occurrence in various sports. Others chose a specific sport and evaluated various sorts of sports injuries in that sport, As a result, a thorough comparison of our findings with those of all other studies was impossible. Only studies conducted during the Olympics (24) are comparable to this study, but the games featured in each study are not the same. For example, the most prevalent injury-causing sports at the Rio Olympics were BMX and cycling, yet those sports were not included in this analysis.

The study's limitations include potential sample bias due to convenience sampling, reliance on self-reported injuries leading to recall bias, and restricted generalizability to other regions of Pakistan. Furthermore, the study lacks analysis of injury severity and longitudinal data, hindering comprehensive understanding of sports injury patterns and prevention strategies.

CONCLUSION

Football was the sport with the most injuries, followed by hockey and cricket. Lower limb injuries were more common than upper limb injuries when combined, although shoulder injuries were the most common. Only three of the 313 participants were female, so we couldn't examine the injuries based on gender. There is a possibility of recall bias because the sports complex did not have any records of the injured players, and the athletes did not have any investigative medical reports, imaging studies, or certifications stating their injuries. Furthermore, the study was conducted over a fairly short period of time. The addition of medical imaging and physical examination would aid in the better diagnosis of damage types.

REFERENCES

1. van Reijen M, Vriend I, Van Mechelen W, Finch CF, Verhagen EA. Compliance with sport injury prevention interventions in randomised controlled trials: a systematic review. Sports medicine. 2016;46(8):1125-39.

2. Sreekaarini I, Eapen C, Zulfeequer C. Prevalence of sports injuries in adolescent athletes. J Athl Enhanc. 2014;3:2.
3. Kisser R, Bauer R. The burden of sports injuries in the European Union. Austrian Road Safety Board. 2012.
4. Injury IOC, Group IEC, Bahr R, Clarsen B, Derman W, Dvorak J, et al. International Olympic Committee consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sports 2020 (including the STROBE extension for sports injury and illness surveillance (STROBE-SIIS)). Orthopaedic journal of sports medicine. 2020;8(2):2325967120902908.
5. Azad TD, Li A, Pendharkar AV, Veeravagu A, Grant GA. Junior Seau: an illustrative case of chronic traumatic encephalopathy and update on chronic sports-related head injury. World neurosurgery. 2016;86:515.11-16.
6. Junge A, Engebretsen L, Alonso JM, Renström P, Mountjoy M, Aubry M, et al. Injury surveillance in multi-sport events: the International Olympic Committee approach. British journal of sports medicine. 2008;42(6):413-21.
7. Clarsen B, Bahr R, Heymans M, Engedahl M, Midtsundstad G, Rosenlund L, et al. The prevalence and impact of overuse injuries in five N orwegian sports: Application of a new surveillance method. Scandinavian journal of medicine & science in sports. 2015;25(3):323-30.
8. Almeida GPL, Silveira PF, Rosseto NP, Barbosa G, Ejnisman B, Cohen M. Glenohumeral range of motion in handball players with and without throwing-related shoulder pain. Journal of shoulder and elbow surgery. 2013;22(5):602-7.
9. Clarsen B, Bahr R, Andersson SH, Munk R, Myklebust G. Reduced glenohumeral rotation, external rotation weakness and scapular dyskinesis are risk factors for shoulder injuries among elite male handball players: a prospective cohort study. British journal of sports medicine. 2014;48(17):1327-33.
10. Lessi GC, Dos Santos AF, Batista LF, de Oliveira GC, Serrão FV. Effects of fatigue on lower limb, pelvis and trunk kinematics and muscle activation: Gender differences. Journal of Electromyography and Kinesiology. 2017;32:9-14.
11. Ruedl G, Schobersberger W, Pocecco E, Blank C, Engebretsen L, Soligard T, et al. Sport injuries and illnesses during the first Winter Youth Olympic Games 2012 in Innsbruck, Austria. British journal of sports medicine. 2012;46(15):1030-7.
12. Lambert C, Ritzmann R, Akoto R, Lambert M, Pfeiffer T, Wolfarth B, et al. Epidemiology of injuries in olympic sports. 2022;43(05):473-81.
13. Waldén M, Hägglund M, Ekstrand J. The epidemiology of groin injury in senior football: a systematic review of prospective studies. British journal of sports medicine. 2015;49(12):792-7.
14. Engebretsen AH, Myklebust G, Holme I, Engebretsen L, Bahr R. Intrinsic risk factors for groin injuries among male soccer players: a prospective cohort study. The American journal of sports medicine. 2010;38(10):2051-7.
15. Hölmich P, Thorborg K, Dehlendorff C, Krogsgaard K, Gluud C. Incidence and clinical presentation of groin injuries in sub-elite male soccer. British journal of sports medicine. 2014;48(16):1245-50.
16. Mosler AB, Weir A, Eirale C, Farooq A, Thorborg K, Whiteley RJ, et al. Epidemiology of time loss groin injuries in a men's professional football league: a 2-year prospective study of 17 clubs and 606 players. British journal of sports medicine. 2018;52(5):292-7.
17. Grimm NL, Jacobs Jr JC, Kim J, Amendola A, Shea KG. Ankle injury prevention programs for soccer athletes are protective: a level-I meta-analysis. JBJS. 2016;98(17):1436-43.
18. Melvin PR, Souza S, Mead RN, Smith C, Mulcahey MKJTAjosm. Epidemiology of upper extremity injuries in NCAA men's and women's ice hockey. 2018;46(10):2521-9.
19. Engebretsen L, Steffen K, Alonso JM, Aubry M, Dvorak J, Junge A, et al. Sports injuries and illnesses during the Winter Olympic Games 2010. British journal of sports medicine. 2010;44(11):772-80.
20. LaPrade RF, Surowiec RK, Sochanska AN, Hentkowski BS, Martin BM, Engebretsen L, et al. Epidemiology, identification, treatment and return to play of musculoskeletal-based ice hockey injuries. British journal of sports medicine. 2014;48(1):4-10.
21. Tuominen M, Stuart MJ, Aubry M, Kannus P, Parkkari J. Injuries in world junior ice hockey championships between 2006 and 2015. British journal of sports medicine. 2017;51(1):36-43.

22. Akoto R, Lambert C, Balke M, Bouillon B, Frosch K-H, Höher J. Epidemiology of injuries in judo: a cross-sectional survey of severe injuries based on time loss and reduction in sporting level. British journal of sports medicine. 2018;52(17):1109-15.
23. Herbaut A, Delannoy J, Foissac M. Injuries in French and Chinese regular badminton players. Science & Sports. 2018;33(3):145-51.
24. Engebretsen L, Soligard T, Steffen K, Alonso JM, Aubry M, Budgett R, et al. Sports injuries and illnesses during the London Summer Olympic Games 2012. British journal of sports medicine. 2013;47(7):407-14.
25. Soligard T, Steffen K, Palmer D, Alonso JM, Bahr R, Lopes AD, et al. Sports injury and illness incidence in the Rio de Janeiro 2016 Olympic summer games: a prospective study of 11274 athletes from 207 countries. British journal of sports medicine. 2017;51(17):1265-71.
26. Manan MNIbA, Khan HA, Ahmed W, Umar M, editors. Common Sports Injuries In Relation To Age Gender and Sports in Elite Athletes of Pakistan2015.
27. Eirale C, Farooq A, Smiley FA, Tol JL, Chalabi H. Epidemiology of football injuries in Asia: a prospective study in Qatar. Journal of science and medicine in sport. 2013;16(2):113-7.
28. Doherty C, Delahunt E, Caulfield B, Hertel J, Ryan J, Bleakley CJSm. The incidence and prevalence of ankle sprain injury: a systematic review and meta-analysis of prospective epidemiological studies. 2014;44:123-40.

Table 1: Injuries in athletes

	Injured		Non-Injured		Total	
	N	Percent	N	Percent	N	Percent
Athletes	204	65.2%	109	34.8%	313	100.0%

Table 2: Area of injury in each sport

	ATHLETICS	BADMINTON	CRICKET	FOOTBALL	HOCKEY	KARATE	VOLLYBALL	TABLE TENNIS	SQUASH
HEAD AND	0	1	1	0	0	1	0	0	0
NECK	0.0%	2.8%	2.0%	0.0%	0.0%	4.0%	0.0%	0.0%	0.0%
FACIAL	0	0	1	0	2	0	1	0	1
INJURIES	0.0%	0.0%	2.0%	0.0%	3.7%	0.0%	5.3%	0.0%	3.4%
SHOULDER	1	3	15	7	0	2	3	7	2
	4.2%	8.3%	30.0%	12.5%	0.0%	8.0%	15.8%	35.0%	6.9%
ELBOW	1	1	1	6	0	0	0	0	0
	4.2%	2.8%	2.0%	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%
WRIST	0	1	6	1	8	1	4	0	1
AND HAND	0.0%	2.8%	12.0%	1.8%	14.8%	4.0%	21.1%	0.0%	3.4%
GROIN	0	0	1	1	1	0	1	0	0
	0.0%	0.0%	2.0%	1.8%	1.9%	0.0%	5.3%	0.0%	0.0%
THIGH	3	2	0	6	2	7	1	2	6
	12.5%	5.6%	0.0%	10.7%	3.7%	28.0%	5.3%	10.0%	20.7%
KNEE	0	2	0	8	13	2	0	0	3
	0.0%	5.6%	0.0%	14.3%	24.1%	8.0%	0.0%	0.0%	10.3%
SHIN	6	5	1	6	5	3	1	1	2
	25.0%	13.9%	2.0%	10.7%	9.3%	12.0%	5.3%	5.0%	6.9%
ANKLE	0	2	0	9	5	2	2	0	2
AND FOOT	0.0%	5.6%	0.0%	16.1%	9.3%	8.0%	10.5%	0.0%	6.9%
SPINE	5	1	3	2	0	0	2	1	1
	20.8%	2.8%	6.0%	3.6%	0.0%	0.0%	10.5%	5.0%	3.4%

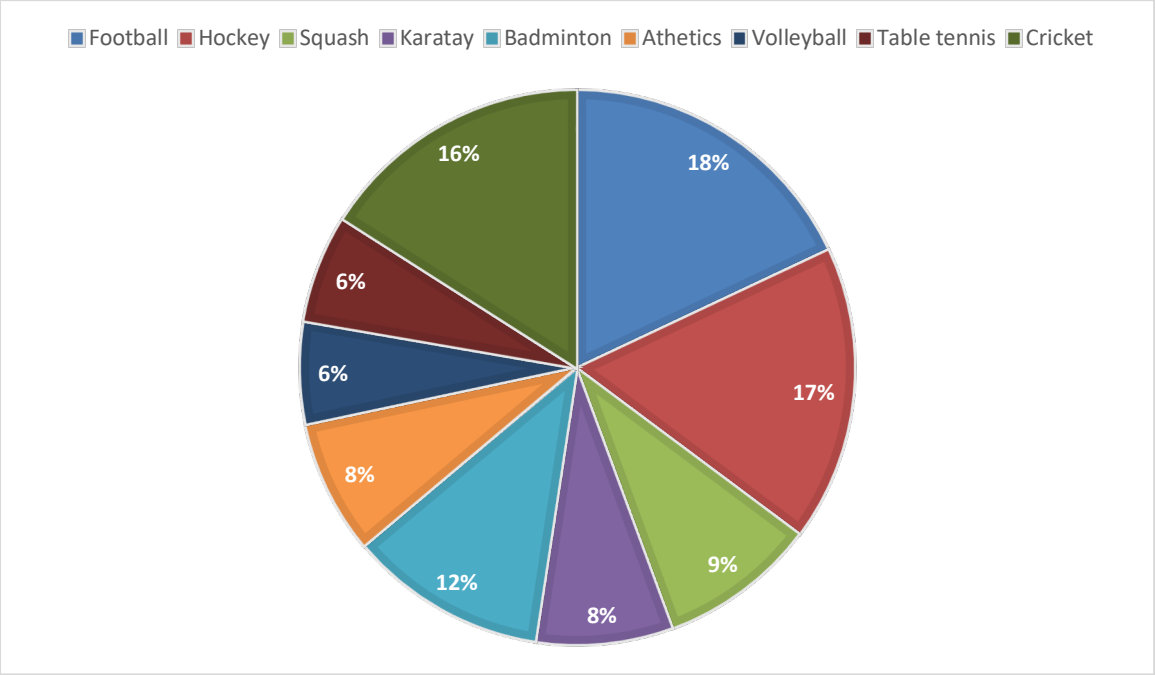

Figure 1: *Injury rate in different sports*