

# The most Common Injuries in Team and Individual Sports, and Related Training Mistakes

## Case Study: Sultanate of Oman

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### ABSTRACT

**Objective:** This study aims to investigate the common injuries in team and individual sports, and the common related training mistakes that lead to the injuries. **Method:** This is a cross sectional study, covering 262 athletes through an online survey. The survey aims to investigate the main injury factors, injury first aiders, and injured athletes' satisfaction with the support provided by the first aiders.

**Result:** Fifty-nine percent of the participants classified their injury as moderate. Thirty-four of the participants noted that failure to warm-up before performing is one of the main injury factors. Almost half of the participant did not receive rehabilitation after an injury that needed surgical intervention.

**Keywords:** Athletes, Injury, Sport, Training, Oman.

### INTRODUCTION

Medical illnesses and sports-related injuries have an effect on both an athlete's health and their performance. The combination of high sport-specific participation and high injury rates leads to the highest burden of injury. These injuries can have serious consequences for the injured athlete in terms not only of treatment costs and time lost from sport, but also a greatly increased risk of early osteoarthritis, decreased sport participation associated with all-cause morbidity, overweight, and obesity<sup>1,2</sup>. Thus, reducing the public health burden associated with sport injuries is critical.

It is important to focus on the implementation context and real-world effectiveness in evaluating prevention strategies in sport<sup>3</sup>. Studies from Scandinavia have documented that sports injuries constitute 10–19% of all acute injuries treated in the emergency room, and the most common injury types are knee and ankle injuries [4]. As people become more involved in sport and exercise, sports medicine becomes increasingly important.

Serious knee injuries, such as those to the anterior cruciate ligament (ACL), are a growing cause for concern [5]. The highest incidence is seen in adolescents playing pivoting sports, such as football, basketball, and team handball [6].

Injuries are more common in football compared to most other types of sport [7]. Ellen et al. (2011) [8] followed ten softball and eight baseball teams in high schools during the 2009 softball and baseball seasons. They found that both softball and baseball players

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experienced a low incidence of injury and that most injuries were minor and affected the upper extremity. Injury rates were highest during the first month of the season, suggesting that athletes may benefit from a more gradual increase in activity and a structured off-season injury prevention program.

Arin et al. (2004)<sup>[9]</sup>, applied their study on 306 male football player participants. During the 4-month competition season, 170 of the 306 players (56%) incurred 244 injuries: 206 (84%) were acute injuries, and 38 (16%) were overuse injuries. No significant difference was found in the incidence of injury between the elite and the first division or between the first and second half of matches or training sessions. Two hundred and one (82%) injuries were located on the lower extremities. The thigh was the most frequent injury location (24%), followed by the knee (16%), groin (13%), lower leg (13%), and ankle (9%). The most frequent injury type was muscle strains, with the majority occurring during matches (73%). They identified four specific injury types as being the most frequent: hamstring strains, groin strains, knee sprains, and ankle sprains. Bayne et al. <sup>[10]</sup> (2017), in their 10-month cohort study involving two football teams over the duration of Soccer League in South Africa, where the medical staff recorded daily football exposure, illness, and injuries, reported in their study that the knee was more frequently affected than the ankle or thigh, joint injuries were more common than muscle injuries, and there was a larger proportion of severe injuries.

Beynon [2001] reported that women who played soccer had a higher incidence of ankle injury than those who played field hockey or lacrosse. Among men, there was no relationship between type of sport and incidence of injury <sup>[11]</sup>.

Until recently, the hip joint was not thought to be a significant cause of problems in the athletic population. However, the Australian Football league (AFL) reported that hip and groin pain is the third most common injury, accounting for between 5 and 15% of all football-related injuries; it is also prevalent in many other sports, including tennis, football of all codes, and hockey<sup>[12]</sup>.

The likelihood of a sportsperson sustaining an injury to the hip joint can be increased by the demands of the sport, in particular, sports that require repetitive hip flexion, adduction, and rotation<sup>[13]</sup>

The incidence of volleyball injuries in the Netherlands is estimated to be 170,000 per year <sup>[14]</sup>. Kilic et al.'s (2017) results showed that ankle, knee, and shoulder injuries are the most common injuries sustained while playing volleyball<sup>[15]</sup>.

Youth have very high sport participation rates. However, sport is also the leading cause of injury in adolescents, accounting for >30% of injuries in this population across many countries. The estimated injury incidence proportion in youth sport is 35 injuries requiring medical attention/100 youth annually (ages 11–18)<sup>[16]</sup>.

Sport science (including strength and conditioning) and sports medicine (including doctors and physiotherapists) practitioners share a common goal of keeping players injury free <sup>[17]</sup>. Studies have shown that Sports Medicine Professionals (SMPs, i.e., athletic trainers, physiotherapists), who are in regular contact with athletes during treatment, are in an ideal position to inform, educate, and assist with both the psychosocial and physical processes of injury<sup>18</sup>. Indeed, it appears that SMPs are the first to attend to the injured athletes' needs<sup>6</sup> and are often present immediately after an injury has taken place—a time when the levels of pain and confusion experienced by the athlete are at their worst. However, many SMPs feel inadequately trained to address the psychosocial aspects of injuries and to implement psychosocial strategies<sup>[19,20]</sup>.

A precise description of the inciting event is a key component to understanding the causes of any particular injury type in a given sport <sup>[21]</sup>. Orchard <sup>[22]</sup> proposed hypothetical relationships between training (both under-training and over-training), injury, fitness, and performance. Both inadequate and excessive training loads can result in increased injuries, reduced fitness, and poor team performance. Excessive and rapid increases in training loads are likely to be responsible for a large proportion of non-contact, soft-tissue injuries. However, physically hard (and appropriate) training develops physical qualities, which, in turn, protects against injuries. Orchard emphasized the importance of monitoring training loads, including the load that athletes are prepared for, as a best practice approach to the long-term reduction of training-related injuries.

In a study of rugby league players, it was found that the majority of training injuries (37.5%) were sustained in traditional conditioning activities that involved no

skill component (i.e., running without the ball), while the incidence of injuries in game-based training was low (10.7%)[23]; these results suggest that game-based training offers a relatively safe method of conditioning for team sport athletes [24].

For players with a history of previous injury, a balanced training program appears to reduce the risk of re-injury to the same level as healthy ankles in football and volleyball players [25].

Gorostiaga et al. (2006) stated that ‘understanding the effects of periodized training and competition time spent volumes and intensities may provide insights for enhancing performance and prevent injury in elite handball team sport’ [26].

According to the Sports Medicine Center, there were 14,970 injuries treated by the center in 2016. Football injuries accounted for most of the injuries, corresponding to 89% of the total injuries. This percentage was an increase of 15 % over the previous year (2015). Seventy percent of the injuries were knee injuries, and 17% were muscles and tendon injuries.

## RESULTS

The study showed that 28% of the participants had tendon strain, 23% had a torsion, and 18% had muscle strain. Figure (1) illustrates the main injuries among participants. Participants reported that knees and feet are the main affected parts during play (40%, 31% respectively), as illustrated in Table (1).

Fifty-nine percent of the participants classified their injury as moderate, while 24% classified it as serious. Figure (2), shows that 26% of the serious injuries occurred during official matches. Thirty-four of the

participants noted that ignoring warming before practicing is one of the main injury factor, 28% highlighted the fitness level of the player, and the appropriateness of the infrastructure was reported by 12%. Orchard[27] proposed hypothetical relationships between training (both under-training and over-training), injury, fitness, and performance. Both inadequate and excessive training loads could result in increased injuries, reduced fitness, and poor team performance.

Moreover, thirty-nine (27%) of the participants stated that the injury was due to a sudden movement or a mistaken movement. Ellen et al. (2011) [8] suggested that athletes may benefit from a more gradual increase in activity and a structured off-season injury prevention program. For players with a history of previous injury, a balanced training program appears to reduce the risk of re-injury to the same level.

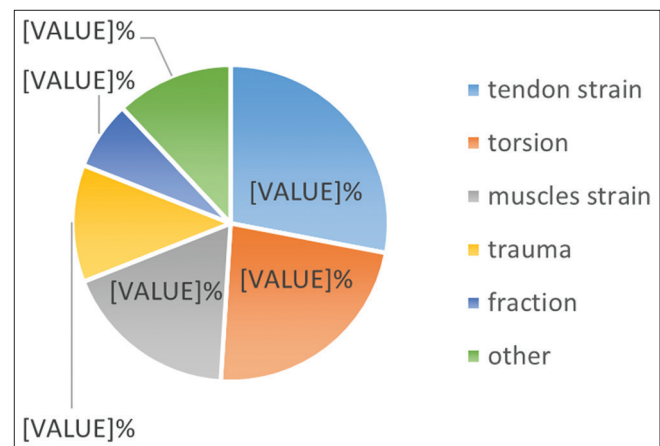


Figure 1: Injury type

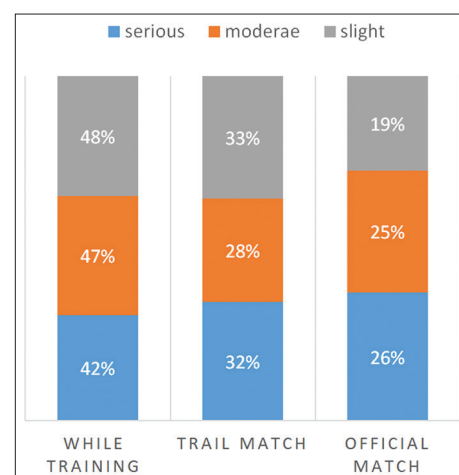


Figure 2: injury level and the stage of injury

part	frequency	valid percent
knee	104	39.7
foot	82	31.3
leg	36	13.7
arm	9	3.4
shoulder	9	3.4
arm joint	8	3.1
spaine	5	1.9
others	9	3.5
total	262	100

Coaches and physiotherapists were the first aiders for (28%, 26%) of the participants. For 15%, their colleagues provided them with the first aid and 5% treated themselves, while 19% did not receive any first aid. However, more than half of the participants were not satisfied with the first aid provided. The majority of the satisfied participants were treated by physiotherapists and coaches (34%, 25% respectively). Figure (3) shows the satisfaction level with support from first aiders. In addition, almost half of the participants did not receive any rehabilitation after an injury that needed surgical intervention.

Studies have shown that SMPs, i.e., athletic trainers, physiotherapists, who are in regular contact with athletes during treatment, are in an ideal position to inform, educate, and assist with both the psychosocial and physical processes of injury<sup>28</sup>. Indeed, it appears that SMPs are the first to attend to the injured athletes' needs<sup>6</sup> and are often present immediately after an injury has taken place—a time when the levels of pain and confusion experienced by the athlete are at their worst. However, many SMPs feel inadequately trained to address the psychosocial aspects of injuries and to implement psychosocial strategies<sup>29, 30</sup>.

## CONCLUSION

Understanding the effects of periodized training and competition time spent volumes and intensities may provide insights into how to enhance performance and prevent injury. Moreover, SMPs must be adequately

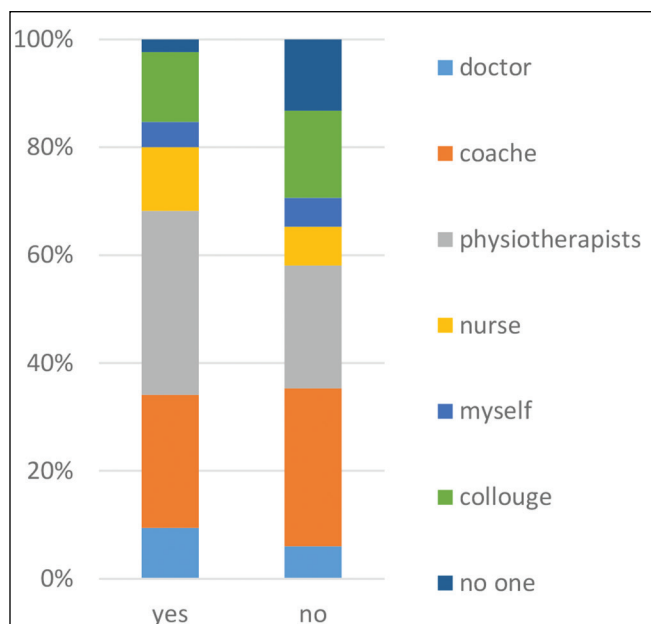


Figure 3: Satisfaction level from the provided first aid

trained to address the psychosocial aspects of injuries and to implement psychosocial strategies.

The results of this study show that there is a difference in the causes of the occurrence of sports injuries between all sports, and between individual and team sports. In addition, the results show that there is a correlation between the types of sports injuries and the type of sport practiced, whether team or individual sport. Also, there is a significant correlation between the types of sports injuries and the type of specialization, where the types of sports injuries vary according to the different sports specialization.

One of the main causes of sports injuries is that coaches and athletes do not give enough attention to warming up, as well as paying little or no attention to safety factors. Therefore, there is a need to educate coaches and athletes through theoretical and practical lectures about warming up and safety factors, which should be considered to reduce the number of injuries among athletes. There is a need also to educate sports coaches to work according to the rules of sports training in the development of training plans, taking into account that the training plans fit with the physiological and physical abilities of athletes.

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