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Injuries among varsity men volleyball players

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Abstract

Volleyball is an increasingly popular team sport. As with any competitive sport, there is always an inherent risk of injury. The purpose of the study is to quantify the injuries of varsity volleyball players and to determine the temperament, position, incidence and pattern of injuries involved in varsity men Volleyball players of Annamalai University. The age range of the players is from 18 to 26 years. Injuries to players during 2014–2016 season, were registered by using a questionnaire. Ninety Six (96) volleyball players (100% response rate), a total of 32 players (66.66%) reported 84 injuries, during a total exposure time of 2 years. the shoulder and ankle being the most commonly injured anatomical location. Most injuries involved related to the ligament and muscle. The majority of the injuries were located in the shoulder (28.57%), ankle (26.20%), finger (14.29%), thumb (11.90%), knee and wrist (7.14%) and Hip (4.76%). Spiking and blocking is the most common cause of injuries. The rate of injury incidences are highly effected by body weight as 54.80% of injuries were observed in above 70 kg players and also 61.58% injuries occurred during the competition while as 38.42% were occurred during training. The injuries that could be related to a specific court situation occurred during spiking (33.33%), blocking (30.95%), setter (26.20%) and libero (9.52%). The results of the research provide a useful insight into the temperament, incidence and sites of injuries in varsity level volleyball players. The present study may be concluded the rate of injuries and these injuries affecting shoulder, ankle and finger represent a significant sources of disability and impaired performance for Professional volleyball players.

Keywords: Volleyball, Injuries, Risk factor

Introduction

Volleyball is recognized as one of the most popular sports in the world amongst men and women (Verhagen *et al.*, 2004) ^[1, 4, 24], in large part due to its accessibility to a wide age group, minimal equipment requirements and the ability to play both indoors and outdoors (Reeser *et al.*, 2006) ^[2]. Volleyball is practiced by approximately 800 million people with diverse characteristics, including different age groups. Sports injuries have become one of the most common injuries in contemporary Western societies and volleyball, together with soccer and basket, is at the first places in the ball-related sports causing injuries. Injuries in volleyball are quite frequent (Verhagen *et al.*, 2004) ^[1, 4, 24]. It is believed that an increase in the frequency, intensity and duration of training might lead to an increased rate of injury (Ferretti *et al.*, 1990; Parkkari *et al.*, 2001) ^[5, 6, 22]. The sport involves repeated, whole-body maximal ballistic actions in addition to rapid lateral movement in response to external stimuli. As such, there is an inherent risk of injury that must be recognized. In order to manage this risk, specific injury prevention strategies are needed and should serve as an essential component to the training plan for volleyball athletes. However, untargeted methods aimed at reducing injuries may misdirect resources and training time, thereby limiting the benefit of the intervention. An effective injury prevention plan must be directed towards those athletes at greatest risk (Bahr and Krosshaug, 2005) ^[3]. The purpose of this article is to assist these athletes into low-, medium- or high-risk groups based upon the interaction of modifiable and non-modifiable risk factors for the major injuries amongst volleyball athletes. This article is intended to provide a practical solution to decrease injury rates in volleyball players with recommendations underpinned by the current body of literature.

Methodology

The aim of this study was to find the injury rate in professional volleyball players in various

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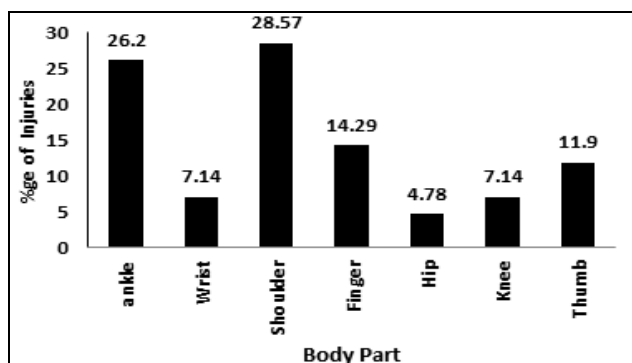
Competitions. Injuries for which professional volleyball athletes sought attention during events from 2014-2016 were recorded. The sample population comprised of 96 male Professional volleyball players from Annamalia University Tamil Nadu whose age ranges from 18 to 26 years. All the teams accepted to participate and verbal information was given to each team coach. The teams were introduced to the survey at the end of the seasons, through their team coach, and the data were collected retrospectively. Written information was given to each player and informed consent was obtained. The inclusion criteria were professional male players included in the regular team line-up (including substitutes). The questionnaire comprised 19 questions, divided into two parts. Part one included data relating to team affiliation and the players' gender, age, weight and height. Each player was also asked to report the number of years of volleyball training, the number of training hours per week and his training routines. Part two included six identical injury profile subsections, in which the players were asked to report all previous injuries. The data that were collected included whether the injury occurred during training or a competition, the skill performed, the injured player's court position and the anatomical localization of the injury. Questions concerning the ability for the player to complete the particular competition or training session, and whether the injury resulted in any absence from training and/or competition were also recorded. The data was collected through self-administrated sports injuries questionnaire. A questionnaire was distributed in December 2016, together with written information and stamped self-addressed envelopes. The coach or a volunteer from each team was responsible for the distribution and the subsequent collection of the questionnaires and for ensuring that the questionnaires were returned by hand. We collected data from all players, including drop-outs because of an injury.

Results

Ninety Six (96) volleyball players (100% response rate), a total of 32 players (66.66%) reported 84 injuries, during a total exposure time of 2 years. the shoulder and ankle being the most commonly injured anatomical location. Most injuries involved related to the muscle and tendon. The average age, weight and height of the volleyball players were 23.35 years, 66.21 kg and 176.76 cm. respectively and the standard training duration was 1.25 hours.

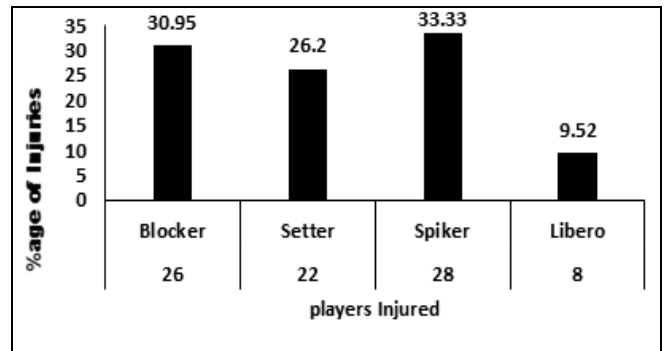
The distribution of injuries by body region is 7.14% in Knee, ankle (26.20%), Wrist (7.14%), Shoulder (28.57%), Finger (14.29%), Hip (4.76%), Knee (7.14%) and Thumb (11.90%) (Table. 1 and Fig...).

Table 1: Percentage of injuries of male volleyball Players with respect to body part



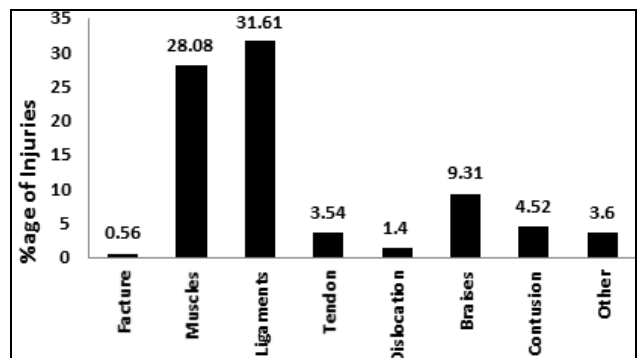
The present survey also resulted that the position of player on the track is effected and varied with 30.95% of injuries at Blocker position, 26.20% at Setter position, 33.33% at Spiker position and 9.52 at Libero position (Table.2 and Fig...).

Table 2: Percentage of Injuries of male volleyball players due to Causes



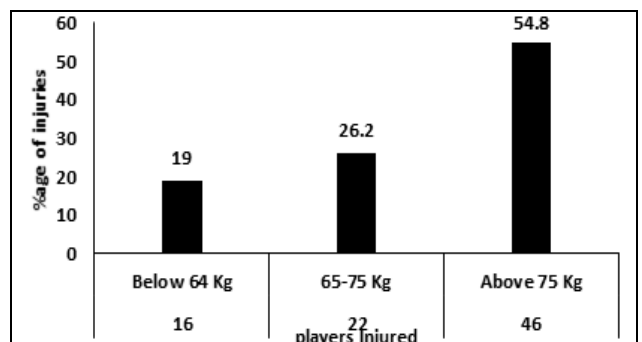
In this study display the temperament of injuries incurred by volleyball players. Maximum incidence of injuries reported relate to the Ligaments (31.61%), Muscles (28.08%), Braises (9.31%), Contusion (4.52%), Tendon (3.54%), Dislocation (1.40%), Fracture (0.56%) and other (3.60%). Ligament and muscle injuries were the most frequently occurring injuries in volleyball players. (Table.3 and Fig...).

Table 3: Percentage of Injuries of male volleyball players with respect to temperament



There is also variation in relation of body weight and injuries as, Below 65 kg players showed 19.0% injuries, 65-75 kg players showed 26.20% injuries, 75 kg above players showed 54.80% injuries (Table.4 and Fig...).

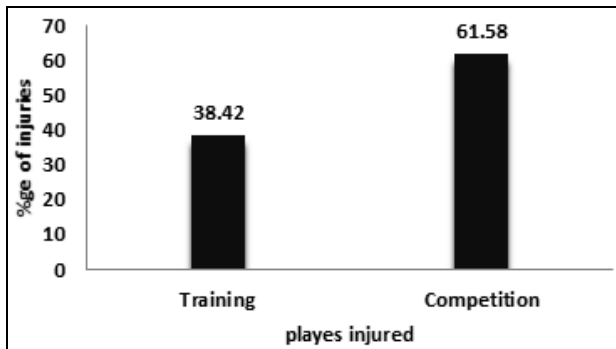
Table 4: Percentage of Injuries of male volleyball players with respect to weight



This study reveals that 61.58% injuries occurred during the competition while as 38.42% were occurred during training. The comparatively high incidence of injuries during competition was perhaps due to bad technique, low fitness,

large amount of over training and aggressive temperament by the volleyball players. (Table.5 and Fig...).

Table 5: Percentage of Injuries during Competition and Training Men Volleyball Players.



The results of the research provide a useful insight into the temperament, incidence and sites of injuries in varsity level volleyball players. The present study may be concluded the rate of injuries and these injuries affecting shoulder, ankle and finger represent a significant sources of disability and impaired performance for Professional volleyball players.

Discussion

This study reveals that 61.58% injuries occurred during the competition while 38.42% were occurred during training. The relatively high incidence of injuries during competition was probably due to bad technique and low fitness by the volleyball players. In contrast, Agelet et al. (2007) [30] report that volleyball injuries predominate during matches, mainly due to the extra motivation generated during a competition. Moreover, the risk of injuries during competitions may be more frequent due to the greater intensity of the game. The present study shows, the most frequently reported injury occurring during during competition.

Shoulder overuse injury is common amongst high-level volleyball athletes. Specifically, 16% of injuries to elite US national volleyball players (Seminati and Minetti, 2013) and 32% of injuries to English division one players were to the shoulder (Wang and Cochrane, 2001). Mjaanes et al., (2005) [7], determined that these injuries represented 24.8% of all injuries to elite US players. Although less common, anterior cruciate ligament (ACL) injuries can be particularly devastating to an athlete. The observation of the present study is also comparable with the results of previous reports regarding injuries in volleyball players and may be because of high usage of the organs in this game. Shoulder, Ankle, finger, and thumb injuries were the most frequent in this study, which is in agreement with other studies of volleyball players (Aagaard & Jorgensen, 1996; Bahr & Bahr, 1997; Verhagen et al., 2004 and Augustsson et al., 2005) [13, 25, 1, 4, 24, 14].

Waston (1993) also found that lower limb injuries were most common in sports. In this study, most injuries were acquired in the upper limb of which Shoulder (28.57).

Volleyball involves repetitive overhead motions, such as spiking and blocking, players are prone to overuse injuries of the shoulder. In addition, volleyball players are particularly susceptible to finger injuries. Mahieu et al., (2011) [9], reported that the incidence of injuries are higher in outside hitters (11%) and middle blockers (12.1%) than opposites (3.2%), setters (4.8%) and libero's (6%). The present investigation also reported the variation in injuries with regard to the position of volleyball player, which is comparable with

previous reports.

Jorgensen U. (1984) [28] investigations of handball and soccer injuries have shown that knee injuries account for 9% and 19% of acute and chronic injuries in club players. In this study, knee injuries accounted for only 7.14% of the injuries, while the incidence knee injury among injured club players has been stated to be higher. Nielsen AB, Yde J. (1989) [29].

Overweight students were at a 34% increased risk for sport injury, compared to healthy weight students (Richmond et al., 2013) [12]. Higher BMI measures are at increased risk of a sport-related injury. Nilstad et al. (2014) [10] demonstrated that female soccer players with a higher BMI were associated with greater odds of lower extremity injury (Nilstad et al., 2014) [10]. Ezzat et al. (2014) [11] who demonstrate a statistically significant reduction in the odds of sport injury in obese adolescents compared to their healthy weight counterparts (Ezzat et al., 2014) [11]. The present observation is in agreement with the previous reports regarding the body weight of player and increasing incidences of injuries as there are increasing percentage of injuries with increasing body weight.

Finally it is concluded that injuries are a very serious problem for varsity volleyball players. Compared with high-risk sports (such as soccer, basketball, wrestling, rugby, motor sports) the injury rate in volleyball appears to be lower (Jerrett et al., 1998; Gabbett, 2002; Ha' gglund et al., 2003; Tomida et al., 2005) [15, 16, 17, 18]. However, when compared with endurance and low-risk sports (such as cross-country skiing and elite pullers) the injury rate in volleyball seems to be higher (Steinbruck, 1987; Wikstrom & Andersson, 1997; Parkkari et al., 2001; Smith & Krabak, 2002) [19, 20, 5, 6, 22, 21]. Taken together, we noted an injury risk of 52%, which could be regarded as relatively high as volleyball is a non-contact sport. In the present study, most injuries were related to the three front players (attackers and blockers) and occurred during blocking and spiking. This observation has been reported in several studies (Aagaard & Jorgensen, 1996; Aagaard et al., 1997; Bahr & Bahr, 1997). In our study, the most frequently reported injury occurring during spiking or blocking was the shoulder and ankle injury which agrees with previous studies (Aagaard & Jorgensen, 1996; Aagaard et al., 1997; Bahr & Bahr, 1997) [27, 13, 25].

Ligament and muscle injuries were the most common types of injuries to the volleyball player. It may be due to bad skill, and low fitness level of volleyball players.

The least common injuries were of the most serious types and included fractures (0.56%).

Conclusion

Although two out of one players incurred an injury during two seasons, which indicates that the risk of suffering an injury in elite volleyball is somewhat high. The most commonly occurring injuries among volleyball players are sustained in shoulder, ankle, finger and thumb and these injuries were persistent to the spikers and blockers. Regarding the temperament of injuries, muscle and ligament injuries are commonly reported ones in volleyball players. Maximum injures occur during competition of game. The high rate of injuries among male volleyball players may be attributed with lack of body weight. As elite volleyball players run a high risk of injury.

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