



International Journal of Physical Education, Sports and Health

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2016; 3(6): 323-324
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www.kheljournal.com
Received: 23-09-2016
Accepted: 24-10-2016

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A study of volleyball injuries in Maharashtra

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Abstract

Volleyball is one of the most popular sports in the world. It is played by approximately 200 million players worldwide. 1 Despite the popularity and the large number of players there have been surprisingly few prospective reports on volleyball injuries and their prevention. 2 As volleyball is a non-contact game, where players from the opposing teams are separated by a net, the incidence of injuries might be expected to be low. Nevertheless, volleyball is a sport involving rapid and forceful movements of the body as a whole, both horizontally and vertically, and because of the large forces involved in such movements it is inevitable that injuries occur. 3 De Loe's, 4 for instance, found in a three year prospective study that—with an injury incidence of 3.0 per 1000 hours—volleyball is the eighth most injury prone sport in the age group 14 to 20 years. Schafler et al found an overall injury incidence of 2.3 per 1000 hours during the United States Volleyball Association's six day national tournament, 5 while in Norwegian elite volleyball players an incidence of 1.7 per 1000 hours has been reported. 6 An important purpose of sports injury epidemiology is to supply information about injuries that occur frequently and have serious consequences, and to describe their a etiology, in order to provide a basis for preventive measures.

Keywords: Volleyball, forceful movements, information, injuries

1. Introduction

Volleyball is one of the most popular sports in the world. It is played by approximately 200 million players worldwide. 1. Despite the popularity and the large number of players there have been surprisingly few prospective reports on volleyball injuries and their prevention. 2 As volleyball is a non-contact game, where players from the opposing teams are separated by a net, the incidence of injuries might be expected to be low. Nevertheless, volleyball is a sport involving rapid and forceful movements of the body as a whole, both horizontally and vertically, and because of the large forces involved in such movements it is inevitable that injuries occur. 3 De Loe's, 4 for instance, found in a three year prospective study that—with an injury incidence of 3.0 per 1000 hours—volleyball is the eighth most injury prone sport in the age group 14 to 20 years. Schafer et al found an overall injury incidence of 2.3 per 1000 hours during the United States Volleyball Association's six day national tournament, 5 while in Norwegian elite volleyball players an incidence of 1.7 per 1000 hours has been reported. 6 An important purpose of sports injury epidemiology is to supply information about injuries that occur frequently and have serious consequences, and to describe their a etiology, in order to provide a basis for preventive measures. 7 In view of the global participation rate and the relatively high incidence of volleyball injuries when comparing volleyball with high intensity contact sports, preventive measures are definitely warranted in volleyball. Studies on volleyball injury incidence during training and match play, however, have mainly been retrospective, and reliable information from season-long prospective studies is scarce. 2 5 6 8–12 From these previous studies on volleyball injuries it is known that ankle sprains account for up to half of all acute injuries, with an estimate of one sprain per 1000 playing hours. Consequently, preventive strategies should focus mainly on this injury type. Our aim in the present study was to examine the overall incidence of volleyball injuries, both acute and chronic, and to describe the factors associated with ankle sprains. For this purpose a season long prospective cohort study in a population of competitive volleyball players was used.

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2. Methods

2.1 Population

One hundred and forty four teams (Maharashtra second and third division teams) selected. From these, 50 teams (20 male, 30 female) consisting of 486 players selected.

2.2 Injury definition

An injury was recorded if it occurred as a result of volleyball and caused the subject to stop this activity, or resulted in the subject not participating fully in the next planned sports activity. All recorded injuries were independently diagnosed as being either acute (that is, resulting from a sudden event during organised volleyball) or overuse (resulting from volleyball, but without a sudden event leading to injury) by two certified sports physicians of the Dutch Volleyball Association, using the injury registration forms. Both physicians had formerly been the Dutch national teams' physician and had considerable knowledge of volleyball injuries. In a consensus meeting, the two physicians tried to reach agreement on injuries which they had classified differently. If no accord was reached a third sports physician would make the final decision. This latter situation, however, did not occur.

In our study knee injuries accounted for 12% of all injuries. Although knee injuries are not the most frequent injuries seen in volleyball, these types of injury are of increasing concern in various sports. This is mainly a reflection of the comparatively high incidence of anterior cruciate ligament (ACL) injuries among women in some sports. It has been suggested that female volleyball players are at much higher risk for ACL knee injuries than male players,¹³ but our study and some other studies^{8 10} did not find such a sex difference. This could mean that the overrepresentation of female knee injuries seen in other sports—for example, handball,^{16 17} skiing,¹⁸ basketball,¹⁹ and soccer¹⁹—is not present in volleyball. Although the population of the study was large, there was a considerable number of non-responders. Of the 144 invited teams, only 50 participated. While a non-response analysis showed no differences between the participating and the non-participating teams, there is still a chance of a selection bias. Because information gathered for the non-response analysis was rather limited (that is, the number of players per team, the sex, age, and volleyball experience of players, and the number of registered players in the club), it is unknown to what extent factors such as level of play may have biased the results. However, the non-participating teams were uniformly divided over the final competition rankings and regions. Therefore we believe that our study may be seen as a random sample of teams and that the likelihood of selection bias is small. As baseline variables of the 12 teams that dropped out of the study did not differ from the other teams included, and only five teams dropped out for reasons unknown, the likelihood of selective drop out is also small.

3. Conclusions

The overall injury incidence in volleyball was 2.6 per 1000 playing hours. The incidence of acute and overuse injuries was 2.0 and 0.6 per 1000 playing hours, respectively. The ankle sprain is clearly the most common injury in volleyball, accounting for 41% of all volleyball related injuries, with an injury incidence of 1.0 per 1000 playing hours. Although our study was limited to injuries causing absence from volleyball, ankle sprains should be of particular interest in studies on prevention strategies. Previous injury seems to be an important risk factor for ankle sprains. Thus if an initial ankle sprain can

be prevented the most important risk factor has been eliminated.

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