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## **INVESTIGATING THE CAUSES OF SPORTS INJURIES IN ELEMENTARY SCHOOL BOYS**

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### **ABSTRACT**

The objective of the current study was to investigate causes of sports injuries among elementary school students. The current research was a descriptive- retrospective study. The statistical society was all elementary school boy students of Marivan Township from the first to sixth grade during the academic year of 2013-2014. The methodology of recognizing injured students was through investigating record books of elementary-school Physical Education teachers. Then the collected data were analyzed and interpreted using descriptive statistics. The findings of the research showed that in total 74 individuals were injured. Soccer, Trach and Field, and Handball got the highest number of injuries. Basketball, Table Tennis and Volleyball got the lowest frequency and Gymnastics and Rope Skipping had no injuries. The most important causes of injuries were collision between players and fall accidents. Though obviously, it is nearly impossible to eliminate all risk factors in sports and physical activities but policy makers should do their best effort to minimize the risk and vulnerabilities of spectators and participants in designing and constructing facilities and fields.

**Keywords:** *Student, Sports Injury, Elementary Level*

### **INTRODUCTION**

One of the most important institutions that prepare backgrounds for current and future activities of children is the Ministry of Education. The aim of including Physical Education in the course curriculum of students is to obtain and maintain health and well being through physical activities. But activities have meaningful concept and reach its objectives only if they are carried out in safe environments with standard facilities (Ramezina and Alireza, 2005). Despite a long history, sport and physical education in our country is still practiced in a traditional way and with non-scientific management. During the previous years, there have been lots of changes in this issue but there is still a long way to reach international and global standards and criterion. Managing sport sites is one of the issues that has a long way ahead to reach common standards in the world from qualitative and quantitative point of views (Jaaberi *et al.*, 2005). Safety in sport is defined as having responsibilities and solutions to confront with hidden dangers that might have a negative impact on sport events (Graham *et al.*, 2007). The ultimate guide to sport and event management & marketing. Chicago: Irwin Professional Publishing. 2007). Dangers are inevitable in sport and even the safest sports might not be able to prevent injuries and collision completely (Appenzeller, 2008). Risk management in sport: Issues and strategies. Durham, NC: Carolina Academic Press. 2008). Although regular physical activities would reduce risks of cardiovascular disease, hypertension, cancer, obesity, diabetes and etc, participating in sports competitions has high potential of injury outbreak for athletes, being an amateur or professional (Bahr and Krosshaug, 2005). Being injured during physical activities is one of inseparable problems in sports and in case of being acute, it can lead to loss of mobility, endangering physical and mental health, increasing health care and treatment costs, decreasing athletes' motivation (Zakani, no date ). Sports has attracted lots of attention nowadays as a constructive means and preventive tools from sport injuries and problems resulted from them, in rehabilitation and recovery (Collopy and Friese, 2010). Sucks *et al.*, have studied the causes of injuries and casualties in playgrounds. They recognized outbreak of accidents due to several reasons like equipment going too high, insufficient protective coverage of surfaces, lack of protective fences, sharp/unfinished edges, spaces and gaps in which head might be trapped, etc . Azmoon, (2007) researches showed that in year 2004 most of sport injuries in training centers of educational institutes in United States were caused by falling on the

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ground. The reason for falling was related to collision with objects and sport equipment (American Chemical society 1995). The most important cause of physical injuries is no warming up, no physical fitness, improper training site, non-standard equipment and the intensity of physical collision of athletes (Verhagen *et al.*, 2010). Mohammad (2011) investigated the correlation between BMI and body fat percentage, height and weight with sport injuries among school kids of 12-15 year old while doing physical activities. He found a positive correlation between BMI and muscle injuries and fractures, between body fat percentage and muscle injuries and fractures and dislocation and ligament rupture, between height and weight with bone and muscle injuries (Mohammad, 2011). Vahid Nejadi (2008) conducted a study about frequency of physical injuries and related causes on school students. The highest number of sports injuries belonged to Volleyball (35%), Basketball (33.3%), Handball (17.6%), and the most injured body parts were reported in lower extremity (43.3%), upper extremities (38.3%), spine (18.3 %) (VahidNejadi, 2008). Gozal (2007) studied sport injuries outbreaks and he compared the frequency of injuries in school tournaments with university tournaments. He reported the injuries in soccer game more than other sports in both levels (Gozal (2007). Sayyah *et al.*, (2008) concluded that most sport injuries occurred in Basketball (32%), Futsal (26%), and Handball (14%) (Sayyah *et al.*, (2008). Shenkar (2007) conducted an epidemiologic study in school and university tournaments in United States and reported the frequency of injuries in Soccer more than other sports (Shenkar, 2007). Nilson (2007), investigated the frequency of ankle injuries of athletes in educational institutes in United States during academic year 2005-2006 and he reported highest frequency of injuries in Soccer, Volleyball and then Basketball (Nilson, 2007). However some studies have emphasized on the importance of presence of experienced experts, and proper and usable equipment in physical education and sport activities (Sullivan *et al.*, 1994). Despite the importance of sport injuries, there has been no scientific research conducted about the causes of sport injuries among elementary school boy students so far. Thus this study has been carried out to define sport injury causes in educational institutes and suggest preventive solutions.

**MATERIALS AND METHODS**

**Methods**

The current research was a retrospective study. The statistical society was all elementary school boy students in Marivan Township from the first to sixth grade during the academic year of 2013- 2014. The data were collected using elementary level Physical Education teachers’ record book where records of sport injuries during physical education classes are registered. The data were analyzed and interpreted using descriptive statistics.

**RESULTS AND DISCUSSION**

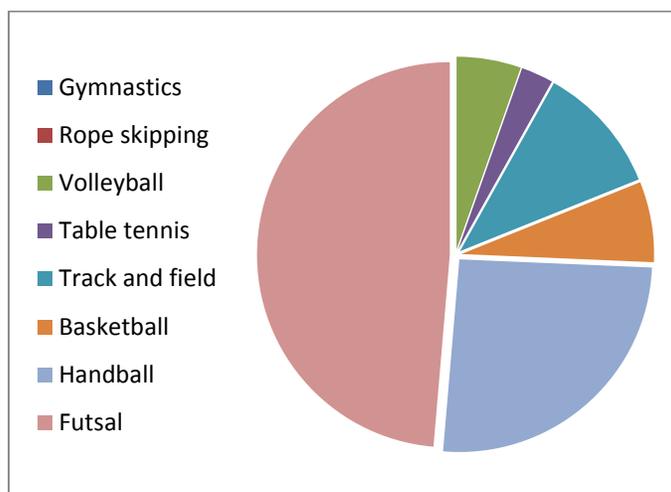
**Results**

The findings of analyzing provided data, presented in Table 1 and Figure 1, show that in total 74 individuals got injured with highest injury frequency starting from Soccer, Track and Field, and Handball; Basketball, Table tennis and Volleyball got the lowest frequency; and Gymnastics and Rope-skipping had no injuries. The collision between players and falling on the ground were the most important causes.

**Table 1: Descriptive Statistics of Injury Frequency in Different Sports**

| Field of Sports      | Gymnastics | Rope Skipping | Volley Ball | Table tennis | Track and field | Basket Ball | Hand Ball | Foot Ball | Total |
|----------------------|------------|---------------|-------------|--------------|-----------------|-------------|-----------|-----------|-------|
| Frequency            | 0          | 0             | 4           | 2            | 8               | 5           | 19        | 36        | 74    |
| Frequency Percentage | 0          | 0             | %5.40       | %2.7         | %10.8           | %6.7        | %25.6     | %48.6     | %100  |

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**Figure 1: Descriptive Statistics of Injury Frequency in Different Sports**

**Discussion and Conclusion**

The objective of current research was investigating sport injury causes of boy students in elementary level and solutions to prevent it. The results of the study showed that, in sequence, Soccer, Track and field, and Handball got the highest rate of injuries; Basketball, Table tennis and Volleyball got the lowest rate, and Gymnastics and Rope skipping got no rate of sports injury. The results are in line with studies of VahidNejati (2008), Gozal (2007), Sayyah *et al.*, (2008), Shenkar (2007) and Nilson (2007). The reason for high rates of injuries in Football and Handball over other sports is the nature of them and the collision between players and the opposite teams, overplaying Football due to personal interest and creating sense of competition among them, lack of adequate skills and specifically limited school facilities and proper equipment and space for doing other sports in the school. Football is one of sports in which many injuries and damages are caused by collision and fighting between players or frequently being kicked. And the rate of injuries increases as the players grow older. Most of injuries are caused as a result of collision between two players or being hit by the ball (Gharakhanlou *et al.*, 2004). The reason for having no sport injury in Gymnastics, which is a traumatic sport itself, can be explained by the fact that although Gymnastics has become compulsory for second level of elementary schools, lack of facilities and equipment like mattresses, no proper gym and so on, make it ineligible to be practiced in schools but only in well-equipped salons. Furthermore, since this sport is practiced by a single person, less collision occurs and the trainer has continuous and precise monitoring over performance skill of student. Also, as the basic skills are also thought the risk of injury is very low. Collision between students and falling on the ground were the most important causes which can result from factors that can reduce or increase risk of sports injuries like personal hygiene and safety of places, floor covering of yards (which is mostly asphalt), equipment and accessories needed for each sports like pillars for goal's gate, net posts, basketball hoops, etc.

According to above named factors, students are no exceptions and they are always at the risk of being injured during the physical education classes. Apart from internal and external factors threatening health and vulnerability of students, other factors like being more active, not following trainers' or teachers' guide, lack of mental maturity to control emotion and having aggressive behavior can also be added to risk factors contributing to occurrence of injuries among students (Dehestani, 2007). Students do not have equal physical fitness due to lack of regular physical activities. On the other hand, due to time constraints and little time dedicated for each sport session, teachers have no choice but to let students with different levels of physical fitness participate in the same class at the same time. The playing grounds are often not standard since the sports are played in the school yards which has asphalt and concrete floor covering, and several dangerous obstacles like stairs, pits, lack of proper cover of goal posts in Handball, Basketball and

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Football; as well as enthusiasm and passion of students during physical education classes which makes it impossible for the teacher to control all of them, lead to higher risks of injury for students (Rostami, 1996). Thus, practical solutions for preventing sport injuries of students are needed. One of the most effective preventive methods is modifying environmental condition and planning according to type of sports. Such measures can reduce rate of injuries significantly. Next, is using sports facilities and equipment according to features and requirements of each sport. This would directly contribute to well being of athletes and any weakness in meeting such appropriateness can affect physical and mental abilities and well as coordination among students. As a result, premature fatigue shows itself in their lower extremities and makes occurrence of injuries inevitable. To sum it up, the most fundamental preventive solutions from sports injury occurrence or continuation among students can be defined as follows:

Increasing information of Physical Education teachers in schools about sports related injuries and personal characteristics of students; planning modification or modifying seasonal training programs according to type of sports and individuals' characteristics and level of fitness; using standard sport equipment and facilities appropriate to sports features and also students' especial conditions; carrying out accurate and complete medical examinations at the beginning of exercises and continuing; teaching students the regulation of sports to reduce possibility of physical collision during practices or tournaments; taking warming-up trainings according to nature of physical activity seriously by trainers and students; encouraging students or sometimes forcing them to use safety equipment to protect different organs from injuries; interrupt trainings by the first signs of any injury, increase emphasis on implementing physical fitness programs appropriate to nature of the sports to strengthen the students in facing difficult training conditions of inevitable collisions, optimizing physical and environmental condition of sport activities considering equipment and climate and geographical condition of where that sport is being practices (Shojaedin, 2003). Clearly it is nearly impossible to eliminate all risk factors in sports but designers and decision makers must do their best efforts to minimize risk of dangers and injuries of participants and spectators (Ministry of Science, Research and Technology of Iran. Sport Facility Expert (2004). Physical activities play a critical role in maintaining health, although it is sometimes accompanied by physical injuries which endanger athletes' health and might force them to retire permanently (Zabih Hoseinian, 2005). Therefore, it is recommended that Physical Education teachers and trainers use these sorts of knowledge and information. They should pay closer attention to physical activities of students in schools or gyms and take required actions to reduce injuries during tournaments or practices.

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