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The Survey of Prevalence of Sport Injuries in Student Athletes of Islamic Azad University

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Abstract: The aim of this study was to investigate the incidence and prevalence of sports injuries causes in elite athlete's region 11 of Islamic Azad university students. For this purpose, data collection questionnaires were distributed among all students participating in the regional championship of region 11. In this study, 250 student athletes completed questionnaires in interviews and collected data collaboration and were selected as statistical samples. Method of data collection was using questionnaires, interviews and direct observation and collected data were analyzed using descriptive statistics. The results showed that total 250 subjects suffered some form injuries (73.65 percent), among those injuries that has occurred in the various activities (training and competitions), the highest injuries (76 percent) related to muscle damage and the lowest rate (3 percent) related to bone damage. Also 46.3 percent of injuries related to upper organs and 42.3 percent injuries related to lower limbs and 11.4 percent related to the trunk and spine. Among sport majors, the highest injuries related to karate (34 percent) and the lowest related to table tennis (1.6 percent). The results showed that the highest percent of injuries in this research occurred compared to the same other studies. The main causes of injuries in this study may be consisted of; opponent's contacts, lack of attention to safety tips -not good fitness and lack of proper facilities. Therefore, these findings proved that students must consider causes of injuries more than ever.

Key words: Sports injuries · Sports injury incidence · Elite student athletes

INTRODUCTION

It has been reported that one of the destructive effects of urban life was increased mortality due to cardiovascular disease [1]. Today, causes of many mental and physical illnesses is being automated and non-life physical activity and sedentary. Health experts and sport scientists try to drag people to sport stadiums [1, 2]. Therefore, one of the reasons for individuals interesting to do sporting activities is obtaining health and happiness is achieved through the implementation of sports activities. However, the phenomenon of physical injury is always a problem for athletes and coaches besides all the benefits to participating in sports programs, both in public and in the professional level [3, 4]. Lack of knowledge of athletes and coaches about injury reasons and in the other hand lack of careful planning by the managers and coaches to prevent sports injuries, has led to not only detaching of elite athletes and professional sports because of injury, but also encountering of non-professional and amateurs to the risk of injury problems and fear of injury lead to less motivation and willingness to be present at the scene of sports competitions [1]. However, sporting activities and physical injuries are an integral part of physical injury risk during sport activities and there always seems to be natural [1]. Many athletes still are suffering injury even observing all principles related to each sport including implementing regulations accurately and using of the best fitness equipments. Some reasons for sports injury in training classes are including; incorrect training and inappropriate running athletic skills, lack of nerve and muscle coordination, lack of coordination between team members (team sports) [5]. Some sports injuries may be caused by colliding of athletes with each other, hall floor, ground and sport equipments, too [1-3]. Therefore, if safety conditions and physical environment is conducive to athletes, the possibility of injury exists in these activities [6, 7]. Since the implementation of activities related to sports have been met always with different

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events, it is essential to investigate factors affecting accidents and injury accidents to identify reducing factors accidents. Therefore recognition of injury, its causative factors, the proper training motivating skills to learners is always regarded by coaches and teachers exercise [8 -10]. The injury type and location of damage have close relationship with nature and characteristics of sport, obviously. Khosravi-Zadeh [4] showed that the most injuries related to lower limbs at all sports, while the lowest rate of injuries related to head and face. Morgan *et al*. [11] suggested that the rate of injury during competition is higher than during practice. Results showed that in men and women doing taekwondo, the rate of injury were more in lower limbs than other organs [12]. Providing of such information to the coaches and athletic directors, either professional sports or in public sports can be helpful in maintaining health and prevention of athletic injuries, because it seems necessary to design appropriate programs in correct calendar for tournaments and educational programs in schools and universities for having accurate information about real place of injury, its causes and prevalence [2].

Knowledge in this field also can be useful to design appropriate training programs to reduce injuries sports athlete students in the fields of teaching, use of company facilities in practice classes and etc [3, 7]. If such information is provided for teachers, coaches and athletes, they can clearly and carefully plan their training program and aware of the type and prevalence of injury in each sport for providing strategies to prevent injuries during sport activities. On the other hand, statistically significant differences can be seen in epidemiologic study of prevalence and causes of injuries and mechanisms inducing them in literature due to data collection methods and different definitions of injuries [13]. The differences in results of various studies have led to not conformity in possible mechanisms of injuries incidence and their frequency in sport activities. It seems necessary to surveying the prevalence mechanisms and causes of sports injuries in elite sport athlete students of Islamic Azad university- 11th region because of necessity of these issues.

MATERIALS AND METHODS

This research was performed using retrospective methods by descriptive-field study in which the researcher describe the rate of injuries in different body parts and investigate the relations between injuries and some of the inducing factors. Athletic population included students of Islamic Azad University–region 11 that had been participated in championships of universities of Islamic Azad University–region 11 (year 2007 and 2008). The statistical sample included 250 individuals who were available athlete had completed the questionnaire. The study group was male student athletes in eight sports (Footsal, volleyball, wrestling, handball, judo, karate, athletics and table tennis). The group of female students including athletes participating in six sports (Footsal, volleyball, handball, karate and table tennis). It is necessary mentioned that information gained from questionnaires and interviews related to sport activities of students only.

Data Collection: Data collection methods were observation, interview and questionnaire. Tool for gathering information was combined questionnaire (open and closed) that was made by the researchers. The questionnaire included personal data, type of injury, place of injured, mechanism of injury and some other information. Researchers had attended in tournament place and accommodation of students. Information were recorded through interviews with students participating athletes, coaches and the tournament physician, as well as watching tournament, type, location and mechanisms written in the questionnaire. Injury and the injured athlete were defined according to Wong and Hong [14]. On this basis, injured athlete is who needs to medical care, doctor or physiotherapist and deprived of exercise in one or more sessions and injuries had been occurred during competition or exercise. Logical validity of the questionnaire was surveyed by a number of professors and medical experts that its results were acceptable and to get the reliability of the questionnaire, Cronbach's alpha was used ($p<0.05$). The descriptive data including age, height and weight and exercise history that were recorded by students themselves (Table 1).

Statistical Method: Data obtained from the questionnaires. The 2003 Microsoft Excel software was used for showing descriptive statistics including mean and standard deviation [M±SD], percentage frequencies and using. The curves were drawn by the 2003 Microsoft Excel software too.

RESULTS

Results showed that 74 percent of students participating in Olympiad had different injuries, while only 26 percent of them did not experienced injuries in competitions. The most occurred injuries related to muscle damage and the least of them related to bone damage (chart 1). Frequency and percent of damage causes in subjects are presented in Table 2.

Table 1: Subject characteristics by sex

	N	age (yr)	weight (kg)	high (cm)	background sport (yr)
Female	87	21.3±3	68.2±7.5	168±8	5.7±4.2
Male	163	22.4±4	71.45±8.2	174±5	6.2±3.8

Values are given as Mean±SD

Table 2: Frequency and percentage of damage causes in subjects (n=250)

Damage causes	Frequency	Percentage
Technical error rival	30	12
Wrong application technique by rivals	19	7.6
experience Injury	30	12
Inadequate warm up	17	6.8
Age and its effect	25	10
Inadequate facilities during competition	21	8.4
Poor nutrition	24	9.6
Improper temperature	12	4.8
Lack of adequate physical fitness	15	6
Issues relating to weight loss	9	3.6
Fatigue	12	4.8
Non- standard tools and equipment	14	5.6
Inappropriate practice and competition time	9	3.6
Non-standard protective equipment	13	5.2
Total	250	100

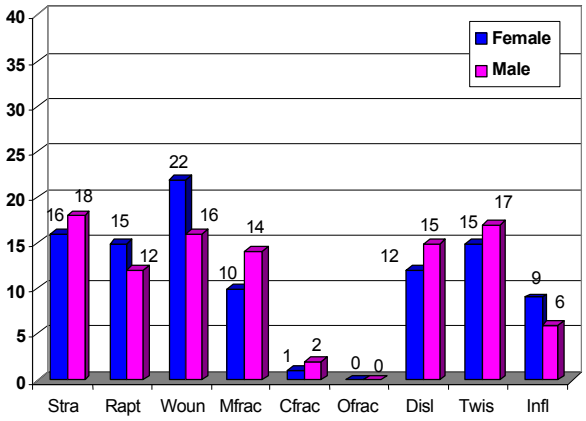

Chart 1: Prevalence rate of injuries in male and female students
[Stra=Strain, Rapt=Rapture, Woun=Wound, Ofrac=Open fracture, Cfrac=Close fraction, Disl=Dislocation, Twis=Twisting and infl=inflammation]

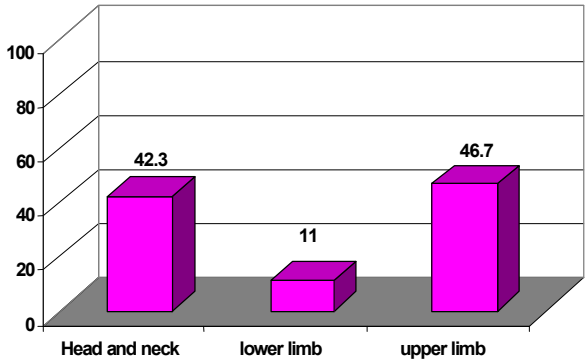

Chart 2: Prevalence rate of injury in different areas

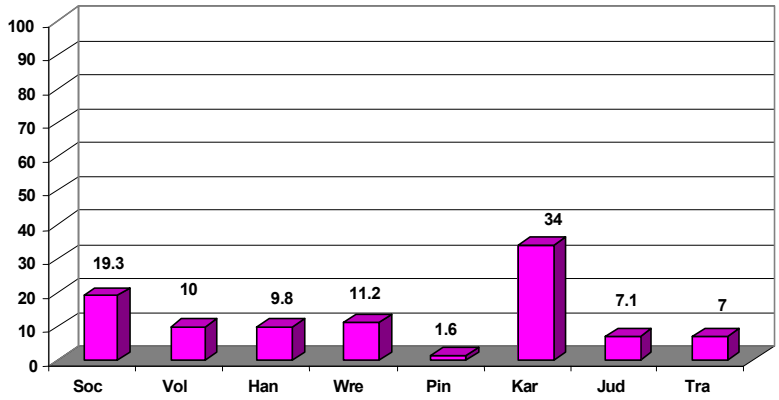

Chart 3: Percent incidence of injury in various sports disciplines (Soc=Soccer, Vol=Volleyball, Han=Handball, Wre=Wrestling, Kar=Karate, Jud=Judo).

The results also showed that the lowest injuries related to head and neck areas regardless of the type of sport, while highest prevalence of injuries related to upper limbs (Chart 2).

Karate sport had the most injured athletes among the eight sports studied in this research; while table tennis had least rate of injured student athletes and table tennis was considered as the healthiest sport (Chart 3).

DISCUSSION

In the present study, we described the prevalence of sport injuries in male student athletes. Results showed that the prevalence of injuries in students is high so that for every 100 people, 74 people suffered injuries. These results do not consistent with the same studies carried out in other countries and percentage of injuries is higher in our study. The possible reasons for inconsistency is due to differences in environmental factors such as use of more standard features, being regular programs and competitions and more control of coaching staff in student activities in foreign countries. Larsen *et al*. [13] suggested that very different results reported about the incidence of injury in athletes due to differences in data collection methods and differences in definitions and interpretations about injuries.

On the other hand, the present results are the same with Iranian research results. This shows that common factors are involved at least on domestic sports injuries [1, 2]. Other factors that should take into consideration are athlete population level of running in specific sport although in some field research, one or more high percentage of sport-specific injuries was reported. Goulet and Regnier [15] reported the highest rate of sport injuries in Canada related to basketball, they noted this caused by high interesting in this field and the high level of competition in the country. The results showed that the highest prevalence of injuries was related to karate and the lowest rate was related to table tennis, on the other hand the number of participants in table tennis competitions was slightly higher than those of karate (respectively 34 against 26 athletes), this issue shows that factors such as the nature and specificity of sport can share more effect on injuries than other factors in Iran.

The results showed that muscle damage was higher than other cases; this is consistent with other domestic and foreign research results [2, 11, 16, 17]. Higher amount of muscle injuries caused by high muscle stretching during sport activities and explosive movements need to produce large forces in the least time especially during athletic competition. Sport competitions are the reason of the most injuries among athletes due to the specific sensitivity. Inner and outer motivations and desire to win are reasons of suffering pressure of competition over than their power by athletes [18]. This can play a more prominent role during formal and important matches. Goulet and Regnier [15] reported that the highest rate of injuries occurred during official matches. Players show more efforts in formal competitions for winning and awarding, this causes the speed and intensity of movements in formal competitions is more than those of informal competitions and ultimately we can see higher incidence of injuries during formal competitions.

The results showed that upper extremity injuries (with high frequency in head and neck) are higher related to lower extremity injuries. The results of current research studies have been inconsistent with Kazemi and Khosravi [4, 12] researches though this issue largely influenced by the nature and characteristics of sport. These researchers suggested that the most prevalence injuries are related to

lower extremities However, more injuries in the upper and lower parts of body than head and neck injuries is confirmed both researches. It seems that the reasons of low frequency of injuries in injury in head and neck regions are high range of motion of upper and lower extremities in the main sport motivations and low amplitude movements in head and neck regions [4, 11]. The role of movement patterns and organs involved in the injury frequency rate are important in different sports. Larsen *et al*. [13] reported injuries over the ankle rotation are one of the most common injuries in football players (almost 10 percent of overall injuries in football players). It is reported that almost 50 percent of basketball players have sprain or strain of the fingers or toes [15]. This issue shows that a combination of physiological factors, movement patterns and intensity of exercise during the race could determine incidence of injuries in athletes.

Karate athletes were the most vulnerable athletes compared with other sports so that 34 percent of athletes have experienced injuries. Such issues are not unexpected regard to the nature of combat sports such as karate. However, injury frequency rate is much higher in karate athletes in comparison with judo and wrestling. In reviewing the results it was observed that ball sports such as Volleyball (10 percent) and handball (9.8 percent) the percent injuries are approximately close together. This shows that the nature of sport higher effect on injuries than the other cases such as environmental conditions, heating programs, physical fitness level of players.

The results showed that 19.6 percent of athletes believed that their injuries were due to their technical error or opponents and only 10.8 percent of the subjects said their injuries were related to non- standard equipments. Generally the 24 percent of injuries related to environmental factors such as inadequate facilities during competition, inadequate nutrition and temperature, non-standard protective equipment and others related to factors in relation to athletes such as lack of physical fitness, poor technique and etc (Table 2). This showed that causes of injury in athletes are technical physiological factors. In this regard, Barrett *et al*. [19] investigated the effect of environmental factors on the rate of knee and ankle injuries in basketball players, the result of their study showed that there are no significant difference in the knee and ankle injuries between the basketball players wearing shoes with thin bottom layer and the players wearing shoes with medium bottom layer or lower layer with thick and soft cushion of air. Researchers reported players wearing shoes with thick lower layer with the use of air cushion have lower rate of ankle and knee injuries, however these differences were not statistically significant. Such reports show that environmental factors and external factors are less important in injuries than the nature of sport and internal factors and damage. However, Larsen *et al.* [13] pointed out in NCAA football players the prevalence of injury in natural earth is less than artificial earth.

Ekstrand and Nigg [20] stated that football player injuries mainly depend on stiffness and the friction force of shoes with ground. Contradictory results about the effects of environmental factors on the rate of injuries are likely caused by different type of sports.

CONCLUSION

Factors such as character and nature of various sports disciplines in sports alongside spaces, inappropriate use of non-standard equipment, non-secure environment of sports, lack of close proper monitoring on implementation skills are affect on injuries in exercise classes and led to material and spiritual costs and resignation athletes from sport places. Therefore it is necessary for specialists and athletic trainers to prevent injuries in athletes by designing of sport programs, holding of championship camps, standardization of sporting equipments and close supervision on exercises with taking the nature of sports into consideration as much as possible.

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