Iranian Journal of Health and Physical Activity (2011) 2 (1), 46-50

The Comparison of Sport Injuries of Professional and Nonprofessional track and field, in Iranian Female Students

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Received 10 November 2010 Accepted 12 February 2011

Abstract

The aim of the research is to study the differences between sport injuries made at professional and nonprofessional track and field in Iranian female students. The present study is a descriptive and causative-comparative one, using retrospective technique. This study was conducted to determine the amount of injuries in professional and nonprofessional track and field female athletes participating in Country-wide Students competitions in 2009, and to compare the injuries in these two categories. The data related to all competitors including weight, age, athletic record, and also the type of injury and the location injured were recorded using a researcher-made closed questionnaire with Cronbakh α (α=0/9), the validity and reliability of which were reexamined on the statistical sample. The data were analyzed using U-man Whitney descriptive and inferential statistics and SPSS-11 software. Considering the findings of the research, no significant difference was found between the injuries in different body parts, in professional and non-professional groups. (p=0.577, u=170.5). Most injuries were that of muscle-tendon injuries, and the lower limbs were determined as the most vulnerable parts. In the present study, no significant difference was found between injuries in professionals and nonprofessionals. Perhaps one reason is that in Iran, athletes do not exercise constantly, and no demanding and exhausting exercise is done by track and field players. Further research should be done on the isssue to determine if there is any difference between professionals and nonprofessionals in terms of injuries, and for the reasons as well, to provide strategies to decrease the injuries in both groups. Results of this research can be used in pre-semester examinations to prevent from further subsequent injuries, considering the strategies available. Consequently, the most important usage of this research is to prevent the occurrence of subsequent injuries by identifying apt injured athletes, and to provide preventive strategies.

Keywords: Sport injuries, Track and Field, Professional, Nonprofessional

Introduction

It is necessary for all age groups to have a healthy lifestyle [2]. People participate in physical activity programs due to various reasons, but notwithstanding all benefits of regular physical activity, the risk of injury in competitive and championship sport is undeniable [3]. The issue of athletic injury has become a concern for athletes, coaches, and athletic authorities [4]. Lack of sufficient attention to the prevention of injuries in students can entail numerous undesirable consequences, including physical and psychological problems, and disappointing the students [5]. Among various sport fields, track and field is one of mother sports. Due to various motional paradigms and the variety in this field, injuries frequently occur, leading probably to interruption of exercises and even quitting the competition battles [1].

However, considering the increasing number of people participating in athletic activities, it seems necessary to find strategies to prevent and decrease athletic injuries [6-7]. Hence, it is possible to prevent injury factors through recognition of athletic injuries [1]. And introduction of research findings makes planners, informed of the probability of the occurrence of injuries, so they may restrict and/or control the injury factors through necessary measures and curtail their vulnerability. Much of athletic injuries are preventable, but if we do not contrive solutions for them, the occurrence of athletic injuries increases. Hence it is necessary for coaches and physical educators to get familiar with injuries and athletic losses, preliminary treatments and prevention of athletic injury development [8].

In the researches done by Rezvani on the high schools' students, and by Ebrahimi Atri et al on female elite gymnastics students, injuries among the research samples were reported to be high [9-

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10]. The purpose of this research was to answer the question that whether the background and duration of athletic activity and being professional or nonprofessional can affect the injuries in different parts of the body. Since little research has been done on sport injuries, particularly on female students, further research seems necessary on the issue.

Methods

Current research is descriptive, causative–comparative, which applied retrospective technique. The society which has been studied includes all female students who participated in university championship in 2009. The statistic sample included 133 female students who were professional in track and field and had more than two years of continuous exercises, of the mean age of (22/01±2/1yr), the mean weigh of (55/61±7/7 kg), the mean height of (165/12±5/2 cm) and the mean body mass index of (20/36±2/5 kg/m2), and nonprofessionals who had a maximum of two years of continuous exercises, the mean age of (22/48±1/6 yr), the meanweigh of (55/32±8/8 kg), the mean height of (164/68±12/75 cm) and the mean body mass index of (21/07±2/69 kg/m2). Data collection instrument is a researcher-made closed questionnaire with Cronbakh α (α =0/9). A schedule was prepared to gather the information and then the questionnaires were completed by the students. Before proceeding to complete the questionnaire, necessary recommendations and guidelines were provided to facilitate the completion thereof. The data were analyzed by spss version 11, using descriptive and inferential statistics. (Mann Whitney u).

Results

Findings of research on the prevalence of injuries in different limbs, as shown in figure 1 indicates that head and face, with 6 percent in professionals and 3.2 percent in nonprofessionals, were the least, and lower limbs, with 64.7 percent in professionals and 53.2 percent in nonprofessionals were the most vulnerable areas. Meanwhile, in professionals trunk was the affected area by the rate o 11 percent of injuries. In professionals the injury percentage in upper limbs was 18% and in non-professionals was 28%.

Research findings regarding injuries in different parts of the body:

The information provided in table 1 indicates that both in professional and nonprofessional groups, most injuries have occurred in nose and cheek in the head and face, in the trunk in both groups, most injuries were related to scapula, in upper limbs most injuries were related to the elbow, and in lower limbs most injuries were in the knee, toe and foot.

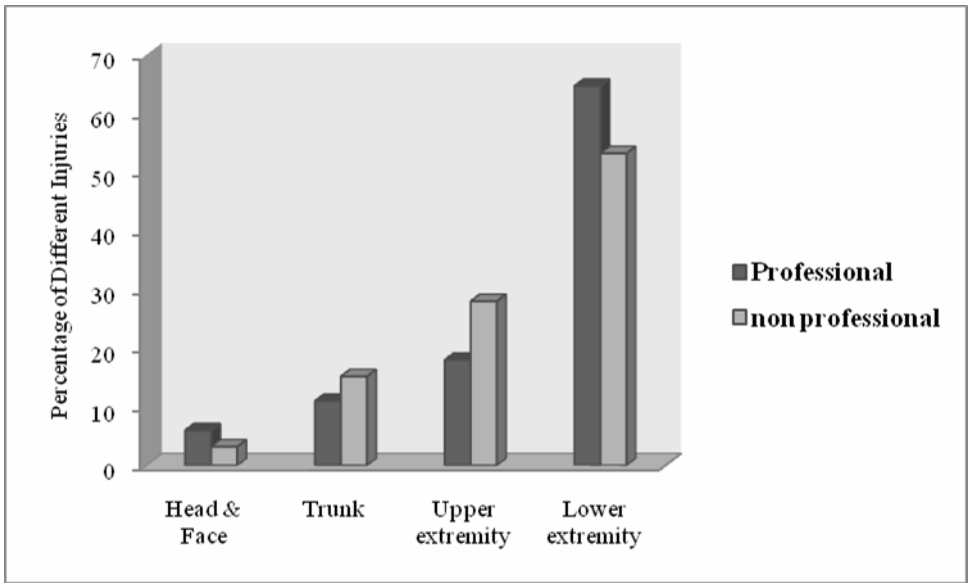

Figure 1: Determining the Percentage of Different Injuries in different limbs in research samples

Table 1: Variance Distribution of Different Types of Injuries in Research Sample

Non-professional				Professional			
Injury locality	**Injured organ**	**Percentage**	**Total**	**Injury locality**	**Injured organ**	**Percentage**	**Total**
Head and face	Eye	0	3.2	Head and face	Eye	2	6
	Nose	1.6			Nose	2	
	Lower jaw	0.8			Cheek	1	
	Mouth	0.8			Mouth	2	
Trunk	Mouth	3.2	15.2	Trunk	Neck	1	11
	Upper back	0			Upper back	1	
	Lower back	2.4			Lower back	2	
	Scapula	5.6			Scapula	4	
	Rib	0.8			Chest	1	
	Stomach	3.2			Stomach	2	
Upper extremity	Shoulder	4	28	Upper extremity	Shoulder	1	18
	Clavicle	2.4			Clavicle	2	
	Arm	4.8			Arm	3	
	Elbow	4.8			Elbow	4	
	Forearm	2.4			Wrist	1	
	Wrist	4			Palm	4	
	Fingers	5.6			Fingers	3	
Lower extremity	Pelvis	4	53.2	Lower extremity	Pelvis	6.1	64.7
	Femora	5.6			Femora	5.1	
	Patella	4.8			Patella	4	
	Knee	9.5			Knee	14.1	
	Lower leg	6.3			Lower leg	9.1	
	Ankle	8.7			Ankle	10.1	
	Foot	4			Foot	7.1	
	Toe	10.3			Toe	9.1	

Considering the information offered in table 2, and regarding the distribution of different injuries in different parts of the body, it is clear that in the category of skin injuries abrasion has been the most common injury in both professional and nonprofessional groups, and in category of muscle-tendon injuries spasm was the most common injury. In the category of joint-ligament injuries the highest percentage was related to sprain in both groups. In the category of bone injuries capillary fraction was the most common injury. In the category of pain injuries, acute pain had the highest percentage in both groups.

Regarding the distribution of injuries and considering the injuries presented in figure 2, bone injury by occurrence of 9.1 percent in professionals and 4 percent in non-professionals constituted the least injuries, and muscle-tendon injuries with the occurrence of 40.3 percent in professionals and 49.9 percent in nonprofessionals constituted most injuries.

Considering the findings of the study in table 3, no significant difference was found among the injuries in different parts of the body in both professional and non-professional groups (p=0.577, u=170.5).

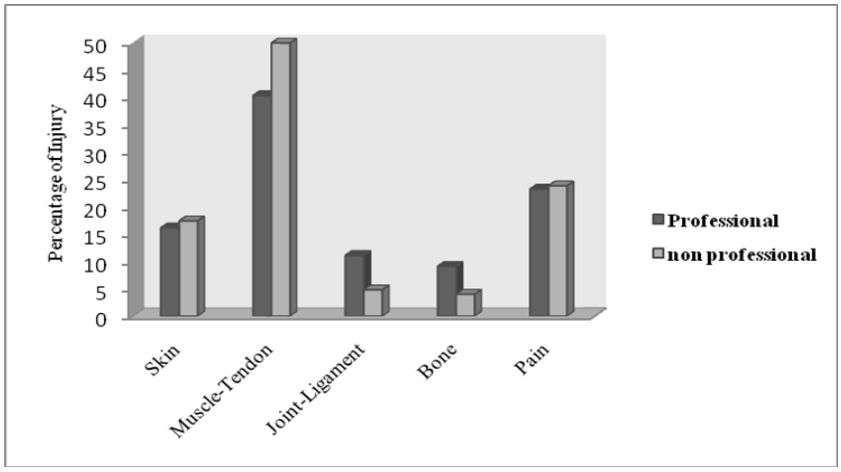

Figure2. Determining the percentage of vulnerabilities in research samples

Table 2. Distribution of different injuries in research samples

Non-professional				Professional			
Injury		**Percentage**	**Total**	**Injury**		**Percentage**	**Total**
Skin injury	Abrasion	8.7	17.4	Skin injury	Abrasion	7.1	16.1
	Laceration	6.3			Laceration	2	
	Blister	0.8			Blister	4	
	Fungus infection	0.8			Callus	2	
	Corn	0.8			Corn	1	
Muscle-tendon injury	Spasm	13.5	49.9	Muscle-tendon injury	Spasm	14.1	40.3
	Contusion	11.9			Contusion	5.1	
	Bruise	6.3			Bruise	4	
	Hematoma	6.3			Hematoma	2	
	Strain	9.5			Strain	11.1	
	Muscle tear	2.4			Muscle tear	4	
Joint-ligament injury	Sprain	2.4	4.8	Joint-ligament injury	Sprain	5.1	11.1
	Dislocation	1.6			Dislocation	3	
	Ligament tear	0.8			Ligament tear	1	
	Meniscus tear	0			Meniscus tear	1	
	Joint cartilage	0			Joint cartilage	1	
Bone injury	Open fracture	0	4	Bone injury	Open fracture	2	9.1
	Closed fracture	1.6			Closed fracture	2	
	Capillary fracture	2.4			Capillary fracture	5.1	
Pain	Acute	12.7	23.8	Pain	Acute	12.1	23.2
	Chronic	11.1			Chronic	11.1	

Table 3. The percentage of injuries in different parts of the body in both professional and nonprofessional groups, and the level of significance

Sig	**Pain**		**Bone**		**Joint-Ligament**		**Mus-Tandon**		**Skin**		**Injury**
U=179.5	Non –P	P	Non- P	P	Non- P	P	Non -P	P	Non –P	P	**Part**
	0.32	1.11	0.32	1.11	0	0	0.65	0	0.65	1.66	Head
	1.96	2.22	0.32	0	0.32	0.55	6.20	4.44	1.30	0.55	Trunck
P=0.577	5.55	3.33	0.65	0.55	0.65	0	7.51	7.22	1.30	1.66	Upper
	14.7	13.88	0.32	3.8	4.57	12.77	44.77	35	7.84	10	Lower

Discussions

The results of many studies in this regard indicate that, generally, in the entire athletic fields, lower limbs have had most injuries. Meanwhile, head and face injuries have had the least occurrences [11-12-13-14-15-16-17-18-19].

In the researches carried out by many of Iranian researchers in the field of athletic injuries, the majority have had consensus on the point that the most injuries belong to the muscle- tendon group of injuries and bone injuries have the least number of occurrences [9-10-14-15-20-21-22].

In this study, muscle-tendon injuries were realized as the most prevalent injuries in both groups, matching with the results gained by lysholm (1987), Schmidt. (1990), and Fuladian (1998), Rezvani (1996), Atri (2007), Elyasi (1998), Funick (1989), Ytterstad (1996), Soltani (1998), Shahidi (1996), Zakani (2005) [1-9-10-14-15-20-22-23-24].This can be justified by the fact that muscles are the first limbs in body contacting the objects and also all the body is covered by muscles. Hence, they are proportionately more exposed to injuries.The highest number of injuries was reported in lower limbs, matching by the results found by Moradi (2007), Schmidt (1990), Funick (1989), Ytterstad (1996), Morgan (2001),Chan (1984), Elyasi (1998), John (2006), Astrid (2006), and Khosravizadeh (2007) [11-12-13-14-15-16-17-18-19] and is presumably related to constant usage of lower limbs in comparison with other limbs. It may also be due to the lack of warming up, insufficient use of protective devices, and high

engagement of muscles and joints in lower limbs. In the study done by Souza (1990), there was a significant relationship between the level of competition and the number of injuries [25]. However, in the present study, no significant difference was found between injuries in professionals and nonprofessionals. Perhaps one reason is that in Iran, athletes do not exercise constantly and no demanding and exhausting exercise is done by track and field players. Further research should be done on the issue to find whether there is a dierence between professionals and nonprofessionals and to provide strategies to decrease the injuries in both groups. Results of this research can be used in pre-semester examinations to prevent from further subsequent injuries, considering the strategies available. Consequently, the most important usage of this research is to prevent the occurrence of subsequent injuries by identifying apt injured athletes and to provide preventive strategies. These tests can be used in rehabilitation and determination of the size of impairments and disabilities of injured athletes and their readiness for the purpose of designing more exact rehabilitation plans.

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