



PREVALENCE AND CAUSES OF INJURIES IN SPORT ROPE IN GIRLS

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ABSTRACT

The purpose of this study was to determine the rate of prevalence and causes of sport injuries in sport rope in girls. To this end 47 girls who were active in sports rope with mean age 12.5 ± 2.5 years and the sport experience 3.8 ± 3.7 years, participated in this study.

The data in this study was based on three different close questionnaires; the first part of the personal characteristics, championship records and experiments, the second part was related to performers sport injuries including strain, sprain, bone and skin and the third section consisted of the probable reasons of injuries occurrence, preparation test, first aids types, action after injury, rehabilitation and type of injury in the injured limb. Each athlete should mark the number of his injuries during a year in the related columns. Descriptive statistical method was used in data analysis.

The results indicated that muscular injuries (77.4%) were significantly more than other injuries. Also, injuries in lower limb organic (60%) were significantly more than other body parts. Moreover, the results showed that the most injuries included muscle contusion (61.3%), strain (16.1%), sprain (9.7%) and dislocation (9.7%). Improper warning up (31.9%), lack of suitable shoes (23.4%) and no special fitness for sport rope (14.9%) were the most injuries reasons. Also, the most important mechanism of injury incidence was related to Performance on hard surfaces and non-standard such as parquet (28%), asphalt (25%), and mosaic and dirty ground (each with 19.1%).

With improving coaches and athletes awareness of the prevailing injuries in this sport, preventing the athlete from return to training and match before being fully healed, according

to the duration of rest to recover energy reserves lost during training and competition, increase muscle strength fits for sport rope, warm up body before practice and competition, along with the use of protective equipment, mental preparedness and safety can be more than many in the sport reduce injuries.

Key words: Sport rope, Sport medicine, Sport injuries, Safety

INTRODUCTION

In most sports, there is a risk of injury. These injuries in contact sports are inevitable. For example, most injuries are strains and muscle soreness and injuries in karate stance is brief and serious inj such as fractures, joint dislocation and sprain in sports such as football, wrestling, weightlifting, skiing, athletics, taekwondo, judo volleyball and basketball, and even higher [1, 2].

There are various sports injuries, many studies have reported that, according to scientific recommendations for the prevention of injuries as a result [3, 4]. Oler *et al* (1991), especially in the championship sports safety questioned [5]. The 5-year study by Birrer (1996) showed that the martial arts are safe. He was just in the martial arts great damage occurs in the limbs, but most of them are minor component damage [6]. Merrilee *et al* (2000) also stated that in their study karate for adolescents and youth, sport is relatively safe as long as the principles taught [7]. In a study Zetaruk *et al* (2005) conducted a minimum of five martial art of Tai Chi injury reported in karate and taekwondo risk

of injury and multiple injuries as were three times higher than karate. The head, face, and upper extremity soft tissue areas most exposed to the discipline of karate introduced [8]. Pieter (2000) in his study of injuries to the head and neck in men's and women's elite Karathkar most damage has been reported [9]. In a study Pappas (2007) about the three major sports of boxing, wrestling, and martial arts do, other sports injuries in martial arts is much lower than reported [10].

Therefore, due to the lack of research to find the sport rope injuries, researchers have aimed to investigate the prevalence and causes of injuries in sport rope in girl athletes.

SUBJECTS AND METHODS

Research were The subjects of this study consisted of 47 girls players in sport rope with average age 12.5 ± 2.5 years and had 3.8 ± 3.7 years history of sport playing. The data collected by the researcher prepared a questionnaire sports injuries, were used. The questionnaire is comprised of three parts. The first part involves personal information of each athlete including duration of sports

activity, the highest rank and place, height, weight, and age. The second part involved the offered tables classified under four type of strain, sprain, bone and skin injury in head and face, torso and spine, and upper and lower limb injuries in which each athlete should check the took place number of his injuries during the last year; And the third part including 11 questions about test preparation, causes of injury, type of first aid, after-injury and rehabilitation actions, in the injured limb. To statistical analyze the data, descriptive statistics (shown as mean, standard deviation drafting tables, figures and percentage) were used.

RESULTS

Results of this study showed that in general 61.7% of the elite karate players had injury in their trainings and matches during the last year and only 38.3% did not have any injury. **Figure 1** shows the percentage frequency of the injury spread in different parts of the body. According to the figures, lower limb (60%) comprises the highest rate in injury significantly and torso and vertebral column (2.8%) and Head and Face (2.8%) have the least rate injury, and upper limbs' injuries were 34.4%, respectively.

The information presented in **Table 1** shows the percentage of injuries in different body parts of Iran's girls' players in sport rope that is illustrated with classification of each limb. The most injured part in head and face

is eye, in torso and spine is Loin, in upper limb are wrists, and in lower limb are ankles.

In **Figure 2**, four fold injury rates are shown in the samples. According to this figure, bony injuries with the least percentage (3.2%) and muscular injuries with the highest percentage (77.4%) comprise the highest rate of injuries significantly, and skin and articulation injuries comprise 19.4% and 0% of the total percentage of injuries.

In **Table 2**, four fold injury types are divided to different parts and percentage of each injured part is observed. According the table, the most frequent types of injuries are muscle contusion (N=19 and 61.3%), strain (N=5 and 16.1%), and sprain and dislocation (each case N=3 and 9.7%), respectively. In articulation injuries, dislocation and sprain (9.7%) comprises the highest percentage of the injuries. In muscular injuries, muscle contusion (61.3%) and strain (16.1%) comprise the highest and the lowest percentage of the injuries, respectively; in bone injuries, closed fracture (3.2%) was the most frequent injuries.

Research findings also suggest that some of the factors involved in injuries. By surveying girls in sport rope, it was found that 61.3% of the girls have taken part in the preparation test while 38.7% of them had

not taken part in it. To them, 31.9% of the injuries has occurred when the body had not been warm enough, 23.4% has occurred because lack of suitable shoes, and 14.9% of the injuries has occurred due to a lack of special fitness in sport rope to them. The information presented in **Table 3** shows the influence rate of factors involved in occurrence of injuries in girls of sport rope.

The survey on the role of having or not having time for a match (training) on injury occurrence showed that 85.2% of the injuries occurred while training and out of match time, since 14.8% of them occurred in match time.

Results obtained from the survey on the type of first aid offered when an injury occurs demonstrate that in 15.1% of the injuries ice is used, in 33.3% the injured limb is immobile organ, in 9.1% the injured limb is bandaged, in 6.1% the injured using massage therapy, in 6.1% the injured athlete is transferred to therapeutic centers, and in 30.3% they did not use any first aid.

The survey on the issue that who has offered the first aid illustrated that the first aid is offered by the doctor (16.7%), the coach (70.8%), the athlete, himself and other people (12.5%), respectively.

A survey was also carried out to ask the subjects about the offered measures after the injury occurrence that showed, reducing the activity (87.5%), and surgery and splint

rated (each one with 6.25%) has the highest and lowest percentage of the measures, respectively (**Figure 3**).

The results obtained from the survey on the offered measures at rehabilitation period shows that measures offered involved heat therapy (8%), physiotherapy (8%), therapeutic massage (16%), therapeutic exercise (32%), and 36% have not taken any action (**Figure 4**).

Another survey was also carried out to ask the subjects if they immediately continued their match or training after being injured during the match or training. 88.9% of the athletes' responses were positive and 11.1% were negative. Moreover, 41.7% of these athletes started their sport activity before being improved fully and just 58.3% of them continued their sport activity after complete healing of their injuries.

In addition, finding of the study demonstrated that 29.8% of the girl's athletes in sport rope still felt pain, 14.8% had motion limit in the injured limbs and only 55.6% had not trouble in the injured limb.

Finally, the results of the survey on the location of the damage has been training, 28% on the parquet, 25% on the asphalt, and 8.8% on the carpet (prayer room), 19.1% on soil surface and 19.1% on the mosaic would have to run the rope. Also, from the same patients, skeletal malformations were

performed to test the 63.8% no skeletal abnormalities, and 36.2% of a variety of skeletal abnormalities were plenty of them in the following **Table 4**, you see.

Table 1: Scattering distribution of injured body parts of Iran's girls' players' in sport rope

Limb		Frequency	Percent	Total percentage of each organ
Head & Face	Cranium (Head)	0	0	2.8
	Cheek (Face)	0	0	
	Jaw	0	0	
	Tooth	0	0	
	Nose	0	0	
	Gob	0	0	
	Eye	1	2.8	
Ear	0	0		
Body & Spine	Neck	0	0	2.8
	Back region	0	0	
	Loin	1	2.8	
	Ribs	0	0	
	Chest	0	0	
	Abdominal muscles	0	0	
Sides	0	0		
Upper limb	Shoulder	3	8.7	34.4
	Arm	3	8.7	
	Elbow	0	0	
	Forearm	1	2.8	
	Wrist	4	11.4	
	Fingers	1	2.8	
Lower limb	Pelvis	0	0	60
	Leg	1	2.8	
	Knee & Kneecap	4	11.4	
	Foreleg	1	2.8	
	Ankle	10	28.6	
	Toes	3	8.7	
	Metatarsus	2	5.7	
	Total	35	100	100

Table 2: Occurrence rate of four fold injury types in people classified under the entire body

Injury types		Frequency	Percent	Total percentage of each organ
Articulation injuries	dislocation	3	9.7	19.4
	sprain	3	9.7	
	Meniscus injury	0	0	
Muscular injuries	trauma	0	0	77.4
	muscle tear	0	0	
	muscle contusion	19	61.3	
	strain	5	16.1	
Bony injuries	open fracture	0	0	3.2
	closed fracture	1	3.2	
	Partial fracture	0	0	
Skin injuries	wound	0	0	0
	ulcer	0	0	
	Total	31	100	100

Table 3: Effect rate of factors involved in injury occurrences

Reasons of injury occurrences	Frequency	Percent
Not having primary physical preparation	3	6.4
Not having the body build related to sport rope	7	14.9
Inappropriate warm up	15	31.9
Not being skillful enough in performing the techniques	1	2.1
Not using protective equipments	2	4.3
Not having suitable clothing	11	23.4
Injury by training partner	0	0
Not observing immunity factors while training	4	8.5
Unfamiliarity with performing method of techniques	4	8.5
Training over-extension	0	0
Total	47	100

Table 4: The prevalence of musculoskeletal disorders in girls sport rope

Skeletal abnormalities	Frequency	Percent
Kyphosis	1	5.9
Flat foot	3	17.6
Hypokyphosis	2	11.7
Jenue Valgum	2	11.7
Jenue Varum	3	17.6
Isolated Shoulder	1	5.9
Foot parenthesis	1	5.9
Deviation of the fingers	1	5.9
Small of Back	1	5.9
Back tilt	1	5.9
Deviation of the leg bone	1	5.9
total	17	100

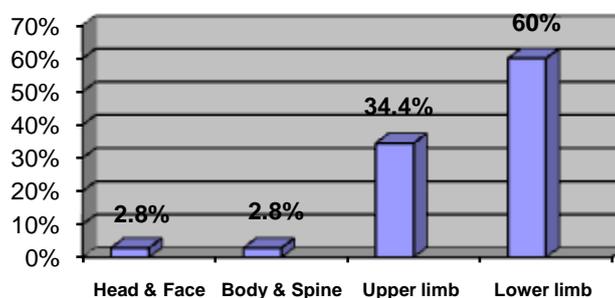


Figure 1: The incidence of injuries in different organs in sport rope in girls

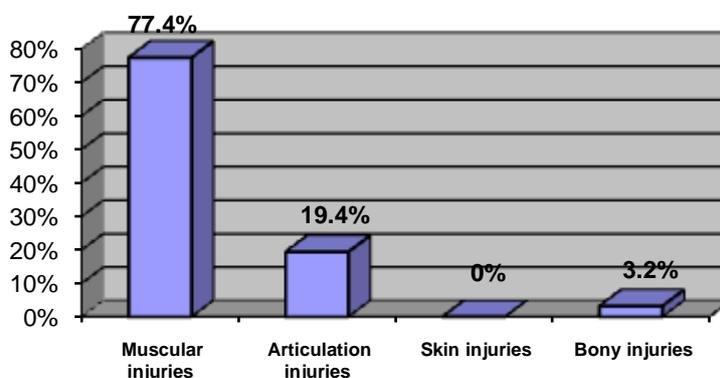


Figure 2: Occurrence of four fold injury types among Iran's girls' players' in sport rope

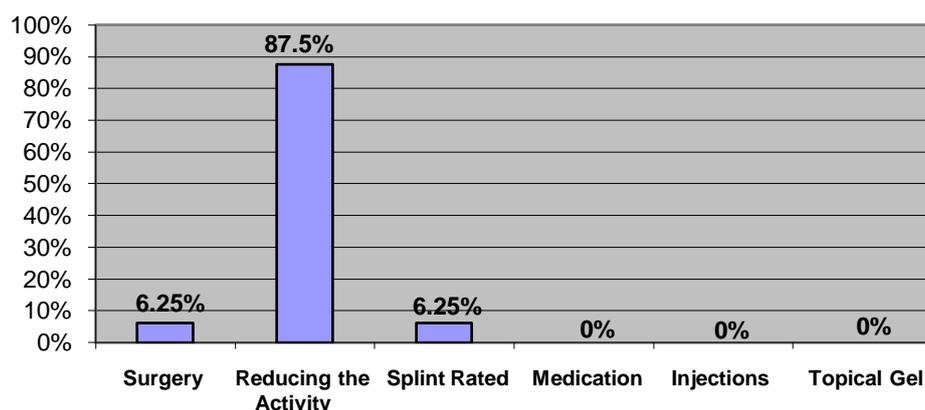


Figure 3: Offered measures after injury occurrence

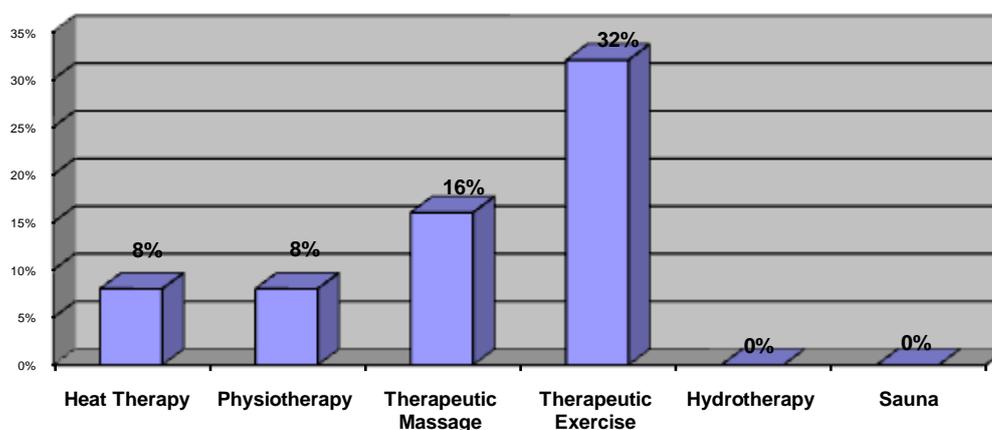


Figure 4: Offered measures in rehabilitation period

DISCUSSION

Injuries in sport occur and are one of the common difficulties in championship sports. Analyzing the results of sport injuries in the present study demonstrates that 61.7% of girls players in sport rope in during last year had injured and just 38.3% had no injury.

The results of the different parts of the body vulnerable in girl's sport rope, in this study, suggesting that the rate of injuries occurring in the lower limbs was significantly higher than in other parts of the body. Cause of injury in this area, the implementation of

non-standard and non-elastic cord on surfaces like asphalt, mosaic, carpet and flooring, which is hard and strong, and do not have the required softness, which in some cases can even cause injury. Irreversible, on the knee and bone growth, toddlers, teens and youth.

In the offered figures of the study and their obtained results, a comparison was made between different type of injuries classified under muscular, articulation, skin and bone. Rate of muscular injuries is higher than other types of injury significantly and

muscle contusion (61.3%) and strain (16.1%) comprised the most and the least frequent type of muscular injuries, these results are consistent with those of Pieter (2005), Zetaruk *et al* (2005), Arriaza and Leyes (2005), Arriaza (2003), Pieter (2000), Critchley *et al* (1999), Hillman *et al* (1993) [8, 9,11-15]. Therefore, the high percentage of muscle injuries, it is suggested that the musculoskeletal system, an essential role in all sports, especially sports woman rope, plays, with regard to the repeated calls, and jump and jump straight lower limb during training and competition, musculoskeletal system, most of injuries, is injured, that it would be desirable and essential role of physical fitness, muscular system, in particular, be considered.

Inappropriate warm up is reason involved in occurrence of injuries in girls that comprise 31.9% of the injuries. As a result, coaches' and athletes' attention and care should be attracted to this important point that athletes should warm their whole bodies up systematically before exercise and match. In this regard, Alter (1996) asserted that warm up along with stretch movement before sport activities cause reduction of many injuries while performing the technique [16]. Hergenroeder (1998) offered strategies to reduce sport injuries that warming up and cooling down body by using PNF stretch. Therefore, the correct methods of heating

the athletes, coaches and more attention to this issue are very important in reducing and preventing injuries [17].

Other factors contributing to the incidence of injuries, lack of appropriate footwear for sports and fitness was 23.4 percent and 14.9 percent, respectively accounted for, as a result of these factors can be considered as a factor, and attention the athlete, who, according to research conducted by Routley and Valuri (1993), Heiss (1998), and Charles and Timothy (2000) showed that the main cause of injuries, excessive fatigue [18-20]. Also, athletes and bodybuilders use for their sport. Therefore, teachers should also implement training programs, technical and tactical, surveillance more on bodybuilding athletes, and to provide training to enhance the ability of athletes under the command of there.

Lack of involvement of 88.9% of the athletes in preparation test and return of 41.7% of them to training and match before complete improvement is very effective on occurrence of further injuries and 29.6% of them still felt pain, 14.8% influenced by motion limit in their injured limbs.

The results indicate that, in this sample of 47 patients, 17 of them, equivalent to 36.2 of girls athletes, with a variety of skeletal abnormalities, which were in your body, it is the authorities' attention relevant, to provide corrective actions, and introducing

people to focus on corrective actions, or even physician to perform special exercises to overcome the skeletal abnormalities in girls done remarkable work.

Contrary to popular belief, a woman sporting cord injury is thought to be high, compared to the sport, with other disciplines such as football, handball, hockey, gymnastics and wrestling, indicating the percentage of low intensity loss is ropes woman. Therefore, it seems that the issue of injury, the woman ropes, including popular courses among students, especially girls, according to the national curriculum, the field in the fourth grade of primary school is compulsory, with attention of the authorities, supervisors, managers, coaches and players in this fascinating field should be considered.

CONCLUSION

Considering that the study results showed 61.7% of girls players in sport rope during training and competition in a kind of last year were injured suffered, lower limb with a 60% most of the damage won, 31.9 and 23.4 percent of the injuries, respectively, while occurred under training inappropriate warm up and lack of suitable shoes, and return 41.7% of conservatives to karate practice and competition before healing was complete, In sum, it can be concluded from the results of the study that more awareness of coaches and athletes regarding common

injuries in this sport, preventing the athlete from return to training and match before being fully healed, according to the duration of rest to recover energy reserves lost during training and competition, increase muscle strength sport rope suit, warm up body before practice and competition, along with the use of protective equipment, mental preparedness and safety can be more than many in the sport reduce injuries.

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