

# Type, incidence and causes of injuries in elective karate national team competition for dispatch to Asian karate championship in Uzbekistan 2012

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## Summary

**Introduction.** Karate is the world's most popular martial art and like any competitive sports focuses on high performance, health and safety of participants. Many sports injuries are reported in karate Competition. According to these reports, the scientific advices are given to reduce and prevent injuries. Therefore this study was to evaluate common injuries in sport karate.

**Material and methods.** In this research most occurred injuries in Iran karate national team selective tournament in 2012 were evaluated. 462 competitions in six weights of the best Iran karate athletes held in these tournaments. Injury report form was completed and reviewed by researchers and tournament's doctor. Descriptive and inferential (chi- squared test) methods were used to analyze the data.

**Results.** Results showed 178 injuries during the tournaments. 57.3% was occurred in evening. Trauma was the most injuries (64.6%). 57.9% injuries were occurred in head and neck. 96.6% injuries were occurred in upper limb. The most injuries (56%) were occurred in the third minute of the tournament and the cause of injuries in 65.7% was opponent punch. 88.2% injuries were removed by using ice pack and anesthetic spray and only five cases of athletes were transferred to hospital.

**Conclusions.** It seems that by the changing of regulations and using of protective equipments in head and face and being aware of common injuries in karate, we can reduce most injuries in this sport.

## Introduction

Exercise is one of necessities of human life. Today, in civilized world we can hardly find someone who is deprive of beauty and excitement of sport. Nevertheless on one hand there are beauty and excitement for athletes, coaches and spectators and on the other hand hardships, pressures, training problems and injuries will have the most negative impact on athletes and coaches. Karate is the world's most popular martial art and focuses on high performance, health and safety of participants, like any competitive sports [1]. Many sports injuries are reported in karate competition. According to these reports, the scientific advices are given to reduce and prevent injuries [2].

Based on Zetaruk *et al.* study (2005) on five martial sports, they reported the least amount of injuries in Taekwondo is three times more than karate [3]. But in another study by the McPherson and Picket (2010) as a descriptive epidemiological study was conducted in martial arts, most martial arts injuries in karate and at the lowest damage were as tai chi [4].

On the study that Pappas (2007) conducted on three important sports and games- boxing, wrestling, and the martial arts – injuries in the martial arts were less than the two other sports [5]. In their study with the title of „Injury profile in competitive karate" and by analyzing three successive world matches, Arriaza and Leyes (2005) reported punch blows (82.7%) as the main cause of injuries, head and face as the injured areas (72.5%), and contusion as the main type of injury (50.3%) [6]. Also, the 6-year study of Macan *et al.* (2006) demonstrated that new judgment rules have caused reduction of injuries in karate matches. They asserted that strict judging and heavy penalties for uncontrolled blows, particularly for the youngest competitions, can significantly decrease the risk of injury [7]. Arriaza *et al.* (2009) in their study showed that applying the new competitive rules karate, with dramatic declines in injury rates has been accompanied by a karate competition for athletes, is safer [8]. So the present study was aimed to examine common injuries in karate tournaments.

## Material and methods

In this study the numbers of occurred injuries were examined in Iran karate national team selective tournaments in the age of senior for dispatching to Asian Karate Championship in 2012.

462 competitions held in these tournaments in six weights of the best Iran karate athletes. The research instruments were standardized questionnaires to measure the prevalence, type and mechanisms of karate athletes' injury and completed by the researchers and tournaments' doctors. Descriptive and inferential (chi-squared test) methods were used to analyze the data.

## Results

Findings showed 178 injuries during the tournaments. In every 2.6 competition, an injury occurred and in every competition there were 0.39 injuries. Table 1 shows the distribution of injuries.

Based on this table significantly the most type of injuries are related to trauma 64.6% ( $\chi^2 = 167.9$ ,  $p < 0.05$ ) and the most injuries (57.9%) are related to head, neck and face ( $\chi^2 = 198.6$ ,  $p < 0.05$ ).

Results show that the time of happening injuries through competition was in this order in first minute (16%), in second minute (25%), in third minute (56%) and extra time (encho-sen) (3%).

Also 57.3% of injuries happened in the evening and the others happened in the morning. 54.5% of injuries were removed by using ice pack, 33.7% use cold spray, 10.1% use cotton and sterile gauze, 1.7% use topical gel and washing, and only five cases were transferred to hospital.

## Discussion

Research's findings show 0.39 injuries in any competition which was consistence with other findings of researchers Tuominen (1995), Arriaza and Leyes (2005), Khodabakhsh (2008) [2,6,9]. Tuominen (1995) reported 0.28 of injuries in any competition in Finland national karate completions [9]. Khodabakhsh (2008) in their studies stated 0.26 of injuries [2]. Arriaza and Leyes (2005) by analyzing three continual world championships reported 0.31 of injuries in any compe-

tion [6]. Comparing these results with other countries indicate the high number of injuries in Iran competitions.

The results of evaluation in different area in body significantly indicate that the number of injuries in head and neck are more than other parts of the body. These results are consistence with the findings of Helabchi *et al.* (2007), Pieter (2005), Zetaruk *et al.* (2005), Arriaza and Leyes (2005), Arriaza (2003), Pieter (2000), Critchley *et al.* (1999) and Hillman *et al.* (1993) [3,6,10,11,12,13,14,15]. Also they are not consistence with finding of Khadkhash (2008) because he may be evaluated occurred injuries in the young age athletes [2]. These results also are not consistence with the findings of Bebari (2009) because he has done on non-control, kyokushin, karate competitions [16]. The most kicks in non control karate training and competitions are in lower limb and very few of them are no the head and face.

The study of damage areas of the body shows that 57.9% of injuries occurred in head, neck and face and it considered as errors. So punching and kicking in these areas means that referee and judging regulations are not fully implemented and athletes try to punch and kick on head and face to eliminate the focus their opponent. Results are consistence with the findings of Salami (2006) [17]. Comparing these results with other countries indicate the high number of head and face injuries in Iran tournaments.

Due to the 65.7% causes of punch injuries, it seems that the use of protective equipments in different areas of body can be useful in reducing injuries in karate and in should be considered by the supervisors.

In this research most of injuries were classified as minor damage which is consistence with other researchers' findings. Contrary to public perception which thought karate is violent sport, a collision with high injury, compare this with other sports like football, handball, hockey, basketball shows that karate has extremely low injuries. Results of this part are consistence with finding of Salami (2006), khadakhsh (2008), and Bebari (2009) [2,16,17]. So it seems that injuries problem in karate which is a field full of medal, should be consider by supervisors, responsables, technical managers, coaches and athletes.

Overall we can concluded from the findings that with variation of regulations, using protecting instruments in head and face region, strict Judging and heavy penalties for uncon-

Table 1. Distribution of injuries

Injured area	Number of injuries	Percent	Injury type	Number of injuries	Percent
Head, neck & face	102	(57.9%)	Trauma	115	(64.6%)
Trunk	51	(28.6%)	Contusion	36	(20.2%)
Upper limb	18	(10.1%)	Bleeding	21	(11.8%)
Lower limb	6	(3.4%)	Sprain	6	(3.4%)

Table 2. Cause and injuries severity

Injured cause	Number of injuries	Percent	Injury severity	Number of injuries	Percent
Punch blow	117	(65.7%)	Light	149	(83.7%)
Kick blow	52	(29.2%)	Mild	18	(10.1%)
Fall down to the ground (barai)	9	(5.1%)	Moderate	7	(3.9%)
			High	4	(2.3%)

trolled blows, and informing coaches and athletes more often with current injuries in karate can decrease many incidence and accidents of injuries in this sport field.

## Conclusion

It seems that by the changing of regulations and using of protective equipments in head and face and being aware of common injuries in karate, we can reduce most injuries in this sport.

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