



## Relationship between sport injuries of Neck and Trunk with fitness factors in futsal players

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### ABSTRACT

*The purpose of this research was to find the relationship of sport injuries in neck and trunk and fitness factors in female futsal players. Sixty eight athletes (19-22 yrs) of futsal teams participated in 2012 in competition were selected as statistical samples. Fitness tests were used to measure their physical fitness. A questionnaire was used for the collection of sport injuries. K-square of correlation coefficient was used to examine the relationship between variables. The results showed that it is observed that 5.9% of the subjects had injuries in the neck, 1.5% at their trunk. There have not been found any rate of injuries in the forehead and ears of players ( $p>0.05$ ).*

**Key words:** sport injuries, physical fitness factors, neck and trunk

### INTRODUCTION

In recent years researchers about the incidence of sport injuries have been increasingly expanded so that enough information are available in the field of different sport pathologies especially for medical, rehabilitation teams as well as coaches and athletes. The importance of this topic can be paid attention in both terms of health and championship; in one hand an athlete needs a healthy body and his/her fitness and in the other hand the atmosphere of competition or championship influences on athletes temperament as well; therefore the role of researchers are important in the field of sport injuries, type and related mechanisms [17]. Today the majority of people have achieved to a correct understanding of sport and physical activity in terms of health, fitness, treatment and prevention of injuries, but the lack of fitness and physical injuries awareness in those one who participated in his/her favorite sport field may cause to unexpected physical losses; this may also label a negative mark in the field of sport; not only the lack of information in terms of sport makes athletes expose to any injuries but also their mental/psychological conditions get into risky setting so that any physical activities disappear from athletes sport life [5]. Fitness factors and sport injuries are dependent completely together influencing each other at the same time; therefore any struggle through athletes physical abilities cause to prevention of an injury is a crucial step to reach to physical training worthwhile goals; as we know football is a favorite sport of Iranian people and the world; based on FIFA statistics about 265 million players exist in all over the world; that is, about four percent of the world population playing football in many different locations (FIFA). Among this futsal is a new-established sport playing by million players in all over the world but a few researches have been achieved in the field of futsal injuries so far; in our country in spite of increasingly number of futsal there is no any comprehensive research in this regard [10]. We should try to keep futsal players from any injuries during the matches because the issue of player injuries has been considered as the most vital problem among coaches and players of futsal sport; therefore in order to prevent any injuries in futsal we should know firstly about the amount and incidence of injury in sport community and its related factors on individuals fitness rate; because fitness tests are used to evaluate the status of athletes in terms of health and their results play key role in players lifestyle quality. Meanwhile the results of the study can help all coaches, body-building partners, sport psychologists to be able to control any injury related factors and the incidence of injury among athletes. Therefore this research plays a key role in the prevention of sport injuries as well as decreasing the incidence of these injuries; Sanaiee (2009) has reported the causes of injuries in terms of player clashes and collision with an opponent; Zareiee (2008)

has also reported the greatest number of injuries in the final 15min of play and the most part of injuries were related to ankle and leg (18%); he took factors such as race, region, field, anatomical area of injury, post of players and host or guest as the famous incidence of injury factors in Iranian premier league. Hasheminaia (2007) has announced that the highest rate of injury in lower limbs (60.7%). The information related to the power of lower limb showed that most of these players were moderate or low in terms of upper and lower limbs; information related to cardiovascular endurance also showed that about 51.2% as the moderate level and 24.4% were in a suitable position; among this their flexibility tests was 22.2%, 26.7% in upper and lower limbs as the most strongest respectively [5]. In 2003 Nasermelli the researcher of gymnastics, wrestling, swimming and taekwando concluded that the rate of backache incidence in footballers (83.87%) stands in the second place in this research; the most important reasons of backache incidence among athletes especially in footballers relate to a direct damage towards back, inappropriate pitch, extra exhaustion and exercise pressures, opponent tackling, and sudden turn during the game; therefore prevention of any severe clashes and aggressive behaviors, readiness of physical skills and a suitable sport setting are suggested strongly as the preventive/protective tools of backache [11]. Safarian (1988) in a comparison of fitness and the incidence of sport injuries concluded that both fitness and injury are dependent together in which some of these injuries such as muscular strain, contusion and inflammation into the muscles can be suspended through increasing the level of fitness. A few injuries such as contusion, fracture, abrasion are a little exposed to the fitness [14]. Barouni et al (2008) in a study related to the review of incidence of sprains in foot wrist of 128 Brazilian 13-15 year old footballers reported hitting on the ground is the main reason for this kind of injury [9]. Gall et al (2008) stated that players under 14 years old are more prone to injury during exercise (especially damage to growth plates) but in the tournaments players under 16 years old are injured more than other age groups. It seems that with the increasing age of the young players the incidence of injury will reduce. This issue is happening in young and inexperienced players due to fewer skills and less muscular endurance [9]. Ribero et al (2006) stated that the main reason of injuries is the clashes between players (65.62%) in the study of futsal championship tournaments of Brazilian under 20 year old players. In another research Emry et al (2006) carried out the comparison of injury incidence in football and futsal tournaments; the rate of incidence (4.45%) for injuries per 1000hr was reported 5.59% for futsal tournaments [9]. Also Giza et al (2005) reported the prevalence rate of 12.63 injuries per 1000hr of competitions for the American national women football league. Despite the lower the incidence of injury in women soccer players than men some types of injuries occur in women; for example the incidence of injury ACL in women has been reported due to hormone effects, the small size of the gap between the condyl of femur and muscle weakness hamstring three to four times more than men. Fuad et al (2005) also reported the prevalence of 23.3 injuries per 1000hr between the women's professional soccer in Germany. Jung and et al (2004) pointed to 191 injuries per 1000hr in the championship of futsal in Guatemala in 2000 that this rate of injuries were two times higher than football competitions [18]; Linderfield et al (1994) also showed 50.4 of injuries per 1000hr for men and 50.3 for women during the futsal tournaments. Hoff et al. (1986) stated that the main cause of these injuries is related to the clashes between players; also they reported that this rate of injury incidences is 6.1 times higher than soccer football. According to the mentioned studies the incidence of injuries in futsal is higher than football that it comes from this sport's fast reactions from players; in other words, all players' movements and the hardness of the field are suitable reasons for any injuries in futsal than football [9]. Sullivan et al (1980) reported the highest rate of injuries among 17-19 year old girls but the lowest rate of this subject relates to 9-13 year old girls; but this rate in old women has been reported lower than old men [17]. John and musher (1991) also stated that some researchers have been considered these injuries related to fitness such as power, endurance, agility and exhaustion and in their studies on injured students showed that the lack of fitness is considered as the most common agent of 27% injuries among students. Based on controversial researches it is implied that self-research should be done in the field of women futsal and their physical fitness factors.

## **MATERIALS AND METHODS**

This research is a descriptive-correlative method. Information about the prevalence and type of occurred damage in the tournaments was obtained through questionnaires. 68 athletes between 18-22 years old as the players on the Olympic team in friendly matches of Iran were selected as the samples. In this study the stopwatch was used to measure time of the tests. K-square correlation coefficient method was used to examine the relationship between the research variables.

## **RESULTS**

**Table 1.** Frequency of injuries in neck and trunk of the subjects

Limb		Injuries	No injuries
Neck	Distribution	66	2
	Percentage	97.1	2.9
Back	Distribution	66	2
	Percentage	97.1	2.9
Thorasic	Distribution	65	3
	Percentage	95.6	4.4
Hip	Distribution		100
	Percentage		100

According to table 1, it is observed that 2.9% of the subjects had injuries in the neck and back, no injuries were observed in thorasic and hip. There have been found much rate of injuries in the neck and back of players.

**Table 2.** Description of fitness records of subjects

Factors		Good	Moderate	Weak
<b>Aerobic power</b>	Distribution	4	37	-
	Percentage	9.8	90.2	-
<b>Flexibility</b>	Distribution	41	-	-
	Percentage	100	-	-
<b>Abdominal muscular endurance</b>	Distribution	11	25	5
	Percentage	23.9	61	12.1
<b>Agility</b>	Distribution	9	32	-
	Percentage	22	78	-
<b>Explosive power</b>	Distribution	-	10	31
	Percentage	-	22.4	75.6

Table 2 shows the record of aerobic power among footballers are as follows 83.8% moderate, 8.8% good, and 7.4% weak. The aerobic power in 90.2% is moderate. 9.8% is defined as a high level; all subjects had enough flexibility in this regard; the level of endurance in abdominal muscles was 23.9% good, 61% moderate and 12.1% weak. 22% had a good agility level and 78% agility is defined as moderate level. 24.4% were moderate aerobic endurance and 75.6% were weak.

**Table 3.** Description of Fitness tests scores of subjects

Variable Indexes	Mean	St dev	Min	Max	Range of Change
VO <sub>2max</sub>	41.2	5.3	29.7	52.3	22.6
Flexibility	31	6.52	12	45	33
Sit-Reach	39.7	10.7	20	65	25
Agility	18.3	1.09	15.8	21.5	5.69
Explosive power	31.6	4.67	23	42	19

Table 3 shows the mean aerobic endurance of the subjects was between 41.2±5.3. Also, footballer's flexibility record was 31±6.52cm; the number of squash was 39.7±10.7. Also the record of agility between footballers was 18.3±1.09 seconds. The mean record of explosive power among futsal players was 31.6±4.67cm.

**Table 4.** Coefficient of K-Square to find relation between fitness tests and incident of sport injuries

Variable	K-Square	Sig
Flexibility	-0.026	0.750
Abdominal muscular endurance	0.106	0.948
Agility	0.72	0.396
Explosive power	1.259	0.262

According to table 4, it can be said that there are no any significant differences between flexibility, abdominal muscles, agility, explosive power and the face injuries ( $p>0.05$ ). But in the other hand, there is a significant difference between aerobic power and face injuries ( $p>0.05$ ).

## DISCUSSION AND CONCLUSION

The results of the study showed that 2.9% of the subjects had injuries in the neck and back, no injuries were observed in thoracic and hip. There have been found much rate of injuries in the neck and back of players. The results of the study and Dourk and Jangi (2007) are matched together in which the highest rate relates to business and also Grenier (2001) states the business as the common injury in football. Lidfield et al. (1994) reported contusion as the common injury in football. Also Hoy and et al (1992) consider contusion and stretch as the usual injuries in football and futsal; Draver and fooler (2002), Thomas and David (1998) reported contusion and stretch as common injuries. Also the results of the study are matched with Saneii (2009), Hasheminaei (2007), and Safaiyan (1998) that all consider contusion and stretch as the most common injuries in football. According to the level of fitness in all footballers as in moderate level, the results of this research are matched with the results of Bergerdon et al (1990), Heiss (1987), Gall et al (2008), Pilevar et al (2012); besides all these researchers consider the lack of fitness as the most vital factor for any sport injury. The present athletes of the study were in good level of flexibility whereas other factors were in moderate level.

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