

## A SURVEY OF SAFETY MANAGEMENT IN SPORTING EVENTS IN CENTRAL PROVINCE OF IRAN

\*Mobin Hassani<sup>1</sup>, Alireza Bahrabi<sup>2</sup> and Mehr Ali Hemmatinezhad<sup>3</sup>

<sup>1</sup>Physical Education Instructor, Arak, Iran

<sup>2</sup>University of Arak

<sup>3</sup>University of Guilan

\*Author for Correspondence

### ABSTRACT

**Aim:** The ultimate goal of safety management in sports is to provide proper and safe conditions for all participants in sports, including: athletes, coaches, spectators and organizers of workshops and sports competitions in order for them to benefit from sports and physical activities and to prevent accidents or damages on the sports arena. The aim of the present study was to evaluate the safety management of sporting events in Central province of Iran. **Method:** This was a descriptive study and the population included the sporting events held in the Central province of Iran within a period of three months (N=36). All the sporting arenas hosting the events, technical supervisors, medical assistants were taken as samples, and in each competition two coaches were randomly chosen as samples. The research data were collected over a period of three months. And a questionnaire was used to obtain information about variables like the safety from the technical supervisors' standpoints, safety facilities, services, first aid equipment, and safety knowledge and safety behaviour of coaches. To analyse data, the methods of descriptive and inferential statistics such as one-way ANOVA, t-test, Pearson correlation coefficients at the significant level of 0.05 were used. **Results:** In only 8% of the sporting events of the sample, an emergency ambulance with full medical equipment was present. The level of safety management in sporting events with the mean ( $67.758 \pm 1.429$ ) and SD (8.572) was at a good level but far from the ideal. The safety management of the sports competitions held indoor and that of outdoor sports were significantly different. The competitions held in indoor places had a higher safety management than those in open sites. In the sporting events, the safety managements were significantly different between men's sports events and those of women. For the women the safety management was higher than that of the men. The safety management of sporting events held in different age groups had no significant differences. Among the parameters affecting the safety of sporting events a significant difference was observed. The most important parameter in improving safety management was the safety behaviour of the coaches, and the most effective one in decreasing safety management was their safety knowledge. **Conclusion:** According to the results, a safety management committee must be held before starting any sporting events. The committee can be helpful in reducing accidents and sports injuries among athletes and all participants in the sporting activities. The committee can boost the safety management of sporting events in order to prevent possible accidents.

**Keywords:** Safety Knowledge and Behavior, Safety of Sporting Places, Sports Facilities, First Aid Equipment, Safety Management

### INTRODUCTION

Athletics and professional sports are always trying to attract more people to sports and help to gain adequate income through sports.

In this way, providing conditions that will guarantee the safety and security for athletes in sports, can contribute to greater efficiency.

Sporting events should be held in standard places that can assure not only the spectators but also the athletes and coaches that they are secured from any physical damage.

In this regard, safety management, especially in the provision of reassuring conditions in competitions can encourage more people to participate in sports events Bahrami and Hassani, 2013).

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Participants in sports and physical activities are always subject to sport related and non-sport related accidents (Bass *et al.*, 1989; Andersen and Ronald, 2002). Accidents in sports, in addition to the financial and civil obligations, cause psychological problems in adolescents and hinder the participation of athletes in future sporting activities and make them get out of sports field (Finch *et al.*, 2000). Reducing and preventing sports injuries and damages are among the most important duties of the athletic directors who can greatly prevent sporting and non-sporting events in sports environments by applying the principles and programs of safety management (Otago *et al.*, 2006).

There are many reports on the overall or slight injuries during sporting activities: Hergenroeder and Albert (1998) reported that almost every year nearly three million students attending school sports in the United States were injured which led to nonparticipation in sports (Hergenroeder, 1998). Finch *et al.*, (2000) considered sports injuries as an obstacle for athletes to participate in sports activities in the future (Hassani, 2007).

Accidents and injuries in sports fields are unavoidable even when greatest cares and controls are exerted; however, according to Otago and colleagues (2006) adopting preventive measures to reduce injuries is of the most important duties of sports managers (Otago *et al.*, 2006). The likelihood of sports injuries and accidents in sports and sporting events calls for coaches, officials and organizers of sports competitions to be prepared to deal with them. The safety of people participating in various sports activities, events and competitions are among the principles that officials and organizers of the competition should pay special attention to.

Safety management involves all the planning and attempts of a manager to provide safety, security and mental and physical comfort for employees and the clients of an organization. In other words, safety management includes all the procedures, planning, coordination and controls that are exerted by a manager in order to reduce risk factors and to prevent accidents in the environment he is in charge of (Hergenroeder, 1998). Safety management means the control and optimization of all structural and managerial parameters that minimize the possible harm to users, staff and all those associated with the system (Hassani, 2007). Hassani *et al.*, (2009) consider safety management as an umbrella which covers all sporting and non-sporting activities that are under the responsibility of managers, coaches and athletic clubs in general. Any defect or delay in the process of safety management can be followed by civil and legal liabilities for sports officials, including managers, coaches, organizers of the competitions and even the referees (Hassani *et al.*, 2008).

Sports and safety management are closely, yet complicatedly related. And safety management mainly involves predicting, assessing and controlling risk factors in sports events which lead to a safe and appropriate environment for sporting activities (Hassani, 2006). Safety management program in sports is the basic guideline for coaches, trainers, supervisors, physical education authorities for enhancing and monitoring the events, sporting places, facilities, equipment and the involved personnel. In other words, the safety management program is the risk assessment as well as managing the athletes (10). Safety management in sports examines the sporting field to eliminate or reduce any risk factor to athletes, coaches, administrators, spectators and all those who enter the sporting fields and to create a safe and secure environment for those involved in sports (Hassani *et al.*, 2008).

Researchers like Finch and McGrath (1997), Donaldson *et al.*, (2004) and Abbott *et al.*, (2007) have improved the strategies for safety in sports clubs by conducting research on sports injuries and risk management (Hassani *et al.*, 2005); Severs *et al.*, 2003); Finch and McGrath, (1997). Certainly the familiarity of sports managers with the principles of safety management and risk factors can help them improve the final goal of safety management which is the elimination or reduction of injuries for both the athletes and others involved.

Observing the basic principles of safety management and risk management strategies involves the prediction of risks in the organization and creating opportunities to defend the organization in the face of legal and civil charges. These principles try to help to avoid potential risks and threats in sporting management (Donaldson *et al.*, 2004); Abbott *et al.*, 2007). A variety of minor and major accidents and injuries may always happen in sports. In other words; the nature of participation in sporting activities

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involves the seprobable incidents (Eickhoff *et al.*, 2009). However, the application and observation of the principles of safety management at all the stages of sporting activities by the spectators, coaches and athletic directors can reduce these risks.

Sekendiz (2011) has mentioned muscle strain injuries, joint sprain, ligament injuries and orthopedic injuries as the most common and most serious injuries in sports which cause dissatisfaction and may face sports club with legal liabilities. However, the safety of the audience, spectators and participants in sporting activities should be of primary concern for athletic directors; for the reason that if security is not provided, these individuals may be damaged, in addition to the civic responsibility to managers which may follow (Sharp *et al.*, 2010).

Statistics show that falling on the ground causes a lot of injuries and even deaths on the playgrounds, mostly as the result of severe head injury (Aghaie, 2012); Sekendiz, (2011). Using a safer ground reduces the frequency and severity of these injuries (Laraque *et al.*, 1994). There are a lot of reports on minor and major sports injuries in stadiums. Sporting standards have been designed to enhance the health and safety of participants in sports competitions. The compliance with these standards is important in reducing the incidence of sports injuries in participants and competitors. Lack of standards related to each sport can cause adverse incidences. Safety management and risk control programs in athletic events can help managers and organizers of such competitions to perform better management. Furthermore, these programs could provide assurance for all participants, even though, they cannot guarantee a completely uneventful exercise (Andersen and Ronald, 2002). Recently, some measures have been taken to reduce sports and non-sports injuries and a prepared team of skilled technicians are employed to provide first aid in the event of an accident. As accidents in sports are unavoidable and even with greatest control and providing a healthy environment, there is a possibility of various accidents in sports, the familiarity of coaches with the principles of safety management; especially how to provide first aid can certainly help them better handle the situation. Research has shown that only half of America's national coaches have formal training in cardiopulmonary first aid (Sibert *et al.*, 1999), while they need to be prepared. On the other hand, the availability of suitable equipment and services in the closest location to sporting events plays an essential role in providing the services (Hassani *et al.*, 2005). The behaviour of trainers in classes, training sessions, competitions and the programs planed by the mare important parameters in creating safe environment for both beginners and professional athletes. Athletic trainers are able to prevent any sport or non-sport event for athletes by applying the correct principles of education, and proper employing of athletes in sporting competitions. On the other hand, teaching athletes and students the methods of avoiding and treating sports injuries is an appropriate strategy to increase their safety in the sports environments (Hassani *et al.*, 2008). Safety is a continuous process for trainers which starts before entering the classroom and continues throughout the class and even after the sports competitions. In other words, for people who join sporting places to enjoy physical activity and exercise, health and safety is the most important principle; and safety behavior of the trainers is the foundation on which the sporting character of a trainee is built. So, their behavior is an important factor in safety management on sporting fields and in competitions (Lewis *et al.*, 1993). Given the importance of creating a safe environment free of any possible injuries and accidents and the fundamental role of coaches, athletes and sports officials, the main issue is that to what degree the sporting events organized for athletes are safe for those attending sport centers. In other words , to what extent the safety measures taken for the individuals participating in sports competitions, including the organizers, coaches, athletes and spectators and other people present in the sports competition are effective in facing and preventing accidents and injuries. Since no study has been done in the Central Province of Iran in this regard, the present study was conducted to evaluate the safety management of sporting events in this area.

## **MATERIALS AND METHODS**

### **Methods**

This was a descriptive field study, and the population was 36 sports competitions held during a period of three months. No sampling of the population was done, and all the places hosting sports competitions, the

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technical supervisors, the physicians and paramedics present in the competitions were selected as samples; in every competition two coaches were randomly chosen as samples. Variables included the safety condition of the arena from the view points of the technical supervisors, the facilities, services, equipment and medical devices from the paramedics' points of view, the safety, facilities and sports equipment of the sport complex hosting the competition, the safety behavior of the coaches present in the competitions and their safety knowledge.

To evaluate the variables a five section researcher- made questionnaire was used whose validity was confirmed by the method of content validity and its reliability was determined by testing it on 10 different sports competitions and the coaches in different cities of the province using Cronbach's alpha coefficients at the significant level of  $\alpha= 0.05$  ( $r= 0.843$ ).

Data were collected within three month by referring to where the competition were held and filling out a checklist of the safety conditions, the facilities and sports equipment used by the technical supervisors of the competitions, and by asking to fill out the related part of the questionnaire by paramedics (concerned with first aid devices) and by the coaches (about their safety behavior and their first aid knowledge).

**RESULTS AND DISSCUSION**

**Results**

As it is necessary to observe appropriate space among the competitors to warm up and to allow them for movement continuation, in more than 16.67 % of the events this space was not observed both in the warm ups and in the competitions. In about 19% of sports places the spectators' seats were not designed properly and in 44% of cases the platforms were made of cement and stone with a height not suitable for all ages and only in 36.11% of the samples suitable seats for the spectators were installed and used.

Only about 11 % of trainers participating in sports competitions had completed a proper first aid training course, 79% of whom had done it more than two years before, without any retraining. In only 8% of the competitions medical emergency ambulance with full equipment was present at the scene. According to the descriptive data obtained about the effective parameters in safety management, presented in table 1, all the parameters involved in the competitions were at good level, yet far from the ideal. And in general, the safety management at the sporting events was good, but far from the ideal.

**Table 1: Statistical indicators of safety management parameters and safety management in sporting events**

Statistical indicators						
Safety management parameters	n	Mean	Sd	Min	Max	desirability
Safety of the competitions from the view points of the supervisors	36	71.829±2.123	12.738	48.571	91.429	good
Safety of the arena, facilities, sports equipment	36	62.677±3.028	18.166	18.605	88.372	good
services, equipment and first aid	36	68.651±2.351	14.109	32.143	92.857	good
Safety knowledge of coaches in sports competition	72	60.194±0.236	2.004	20	100	good
Safety behavior of the coaches in sports competition	72	77.643±1.292	10.962	50	93.284	good
Safety management in sporting Events	36	67.758±1.429	8.572	43.147	79.629	good
Less than 20% very weak		20%-40% weak	40%-60% average	60%-80% good	More than 80% excellent	

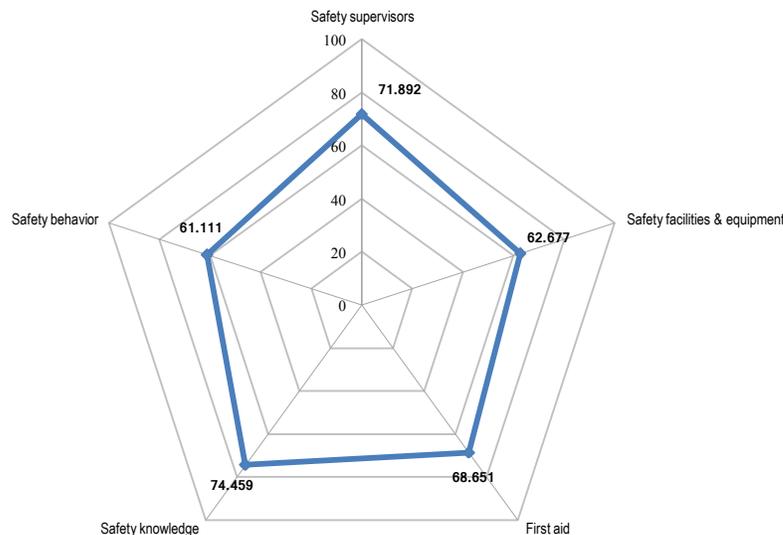
To evaluate the effectiveness of safety management parameters on sporting events the ANOVA test was used at the significance level of  $\alpha= 0.05$ . In this regard, two hypothesis were examined, one that there were differences between safety management parameters and the second asserting that there was a difference in safety management at sporting competitions.

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According to the obtained statistics ( $F=5.8889$ ) and the statistics ( $F(4,140)=5.6281$ ) of F distribution table (Cohen & Holliday, 2001), the null hypothesis that there was no difference between safety management parameters in sporting events was rejected and the presence of a significant difference was confirmed. Also, according to the statistics ( $F=1.8105$ ) obtained from the difference between the sporting competitions of different fields and the statistics ( $F(35,140)=1.9787$ ) of F distribution table the null hypothesis that there was no difference between the different events was not rejected and the presence of a significant difference was confirmed. The results are shown in Table 2 and Figure 1.

**Table 2: ANOVA for the comparison of the means of the parameters involved in safety management of sporting events in Central Province**

	Source of change	Sum of squares	Df	Mean square	F	Table F
Safety Management	Between groups	4780.264	4	1195.066	5.8889	5.6281
	Between subjects	12859.441	35	367.413	1.8105	1.9785
	Interaction and the remainder	28411.164	140	202.937	Significant at 0.05*	
	Total	46030.869	179			



**Figure1: The comparison of the means of safety management parameter sin sport events**

According to post hoc multiple comparison Tukey's tests at a significant level ( $\alpha=0.05$ ), as shown in table 3, significant differences between technical supervisors' views on the safety with the safety of sporting place, sports equipment and safety knowledge of trainers were observed. Also, the results of this test showed significant differences between the safety of sporting place, and sports equipmentwith the safety behavior of the trainers as well as the safety behavior of the trainers with their safety knowledge.

However, considering the mean and standard deviation, among the parameters involved in safety management, the role of trainers' safety behavior and the technical supervisors' view on safety were the most and the parameters of trainers' safety knowledge and the safety of space, sports equipment and sports competitions were the least effective ones in safety management.

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**Table 3: Tukey test to determine differences between the means of safety management parameters in sports competitions**

Safety Factors	Mean	Sd	Safety of the place and equipmen t	First Aid Services	Safety behavior of coaches	Safety knowledge of coaches	
Technical supervisor safety	71.892	12.738	9.215 3.882*	3.241 1.365	-2.567 1.081	10.781 4.541*	difference Statistics Q
Safety of the place and equipment	62.677	18.166		-5.974 2.516	-11.782 4.963*	1.566 0.666	difference Statistics Q
First Aid Services	68.651	14.109			-5.808 2.447	7.540 3.176	difference Statistics Q
Safety behavior of coaches	74.459	14.161				13.348 5.623*	difference Statistics Q
Safety knowledge of coaches	61.111	16.950	DF	r = 5	df <sub>w</sub> =175	Q Tukey = 3.86	

According to the t statistics (t=3.107) a difference between safety management in women's sporting events and those of men was observed (p=0.004) in such a way that in women competitions it was higher than in men's. To examine safety management differences in sporting events between men and women at first Levene's test was used for the evaluation of the conditions of equality of variances of the two groups, which, according to the F statistics (3.003) and the significant level obtained by T-test for equality of variances, was atman acceptable level.

Then the t-test at the significant level of ( $\alpha =0.05$ ) was used to compare the safety management in sporting events of men and women.

According to the t statistics (t=3.107) a difference between safety management in women's sporting events and those of men was observed (p=0.004) in such a way that in women competitions it was higher than in men's. A summary of these results is shown in Table 4.

**Table 4: Independent Samples t-Test to compare differences of safety management in sporting events of men and women**

parameters	gender n	Descriptive Statistics			Levene's Test for Equality of Variances	Test for t-test for Equality of Means			
		Mean	sd	Mean Difference	F	Sig.	t	df	Sig. (2-tailed)
Safety management of sporting places	female 6	76.646±1.128	2.764	10.666	3.003	0.092	3.107	340	0.004*
	male 30	65.980±1.503	8.231						

\*Significant at 0.05

To evaluate the differences of safety management in different levelsof sports events (local, provincial and national) the one-way ANOVA test at the significance level ( $\alpha=0.05$ ) was used.

According to the F (F=0.377) and the significant level (p=0.689) the null hypothesis asserting that there were significant differences in the safety management of sports events held in different levels ranging from regional to national was rejected and it was approved that there were significant differences between the safety management of different levels of the sporting events. A summary of these results is shown in Table 5.

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**Table 5: ANOVA for safety management of sporting events held at different levels**

Factors	Sources of change	Sum of Squares	df	Mean Square	F	Sig.
Safety Management	Between Groups	57.393	2	28.696	0.377	0.689
	Within Groups	2514,495	33	76.197		
	Total	2571.888	35			

To examine the relationship between the safety management in sporting events and the number of teams and athletes participating in competitions, Pearson correlation coefficient at the significant level of ( $\alpha=0.05$ ) was used, accordingly no significant relationship was seen between the safety management and the number of competing teams or individuals. A summary of these results is shown in table 6.

**Table 6: Pearson correlation coefficient to assess the relationship between the safety management in the event with the number of the teams and individuals participating in the competitions**

	Pearson Correlation	Number of teams	Number of Athletes
Safety Management of Events * The number of teams and athletes participating in the competition	-0.012	36	36
	Sig. (2-tailed)	0.974	0.414
	N	36	36

**Discussion**

The main duty of safety management is to predict, assess and control the risk factors in each sporting place with regard to the conditions and the sporting activity.

Safety management examines the operational grounds for the sporting activity and its safety (8, 11) in order to warn against the unsafe factors and adopt measures to eliminate them.

As the levels of competitions in the sports race which range from in-club competitions to Olympic Games, the safety for all participants at each level is of utmost importance.

Trainers are the sole organizers of in-club competitions and have a greater role in monitoring the safety of their club members.

At higher levels, managers and sports board and federations have the greater responsibility to observe the standards.

In this study, between the safety management of sports competitions held at different levels and age groups ranging from regional, provincial to national levels, no significant difference was seen.

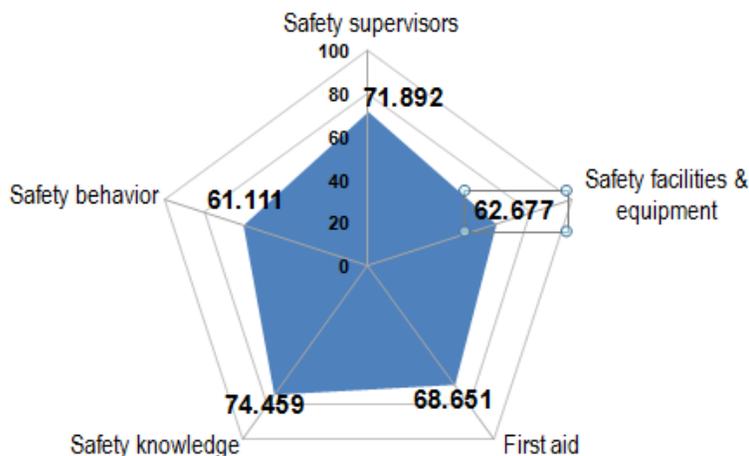
However, the safety management was not desirable which was consistent with the results of the study done by Hassani and Bahrami (2013) and Hassani *et al.*, (2009) in which the levels of Safety management in the sports clubs and schools in Central province of Iran were evaluated as not favorable.

A significant difference was observed between the safety management in the competitions of men and those of women in which the mean for men was lower than for the women; in other words, for the women the priorities of the safety applied to the competition were higher than for the men which was possibly because of the women's greater observance of the rules and the safety precautions.

The research findings were consistent with the results in Bahrami and Hassani (2013) and Hasani *et al.*, (2009).

The researchers expected to find a significant relationship between the process of safety management in the sports competitions with the number of teams and athletes participating in the competitions, however, no significant relationship was observed.

If the application of the principles of safety management in sports is likened to an umbrella which covers all the activities undertaken in sports which provide safety, security, health, and prevention of hazards or accidents (8) in the present study this umbrella was in a good condition yet, far from standards.



**Figure 2: The role of safety management factors to cover sporting events safety**

Figure 2 illustrates the variables involved in the safety of athletic competitions like the technical supervisors, safety of places, equipment and materials used in athletic competition, the facilities, services, first aid equipment and sports competition, knowledge of first aid coaches participating athletic trainers, sports competition and safety of participating in sports competition which are shown together. As it is seen, the safety behavior of coaches in the competition has the greatest role in increasing the coverage of safety management, while their first aid knowledge and skills are the most effective parameters in reducing safety management and safety in sports competitions. The role of human resources in creating favorable conditions for exercise is taken for granted. Therefore, with proper planning for the improvement of the knowledge and skills of coaching, it can be expected that management and safety management principles will promote and the risk of accident or sports injury will reduce.

On the other hand, the provision and the use of first aid services are among the main principles of safety management. It is necessary to make contracts with the private sector to provide full-time ambulance in sport complexes especially for the days with a lot of sports contests, events and tournaments in which there are huge numbers of participants and spectators. This may promote the safety management in the province. Safety management in practice involves all managerial procedures taken to increase workplace safety, and safety management in sports includes the creation of an appropriate ground for sports activities, promoting the safety of athletes, reducing the rate of injury among athletes and all those people who attend sport centers (7). In this regard, safety management requires the attention of the managers, trainers and planners to execute strategic decisions in order to create a risk-free environment.

At the end, regarding the purpose of the research and the results of the questionnaire it can be concluded that the trainers need more courses in first aid training.

Primarily the safety of the facilities, and sports equipment in clubs require a comprehensive definition in order to remove the shortages and secondly they should be regularly inspected to detect any possible risks and deficiencies. The first aids equipment need a comprehensive definition too. They should be funded and completed. As the safety behaviors of the coaches in athletic competitions and in the clubs have a wide diversity, they should be clearly defined and formulated to be observed by them all.

The safety management in sports is among the factors that must be specially paid attention to, alongside each work out and training session or competition in such a way that it ensures safety for participants. The safety and safety management principles should be the biggest and the best rule in class, exercise and sport competition.

In this regard, according to the results of this study it seems that organizing a safety and risk management committee with permanent members and city officials at each club or sporting place before as porting event starts can enhance the safety with regard to available facilities.

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