

THE EFFECTS OF PSYCHOLOGICAL FACTORS ON INJURIES IN FOOTBALL PLAYERS

PSİKOLOJİK FAKTÖRLERİN FUTBOLCULARDAKİ YARALANMALAR ÜZERİNDEKİ ETKİLERİ

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Öz

Amaç

Çalışmanın amacı kaygı seviyesi ve başa çıkma kaynakları düzeyi gibi psikososyal faktörlerin yaralanma oluşumunu etkileyip etkilemediğini incelemektir.

Gereç ve Yöntem

Çalışmaya toplam 83 futbolcu katıldı. Çalışmanın başında Sürekli ve Durumluk Kaygı Ölçeği, Sporcuların Psikolojik Becerilerini Değerlendirme Ölçeği ve Çok Boyutlu Algılanan Sosyal Destek Ölçeği dolduruldu. Takım doktorları yaralanmanın tipini, şiddetini ve sporcunun yaralanmaya bağlı olarak kaçırıldığı antrenman ve maç sayısını ve takımdan ayrı kaldığı süreyi kaydetti.

Bulgular

83 futbolcunun 63'ünde (%75.9) toplam 121 yaralanma gözlemlendi. Toplam yaralanma insidansı Toplam yaralanma insidansı 6.2/1000 saat, maçta yaralanma insidansı 18.3/1000 saat, antrenmanda yaralanma insidansı 3.4/1000 saattir. Yaralanmaların 4'ü (3.2%) minimal, 28'i (22.9%) hafif, 67'si (55.1%) orta, 22'si (17.9%) ciddi şiddetli yaralanmalardır. Yaralanma sayısı ve şiddeti ile başa çıkma kaynakları arasında negatif, kaygı seviyesi arasında pozitif ilişki vardır. Bu ilişkiler istatistiksel olarak anlamlıdır (p<0.05). Yaralan-

nan sporcularda daha yüksek kaygı seviyesi ve daha düşük başa çıkma kaynakları mevcuttur. Yaralanan ve yaralanmayan sporcular arasında bu değerler için istatistiksel olarak anlamlı farklılık vardır (p<0.05).

Sonuç

Psikolojik faktörler ve spor yaralanmalarının oluşumu arasında bir ilişki olduğu açıkça görülmektedir. Psikolojik faktörler ile yaralanma riski arasındaki ilişkiyi araştırmanın spor yaralanmalarını önlemek açısından önemli olduğu görülmektedir.

Anahtar Kelimeler: psikolojik faktörler, spor yaralanmaları, spor psikolojisi

Abstract

Objective

The aim of this study is to investigate whether psychological factors such as anxiety level or level of coping resources affect the occurrence of injury.

Materials and Methods

A total of 83 professional football players participated in the study. At the beginning of the study, the State-Trait Anxiety Inventory, Athletic Coping Skills Inventory-28 and Multidimensional Scale of Perceived Social Support were completed. Team doctors noted

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the type and severity of injury, and the number of trainings and matches the players missed due to injury.

Results

Sixty-three of the 83 players (75.9%) suffered a total of 121 injuries. Total injury incidence was 6.2/1000 hours (during match 18.3/1000 h; during training 3.2/1000 h). Four (3.2%) of the injuries were minimal, 28 (22.9%) were mild, 67 (55.1%) were moderate, and 22 (17.9%) were severe. There was a negative correlation between the number and severity of injuries and coping skills, and a positive correlation between the number and severity of injuries and anxiety level. These relationships were statistically significant ($p < 0.05$).

Injured players had higher levels of anxiety and lower coping resources. There was a statistically significant difference between injured and uninjured players for these values ($p < 0.05$).

Conclusion

It was clearly observed that there is a relationship between psychological factors and the occurrence of sports injuries. Investigating the relationship between psychological factors and the risk of injury appears to be important in preventing sports injuries.

Keywords: Psychological factors, sports injury, sports psychology

Introduction

Sports injury is one of the most traumatic events an athlete can face during their career. Especially when an injury is serious, it can be a very stressful and destructive event for elite athletes. High-level sports have a high risk of injury. It is estimated that over 8 million sports injuries are treated each year in Europe (1). Since the cause of injury is usually complex, risk factors should be clearly identified (2). These include external factors such as environment, equipment, type of sport and weather conditions, and internal factors such as physiological and psychological factors. Many studies to date have examined physical and biomechanical risk factors. Risk factors such as joint laxity, mechanical or functional instability (3), lower extremity strength (3,4), muscle imbalances (4), decreased range of motion (5), previous injuries and inadequate rehabilitation (5) were examined. Some researchers argue that some athletes are prone to injury as a result of their personal and psychological characteristics (6). Therefore, it is important to identify preventive actions that combine well-proven psychological and physiological techniques to prevent injuries (7). Research about sensitivity to injury has significantly increased in recent years. The effect of psychological factors on sports injuries has been an important research area in recent years as well. Some conceptual models were developed to identify significant risk factors in sports psychology. Many studies have used Andersen and Williams's stress and injury model as the basis for research into psychosocial variables that affect the result of injury (8). There are three important areas at the top of this stress response model of personality factors, history of stress factors, and coping resources. These variables may act alone or in combination, affecting the stress response and ultimately injury infliction. This model suggests that ath-

letes who have some stress-causing factors (stressful events in life, daily problems, past injury history, etc.), personal traits that increase stress response (assertiveness, locus of control, sense of suitability, excellence, competitor trait anxiety, motivation to win, thrill seeking, etc.), and a small number of resources to cope with problems (general coping behaviors, social support, stress management and mental ability, and medication, etc.) may perceive these situations as more stressful. In this case, more physiological activation may occur when faced with a stressful situation, such as challenging training or a very important competition, than for individuals with the opposite psychosocial profile. Andersen and Williams propose that the mechanism that puts people at greater risk of injury is the increase in the intensity of the stress response, especially increased muscle tension, fatigue, decreased coordination and timing, narrowing of the visual field, and increased distraction (8,9).

Football is probably the most popular sport in the world, it is a contact sport and requires different skills at different intensities, which challenges physical fitness. It is a sport with relatively high injury rates (10). Epidemiological studies found that the risk of injury during one season for elite football players is between 65% and 92% (11,12). Ekstrand and colleagues found that elite football players in Europe suffered an average of two injuries per season (13). The frequency of injuries among international football players was found to be 9.4 injuries per 1000 hours of football training (14). Many risk factors were investigated to determine whether they cause injury in football players (3,5). However, there are few studies investigating whether psychological factors are effective on the incidence of injuries (6,7,15). In this study, an investigation was completed about whether psychosocial factors such as anxiety level and coping resources affect the risk

and severity of injury in professional football players and which injuries are most affected. A prospective study was conducted for this purpose.

Materials And Methods

Participants

A total of 83 football players aged between 19-36 years (25.37 ± 4.25) who play in the 2nd Professional Football League of Turkey participated in the study. All the players were contracted players on the team and native Turkish speakers. None of the players had any previous or current history of mental disease, or any use of medications which could affect mood. Exclusion criteria in the study included starting to use any anxiety medications during the season. The study started at the beginning of July when the teams started pre-season training and continued for a total of 10 months until the end of April, when the season ended. Firstly, a meeting was arranged by telephone interview with the doctors and coaches of the participating teams. Information about the purpose of the study was given during this meeting. The times and places to fill out the questionnaires were determined. Before the questionnaires were filled, participants were informed about the aims of the study and informed consent procedures were applied. At the beginning of the study, the players completed questionnaires such as the Trait and State Anxiety Scale, the assessment of the psychological skills of athletes and the Multidimensional Scale of Perceived Social Support. The study was approved by Ege University Faculty of Medicine Clinical Research Ethics Committee, İzmir.

Data Collection Tools

State-Trait Anxiety Inventory

The inventory developed in 1970 by Spielberger et al. contains a total of 40 items consisting of 2 sub-scales with 20 questions (20 state and 20 trait) measuring state and trait anxiety. The state items describe how the athlete feels when they complete the questionnaire. Trait items define the general anxiety level of the athlete (16). Participants evaluate each expression from 1 (almost never) to 4 (almost always) on a 4-point Likert scale. The final score shows the total of 20 items. The total score obtained from both scales varies between 20-80. High scores indicate high anxiety levels, while low scores indicate low anxiety levels. Adaptation of this scale into Turkish, and studies of validity and reliability were conducted by Öner and Le Compte (17). In this study, the Kuder-Richardson reliability of the scale was found to be 0.83 - 0.87 for the trait items, and 0.94 - 0.96 for the state items.

Multidimensional Scale of Perceived Social Support

This was developed in 1988 by Zimet and Dahlem (18). The Multidimensional Scale of Perceived Social Support (MSPSS) is a widely used social support scale. It is a 12-item scale that evaluates the adequacy of social support from three different sources (family, friends and a significant other). Each item in the scale is rated using a 7-point Likert scale, between very strongly disagree = 1 to very strongly agree = 7. The total score for the scale is obtained by adding all subscale scores. High scores indicate that perceived support is high and low scores indicate lack of support. It was adapted to Turkish society by Eker and Arkar in 1995 (19). The reliability coefficient (Cronbach's Alpha) of the whole MSPSS sample was calculated as 0.89.

Athletic Coping Skills Inventory-28

This is a self-assessment tool developed by Smith et al. to assess the psychological skills of athletes (20). Developed for athletes, this scale has 4-point Likert type. It consists of 28 items and 7 sub-dimensions (Ability to Cope with Difficulties, Openness to Learning, Concentration, Confidence and Success Motivation, Goal Setting and Mental Preparation, Good Performance Under Pressure, Getting Rid of Worries). Each sub-dimension contains 4 items. Scoring is between 0 and 3 according to the expressions 'almost never', 'sometimes', 'often' and 'almost always'. The scoring ranges from 0 to 12 for the sub-dimensions and 0 to 84 for the whole scale. The increase in the score obtained from the scale indicates that the athlete has good psychological skills. The Turkish validity and reliability study of the scale was conducted by Erhan and colleagues (21). The reliability coefficient of the scale was determined to be 0.85.

Collection of Injury Data

The methodology of the study complied with the consensus about data collection procedures and definitions of football injuries specified by FIFA and UEFA (22,23). The team doctors recorded individual player exposure and time-consuming injuries on standard forms. Missing at least one training or competition due to an injury was defined as injury. Team doctors recorded the type, severity, location, mechanism of the injury and the number of training and matches the athlete missed due to the injury and how long they were separated from the team. This data was collected every month. The severity of the injury was classified as minimal injury (1-3 days), mild injury (4-7 days), moderate injury (8-28 days), and severe - serious injury (more than 28 days). The incidence of injuries was determined as the number of injuries per 1000 game hours ((total injury / exposure time) x 1000) (22).

Statistical Analysis

The Mann-Whitney U test was used to compare the scores obtained from the scales that provide assessment of psychological factors among football players with and without injuries. Since the athletes who had more than one injury form a separate group, the Kruskal-Wallis H test was used for comparison of these athletes. The Spearman correlation test was used to investigate the relationship between psychological factors and injuries. $P < 0.05$ value was considered statistically significant.

Results

Training exposure of the athletes was 16,011 hours, match exposure was 3606 hours, and total exposure time was 19,617 hours. Sixty-three out of 83 players (75.9%) missed at least one training due to injury.

Of these players, 32 (38.5%) suffered one injury, 14 (16.8%) suffered two injuries and 17 (20.4%) suffered three or more injuries. Thus, a total number of 121 injuries occurred. Of these injuries, 55 occurred during training and 66 during matches. The total incidence of injuries was 6.2 injuries/1000 hours, the incidence of injuries in matches was 18.3/1000 hours, and the incidence of injuries during training was 3.4/1000 hours. Four (3.3%) of the injuries were minimal, 28 (23.1%) were mild, 67 (55.4%) were moderate, and 22 (18.2%) were severe. The most common injuries were muscle injuries (56 injuries, 46.3%). Among those, hamstring strains were the most common injury (37 injuries, 30.6%). Other common injuries were MCL strains (22 injuries, 18.2%), ankle ligament strains (20 injuries, 16.5%) and contusions (14 injuries, 11.6%) (Table 1). A player had an average of 1.5 injuries in one season. A negative relationship was found between

Table 1 Injury Types and Severity

	Total	Minimal	Mild	Moderate	Severe
Muscle Strain	56 (46.3)	0	14 (11.6)	35 (28.9)	7 (5.8)
Knee Ligament and Meniscus Injuries	29 (23.9)	0	1 (0.8)	17 (14.0)	11 (9.1)
Ankle Ligament and Tendon Injuries	20 (16.6)	0	6 (5.0)	11 (9.1)	3 (2.5)
Contusion	14 (11.6)	4 (3.3)	7 (5.8)	3 (2.5)	0
Fractures	2 (1.6)	0	0	1 (0.8)	1 (0.8)

Table 2 Relationship Between Psychological Factors and Injury Types (Spearman correlation test).

	Total	Mild	Moderate	Severe	Training Injury	Match Injury	Muscle Strain	Hamstring Strain
Athletic Coping Skills Inventory (ACSI-28)	0.474**	-0.207	-0.346**	-0.407**	-0.171	-0.550**	-0.316**	-0.273*
State Anxiety Scale	0.551**	0.278*	0.364**	0.455**	0.219*	0.599**	0.350**	0.297**
Trait Anxiety Scale	0.484**	0.301**	0.279*	0.431**	0.219*	0.465**	0.302**	0.211
Multidimensional Scale of Perceived Social Support	0.362**	-0.236*	-0.272*	-0.251*	-0.177	-0.366**	-0.310**	-0.281*

*: $p < 0.05$, **: $p < 0.01$

number, severity, type and location of the injuries and psychological factors used as coping resources, and a positive relationship was found between the state-trait anxiety. These relationships were statistically significant ($p < 0.05$) (Table 2). The results of the scales applied to the athletes show that the level of anxiety

was higher and the coping resources were lower in injured athletes. There was a statistically significant difference between these values for psychosocial factors between injured and uninjured athletes ($p < 0.05$) (Table 3,4). While the trait anxiety and state anxiety findings of the players who had injuries during match-

Table 3 Relationship Between Injury Severity and Psychological Questionnaires

	Minimal		Mild		Moderate		Severe	
	No (n=79)	Yes (n=4)	No (n=60)	Yes (n=28)	No (n=39)	Yes (n=67)	No (n=63)	Yes (n=22)
Athletic Coping Skills Inventory (ACSI-28)	58 (31-78)	60 (39-71)	59.5 (34-78)	45 (31-74)	64 (36-78)	41 (31-74)	62 (34-78)	42.5 (31-68)
	p=0.632		p=0.169		p=0.003**		p=0.0001**	
State Anxiety Scale	39 (29-77)	39 (33-49)	38 (29-72)	56.5 (33-77)	38 (29-72)	63 (33-77)	37 (29-68)	61 (32-77)
	p=0.709		p=0.034*		p=0.001**		p=0.0001**	
Trait Anxiety Scale	40 (28-70)	35 (34-51)	38.5 (28-70)	55.5 (32-69)	38 (28-70)	60 (32-67)	38 (28-67)	57.5 (34-70)
	p=0.322		p=0.022*		p=0.01*		p=0.0001**	
Multidimensional Scale of Perceived Social Support	68 (43-76)	73 (63-75)	69 (48-76)	61.5 (48-76)	69 (48-76)	55 (43-76)	69 (48-76)	64 (43-76)
	p=0.133		p=0.069		p=0.037*		p=0.022*	

*: $p < 0.05$, **: $p < 0.01$

Table 4 Comparison of Psychological Factors Between Players Suffered Common Injuries and Uninjured Players

	Hamstring Strain		MCL Strain		Ankle Ligament and Tendon Injuries		Contusion	
	No (n=53)	Yes (n=37)	No (n=65)	Yes (n=22)	No (n=64)	Yes (n=20)	No (n=69)	Yes (n=14)
Athletic Coping Skills Inventory (ACSI-28)	62 (31-78)	42 (36-60)	62 (34-78)	42 (31-68)	59.5 (36-78)	42 (31-69)	57 (31-78)	63 (33-74)
	p=0.023*		p=0.0001**		p=0.011*		p=0.324	
State Anxiety Scale	38 (29-77)	64 (33-72)	37 (29-72)	61 (32-77)	38.5 (29-72)	62 (30-77)	41 (29-77)	38 (30-75)
	p=0.014*		p=0.0001**		p=0.007**		p=0.710	
Trait Anxiety Scale	39 (28-70)	52 (28-67)	38 (28-70)	58.5 (36-67)	39 (28-70)	58 (32-69)	40 (28-70)	37.5 (32-66)
	p=0.045*		p=0.0001**		p=0.041*		p=0.597	
Multidimensional Scale of Perceived Social Support	69 (48-76)	57 (43-75)	69 (48-76)	61 (43-76)	69 (48-76)	67 (43-76)	68 (48-76)	69.5 (43-76)
	p=0.025*		p=0.023*		p=0.137		p=0.542	

*: $p < 0.05$, **: $p < 0.01$

Table 5

Comparison of Psychological Factors Between Match and Training Injuries

	Training Injury		Match Injury	
	No (n=47)	Yes (n=55)	No (n=40)	Yes (n=66)
Athletic Coping Skills Inventory (ACSI-28)	60 (34-78)	58.5 (36-70)	65.5 (38-78)	41 (31-68)
	p=0.221		p=0.0001**	
State Anxiety Scale	38 (29-72)	41.5 (32-68)	34 (29-62)	63 (33-77)
	p=0.111		p=0.0001**	
Trait Anxiety Scale	38 (28-70)	40.5 (28-63)	37 (28-69)	59.5 (33-67)
	p=0.088		p=0.0001**	
Multidimensional Scale of Perceived Social Support	69 (48-76)	67.5 (50-76)	70 (51-76)	56 (43-76)
	p=0.271		p=0.007**	

**: p<0.01

es were statistically higher than those who had no injuries, their social support and psychological skill levels were significantly lower ($p < 0.05$). There was no significant difference in psychological factors between football players with and without training injuries ($p > 0.05$) (Table 5).

Discussion

Football is a sport involving contact and requiring different skills at different intensities, straining physical fitness and involving high injury rates (10). In our study, the level of injury during a season was found to be 75.9%. This finding is similar to the results of epidemiological studies indicating the frequency of injuries is between 65-92% (12,13). Studies describing the risk of injury and the type of injury are typically performed during a season or during a tournament (13). Ekstrand and colleagues found that professional footballers had an average of 2 injuries during a season and 16% of these were serious injuries. The most common injuries were hamstring and medial collateral ligament (MCL) strains (13). In our study, similar to these findings, an average of 1.5 injuries occurred per player. Of these, 22 (18.2%) were severe injuries. The most common was muscle injuries. Hamstring strains were the most common injuries among muscle injuries (37 injuries, 30.6%). In addition, medial collateral ligament strains (MCL strain) and ankle ligament strains were common injuries. Given these findings,

a team which typically consists of 25 players can be expected to have around 40-50 injuries each season. Given the cost of treatment of these injured players and the time they will be away from the team, it is clear that these injuries can have negative effects on the team, both financially and by causing a decrease in team performance. Considering these injury levels, it shows the importance of interventions to prevent injuries.

Risk factors should be clearly identified to prevent injuries (2-5). However, it is difficult to conduct a study that includes all possible variables that may affect the frequency and severity of injuries. Among the risk factors, psychosocial factors are one of the most researched topics in recent years. It was suggested that some athletes are prone to injury as a result of their personal and psychological characteristics (5,7,24,25). The stress and injury model of Andersen and Williams is most commonly used to identify significant risk factors in the field of sports psychology (8). According to this model, variables such as personality factors, history of stress factors, and sources of coping can affect the stress response and ultimately injury by acting alone or together. When athletes lacking the desired personality traits and coping resources face a stressful situation, such as challenging training or a very important competition, they are more likely to perceive them as more stressful. This may result in more physiological activation, diffuse muscle tension, peripheral narrowing, and greater distraction.

The mechanism suggested to cause injury risk is the severity of this stress response (9). In this model, the relationship between stress response and injury formation is proposed, but the time missed due to the injury is not specifically addressed. Maddison and Prapavessis advocate the acquisition of missed time and number of injuries in order to fully understand the complex relationship between psychological factors and injury (24). For this reason, in our study the incidence of injuries occurring during one season was calculated and the severity of the injuries was determined. Whether there is a relationship between the level of trait anxiety, the level of coping resources of the athletes and the severity of injury was investigated. Athletes who have high anxiety as a personal trait and who claim it has a detrimental effect on performance may have the greatest risk of injury exposure. Athletes with undesirable personal traits, such as high competition anxiety and high trait anxiety, have higher stress responses than athletes without these traits when faced with a challenging situation. Consequently, tension in the muscles may increase, reaction time may be prolonged, loss of attention may increase and thus the risk of injury may increase. In our study, there was a positive correlation between the anxiety level of the athletes and the injuries that occurred during one season. It was found that as anxiety level increased, the risk of injury and severity of injury increased ($p < 0.01$). While there was a statistically significant difference between the anxiety levels of the athletes who had moderate and severe injuries and those who had no injuries ($p < 0.01$), there was no statistically significant difference between the athletes who had mild injuries which lasted less than one week and who did not have any injuries ($p > 0.05$). These findings are consistent with the results of previous studies showing that athletes with higher trait anxiety level have more injuries. Ivarsson and colleagues found that personal traits such as trait anxiety, history of stress-causing factors such as negative life events and factors such as incompatible coping were important determinants of injury in professional football players. They showed that personal characteristics may increase the risk of injury (15, 25).

A person with few sources to cope with stress can feel the stress level more and thus increase the risk of injury. Athletes with positive sources of coping, such as high psychological skills and high social support from loved ones in the vicinity, may have reduced risk of injury linked to the reduced stress response. High social support protects athletes from injury, but low social support exacerbates the harmful effects of life stress and thus increases the susceptibility to injury significantly (9). In the study by Lavalee and colleagues

about football and rugby players, the frequency and severity of injuries were related to anxiety, anger and negative mood. More satisfaction with social support was shown to have an indirect and protective effect on the injury rate by reducing the level of depression (26). In our study, there was a negative correlation between the level of coping resources and injuries in accordance with these results. Athletes with low psychological skills and social support experienced more injuries during one season and the severity of these injuries was found to increase ($p < 0.01$). The psychological skill and social support levels of athletes who had moderate and severe injuries were statistically significantly lower than those of the athletes who had no injuries ($p < 0.05$). These findings suggest that high coping resources in athletes may help reduce the risk of injury by reducing the stress response.

According to Andersen and Williams' model, the mechanism that causes increased risk of injury when an athlete encounters a stressful situation is the severity of the stress response. Increased stress response, such as increased muscle tension, fatigue, decreased coordination and timing, narrowing of the visual field, and increased distraction, can lead to injury and increased risk of injury. High negative mood may contribute to increases in muscle tension and increases in physical and mental fatigue, and may support the relationship between psychological stress and injury (8). An increase in muscle tension results in the muscle structure failing to provide the motor structure to quickly remove a person from danger, or to sufficiently relax to absorb the impact if impact occurs. Only one study examined the link between psychosocial factors and muscle tension under low and high stress conditions (27). In this study, all of the participants had an increase in muscle tension during stress conditions. In previous studies, a positive relationship was found between sports injuries and both peripheral narrowing and state anxiety (28). Rogers and Landers showed that a potentially stressful situation causes significant reductions in peripheral vision and increases the risk of injury in a population of football players (28). In our study, factors related to stress response could not be evaluated. However, when we consider that mostly muscle injuries (46.3%) occurred during a season, and the positive relationship between these injuries and the psychological factors of the players, we think that stress responses such as increased muscle tension related to stressful situations and existence of undesirable personality traits can cause these injuries.

Limitations Of The Study

Stress levels and sources of coping are not fixed factors, but are constantly changing over time. In order to

evaluate the impact of psychological factors on sports injuries more accurately, it would be more appropriate to apply these questionnaires more than once, frequently during the season. Hanson and colleagues showed that conducting repeated surveys throughout the season would provide a better indicator of the constantly changing levels of stress (29). In our study, the scales were applied only once at the beginning of the season. According to the results of these scales, there was a positive relationship between high anxiety level and low coping resources and sports injuries. However, applying the scales several times during the season could provide more accurate information to examine the effect on sport injuries of these psychological factors where levels change continuously. It is important that the questionnaires used to identify athletes at risk for injury should be sensitive to the athlete's condition, specific to the sport, and should be validated according to the spoken language used by these athletes (30). Another limitation of our study was the lack of a questionnaire about the history of life events that could cause stress in athletes. However, since there are no Turkish versions of questionnaires with validity and reliability tests performed, questionnaires could not be applied to the athletes participating in the study.

Conclusions

There is a clear relationship between psychological factors and the occurrence of sports injuries. Psychosocial factors such as high anxiety levels and low coping resources can increase the risk of injury by increasing the stress response among athletes, especially when they are in stressful environments such as matches. These findings are useful in identifying athletes with psychosocial factors that increase the risk of injury. Therefore, it is important to investigate the relationship between psychological factors and the risk of injury, and to advise the health team and coaches about this issue in order to prevent sports injuries.

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