Turkish Journal of Sport and Exercise /Türk Spor ve Egzersiz Dergisi
http://dergipark.gov.tr/tsed
Year: 2021 - Volume: 23 - Issue:1 - Pages: 1-8
DOI: 10.15314/tsed.692936

Turkish Journal of Sport and Exercise
Türk Spor ve Egzersiz Dergisi
ISSN: 2147-5652
https://dergipark.org.tr/tr/pub/tsed

Investigation of the Relationship Between Mental Training and Sports Injury Anxiety

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(Received): 24/02/2020/ (Accepted): 30.04.2021

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Abstract

The aim of the study was to determine the sport injury anxiety and mental training level of the athletes. The relationship between mental training and sport injury anxiety was also investigated. A total of 179 (78 males, 101 females) athletes, aged $\bar{x}$= 20.57±1.80 years, licensed for at least 1 year in a team or individual sports branches, voluntarily participated. "The Sport Mental Training Questionnaire" adapted to Turkish by Yarayan and İlhan (31) and "The Sports Injury Anxiety Scale" adapted to Turkish by Caz et al. (8) were applied to the athletes. According to gender and branch variables, injury anxiety and mental training status were analyzed using t-test. Pearson's correlation analysis was used for the relationship between injury anxiety and mental training in sports. The study findings examination according to the gender variable in the sport injury anxiety scale showed a statistically significant difference found in favor of female athletes in the sub-dimensions "Loss of Social Support" (p=.024); "Being Perceived as Weak" (p=.045); "Experiencing Pain" (p=.012) and in the total scale point (p=.037). According to the branch variable, there is no statistically significant difference observed in the sub-dimensions of the injury anxiety scale and in the total scale (p>.05). According to the gender variable, a statistically significant difference in favor of women was observed in the self-talk sub-dimension of the sport mental training questionnaire (p = .048). However, it was concluded that mental training status did not make a statistically significant difference between athletes interested in team or individual sports branches. As a result, male athletes have higher injury anxiety levels than female. Self-talk is more commonly practiced by female athletes during mental training. There is no relationship between mental training and sports injury anxiety.

Key Words: Mental Training, Injury Anxiety, Athletes

Zihinsel Antrenman ve Spor Yaralanma Kaygısı Arasındaki İlişkinin İncelenmesi

Özet

Çalışmanın amacı, sporcuların yaralanma kaygılarını ve zihinsel antrenman yapma düzeylerini belirlemektir. Ayrıca zihinsel antrenman ve spor yaralanma kaygısı arasındaki ilişki incelenmiştir. Çalışmaya, takım ya da bireysel spor dallarında en az 1 yıl boyunca lisanslı, yaşları $\bar{x}$=20.57±1.80 yıl olan toplam 179 (78 erkek ve 101 kadın) sporcu gönüllü olarak katılmıştır. Gönüllü olarak katılan sporculara; araştırmacı tarafından hazırlanan kişisel bilgi formu, Yarayan ve İlhan (31) tarafından Türkçeye uyarlanan sporda "Zihinsel Antrenman Envanteri" ve Caz ve ark., (8) tarafından Türkçeye uyarlanan "Spor Yaralanması Kaygı Ölçeği" uygulanmıştır. Cinsiyet ve branş değişkenlerine göre yaralanma kaygısı ve zihinsel antrenman durumları t-testi kullanılarak analiz edilmiştir. Sporda yaralanma kaygısı ve zihinsel antrenman arasındaki ilişki için Pearson korelasyon analizi kullanılmıştır. Çalışma bulguları incelendiğinde, yaralanma kaygısı ölçeğinde cinsiyet değişkenine göre; sosyal desteği kaybetme kaygısı (p=.024); zayıf algılanma kaygısı (p=.045); acı çekme kaygısı (p=.012) ve yeniden yaralanma kaygısı (p=.045) alt boyutları ile ölçek toplam skorunda (p=.037) kadın sporcular lehine istatiksel olarak anlamlı fark tespit edilmiştir (p>.05). Cinsiyet değişkenine göre sporda zihinsel antrenman yapma envanterinin kendinle konuşma alt boyutunda kadınların lehine istatistiksel olarak anlamlı farklılık gözlenmiştir (p=.048). Ancak, takım veya bireysel spor branşlarıyla ilgilenen sporcular arasında zihinsel antrenman yapma durumlarının istatiksel olarak anlamlı fark yaratmadığı sonucuna varılmıştır. Sonuç olarak, erkek sporcuların yaralanma kaygı düzeyleri kadın sporculara göre daha yüksektir. Zihinsel antrenman durumlarında ise kendi kendine konuşma kadın sporcular tarafından daha fazla uygulanmaktadır. Zihinsel antrenman ile spor yaralanma kaygısı arasında ilişki yoktur.

Anahtar Kelimeler: Zihinsel Antrenman, Yaralanma Kaygısı, Sporcu

INTRODUCTION

Traditionally, if sports performance is considered as a concept, it includes the regular practice of sports and participation in activities related to competition, as well as the performance in activities related to prevention of sports injuries, rehabilitation, and return to sports (6). One of the most important points that affect individuals' athletic lives is injuries. Athletes are exposed to minor and major injuries during training or competitions. These injuries to themselves or other athletes can have psychological effects as well as physical effects.

Sport and exercise-related injury can negatively affect one in many ways. This can lead to negative mood states, re-injury anxiety, withdrawal from sports, re-injury, and physical inactivity (30). After the treatment process is over, the anxiety of athletes increases due to the possibility of returning to sports life. Thoughts such as the joy of getting rid of the injury and the possibility of re-injury that occur after the treatment of athletes can often cause the emergence (2). A lot of research has been devoted to understanding how anxiety can affect sports performance, both in practice and in competitive settings.

Stress and sport-related injury suggest that when athletes are finding themselves in a stressful sportive position, they are going to do cognitive appraisals of the situation requirements, their usable resources, and the results of the possible outcomes. Those assessments, called the stress response, are supposed to interact in two directions with physiological/attentional aspects, which lead to greater muscle tension, a reduced field of vision, and higher distractibility. Based on the stress response, a person can increase or decrease their potential risk of encountering sport injury. In relation to the stress response, an athlete will raise or reduce the chances to have an athletic injury (3, 32). Avoiding injury anxiety of athletes; It is an important point that will eliminate the negative effects caused by anxiety in sportive performance and increase the success in performance.

Usually, the sport has concentrated mainly on physical training. It changed with time, and nowadays psychological training took an important place for improving sportive performance. Mental training includes for the sportive to learn psychological techniques which aim to ameliorate their performances and well-being (13, 29). To use scientific knowledge in sport is essential for the athlete to progress. Indeed, besides enhancing physical skill, improving the mental factors will be beneficial highly as well to the sportive and increase his chances of success. Observation in professional and amateur sports showed that coupling high physical and psychological conditions leads to success (1). There is a strong consideration for tools aiming at psychological skills and strategies in sport since they allow to make the distinction between successful and unsuccessful athletes and bring evidence that the mental trainings are effective (18).

The distinction between mental skills and mental techniques is conceptually important. While a mental skill is the ability to learn a specific training task (goal), increase attention level; the mental technique is a special process used to achieve its goals (mental animation, speaking to yourself) (31). In this context, athletes and coaches should set some goals and contribute to the athlete's optimal efficiency by using effective techniques to achieve these goals. In addition, it will be appropriate to make applications to improve the mental skills of the athlete.

Many studies on injury anxiety (21, 25, 7, 17, 28) and mental training status (12, 14, 27, 11) of athletes stand out in the literature. It has been observed in the studies that injury anxiety and mental training situations were examined separately. No study has been found that investigated injury anxiety and mental training conditions together. In this context, the purpose of this study is to determine the injury anxiety and mental training status of athletes. In addition, the relationship between mental training and sports injury anxiety was investigated.

MATERIAL

Research model

In this study, the relational survey model was carried out. The purpose of this model is to reveal whether the relationship has changed or not, and if so, to what extent it has changed (20).

Participants

A total of 179 (78 males, 101 females) athletes, aged $\bar{x}$= 20.57±1.80 years, who have been licensed for at least 1 year in either teams or individual sports branches participated in this study voluntarily.

Data Collection Tools

As a data collection tool; Personal Information Form, The Sport Mental Training Questionnaire (SMTQ) and Sport Injury Anxiety Scale (SIAS) were used.

Personal Information Form

"Personal Information Form" were used which was developed by the researcher and included information about the gender, age, branch of the athletes included in the research.

The Sport Mental Training Questionnaire (SMTQ)

The Sport Mental Training Questionnaire developed by Behnke et. al. (5) based on the Vealey (29) model, is a comprehensive mental training inventory that explains the distinction between mental skills and mental techniques. The scale was adapted to Turkish by Yarayan and İlhan (31). The Sport Mental Training Questionnaire consists of 5 sub-dimensions. Mental Fundamental Skills (4 items), Mental Performance Skills (6 items), Interpersonal Skills (4 items), Self-talk (3 items), Mental İmagery (3 items) and total 20 items. The 5-point Likert-type inventory is scored as 1 "Totally Disagree" and 5 "Totally Agree". The lowest score that can be obtained from the inventory is 20 and the highest score is 100. Cronbach α coefficients of the sub-scales and total were calculated as: Mental Fundamental Skills .82, Mental Performance Skills .85, Interpersonal Skills .85, Self-Talk .91, Mental Imagery .82 and total .91 in the adaptation study of the inventory to Turkish. In the present study, the Cronbach's alpha coefficient was, Mental Fundamental Skills .66, Mental Performance Skills .74, Interpersonal Skills .80, Self-Talk .75, Mental Imagery .75 and total .91.

Sport Injury Anxiety Scale (SIAS)

Sport Injury Anxiety Scale was developed by Rex and Metzler (23) to measure the level of injury anxiety of athletes. The scale was adapted to Turkish by Caz et. al. (8). The Sport Injury Anxiety Scale consists of 6 sub-dimensions. Letting Down Important Others (3 items), Loss of Social Support (3 items), Being perceived as weak (3 items), Loss of Athleticism (3 items), Experiencing Pain (3 items), Reinjury (4 items). The 5-point Likert-type inventory is scored as 1 "Totally Disagree" and 5 "Totally Agree". The Cronbach's alpha coefficient of the original was found Being Perceived as Weak .64, Experiencing Pain.78, Letting Down Important Others .87, Loss of Social Support.81, Loss of Athleticism .72, Reinjury .60 and total .87. In the present study, the Cronbach's alpha coefficient was; Being Perceived as Weak .62 Experiencing Pain .62, Letting Down Important Others.78, Loss of Social Support .76, Loss of Athleticism.70, Reinjury .64 and total .85.

Data Analysis

SPSS statistics program was used in the analysis of the data. Normality test was performed using skewness and kurtosis analysis and it was determined that the data were normally distributed. The t-test was used according to the variables of the participants' gender and sports branch. The relationship between mental training and injury anxiety was analyzed using Pearson correlation analysis. A value of $p < 0.05$ was accepted as the statistical significance limit. In addition, Cohen d analysis was performed to determine the effect size. SSpooled = $\sqrt{(SS2\ grupA + SS2\ grupB) / 2}$

RESULTS

In this part of the study are presented the findings of the statically analyzed data obtained by survey.

Table 1. Sports Injury Anxiety Scale (SIAS) T Test Results by Gender Variable

SIAS	Gender	N	Mean ± Sd.	t	p	d
LDIO	*F*	101	7.51 ± 2.82	1.563	.120	.23
	M	78	8.20 ± 3.05			
LSS	*F*	101	6.72 ± 3.11	2.283	.024*	.34
	M	78	7.82 ± 3.28			
BPW	*F*	101	7.00 ± 2.60	2.023	.045*	.30
	M	78	7.88 ± 3.10			
LA	*F*	101	7.56 ± 2.61	.341	.734	.05
	M	78	7.71 ± 3.25			
EP	*F*	101	6.86 ± 2.44	2.542	.012*	.37
	M	78	7.88 ± 2.93			
R	*F*	101	9.01 ± 2.96	2.024	.045*	.31
	M	78	10.11 ± 4.00			
Total	*F*	101	44.68 ±13.91	2.099	.037*	.31
	M	78	49.62 ± 17.60			

*p <0.05

LDIO: Letting Down Important Others; LSS: Loss of Social Support; BPW: Being Perceived as Weak; LA:Loss of Athleticism; EP: Experiencing Pain; R: Reinjury

In Table 1, a statistically significant difference in favor of women was observed in Loss of Social Support, Being Perceived as Weak, Experiencing Pain, Re-injury and the total scale. Cohen's d value was found as .34 for Loss of Social Support, .30 for Being Perceived as Weak, .37 for Experiencing Pain, .31 for Re-injury and .31 for the total scale.

Table 2. Sports Injury Anxiety Scale (SIAS) T Test Results by Sports Branch Variable

SIAS	Sports Branch	N	Mean ± Sd.	t	p	d
LDIO	Individual	79	7.72 ± 2.86	-.379	.705	.05
	Team	100	7.89 ± 3.01			
LSS	Individual	79	7.10 ± 2.98	-.367	.714	.05
	Team	100	7.28 ± 3.42			
BPW	Individual	79	7.45 ± 2.86	.291	.771	.04
	Team	100	7.33 ± 2.87			
LA	Individual	79	7.69 ± 2.80	.265	.791	.03
	Team	100	7.58 ± 2.98			
EP	Individual	79	7.21 ± 2.69	-.403	.687	.06
	Team	100	7.38 ± 2.73			
R	Individual	79	9.46 ± 3.51	-.098	.922	.01
	Team	100	9.52 ± 3.49			
Total	Individual	79	46.65 ± 15.10	-.135	.893	.02
	Team	100	46.98 ±16.35			

LDIO: Letting Down Important Others; LSS: Loss of Social Support; BPW: Being Perceived as Weak; LA:Loss of Athleticism; EP: Experiencing Pain; R: Reinjury

Table 2 shows the difference injury anxiety of athletes involved in individual and team sports. The present finding shows that there is no significant difference between individual and team athletes in anxiety of injury point (p> 0.05).

Table 3. The Sport Mental Training Questionnaire (SMTQ) T Test Results by Gender Variable

SMTQ	Gender	N	Mean ± Sd.	t	p	d
MFS	F	101	15.66 ± 3.05			
	M	78	15.62 ± 2.70	-.080	.936	.01
MPS	F	101	21.60 ± 4.13			
	M	78	22.57 ± 4.25	1.543	.125	.23
IS	F	101	16.87 ± 2.85			
	M	78	16.76 ± 2.91	-.235	.814	.03
ST	F	101	11.97 ± 2.38			
	M	78	11.23 ± 2.56	-1.989	.048*	.29
MI	F	101	12.13 ± 2.45			
	M	78	12.08 ± 2.35	-.134	.893	.02
Total	F	101	78.24 ± 12.54			
	M	78	78.29 ± 12.25	.025	.980	.00

*p <0.05

MFS: Mental Fundamental Skills; MPS: Mental Performance Skills; IP: Interpersonal Skills; ST: Self Talk; MI: Mental Imagery

In Table 3, a statistically significant difference was observed in favor of women in the sub-dimension of self talk (p = .048). Cohen's d value was found to be .29 for the self talk sub-dimension.

Table 4. The Sport Mental Training Questionnaire (SMTQ) T Test Results by Sport Branch Variable

SMTQ	Branch	N	Mean ± Sd.	t	p	d
MFS	Individual	79	15.82 ± 2.96			
	Team	100	15.51 ± 2.84	.717	.475	.10
MPS	Individual	79	22.08 ± 4.50			
	Team	100	21.98 ± 3.96	.171	.864	.02
IS	Individual	79	16.54 ± 3.10			
	Team	100	17.05 ± 2.66	-1.171	.243	.17
ST	Individual	79	11.50 ± 2.65			
	Team	100	11.76 ± 2.34	-.677	.500	.10
MI	Individual	79	12.05 ± 2.51			
	Team	100	12.17 ± 2.33	-.329	.743	.04
Total	Individual	79	78.01 ± 13.50	- .245	.807	
	Team	100	78.47 ± 11.49			.03

MFS: Mental Fundamental Skills; MPS: Mental Performance Skills; IP: Interpersonal Skills; ST: Self Talk; MI: Mental Imagery

The effect of the branch on mental training was examined and the results obtained are shown in table 4. Considering the findings, it is understood that the branch has no significant effect on mental training (p> 0.05).

Table 5. The Relationship Between The Sport Mental Training Questionnaire and Sports İnjury Anxiety Scale

		The Sport Mental Training Questionnaire	Sport Injury Anxiety Scale
The Sport Mental Training Questionnaire	**r**	1	-.035
	n	179	
Sport Injury Anxiety Scale	**r**	-.035	1
	n	179	

Table 5 shows the relationship between mental training and injury anxiety. The current finding shows that there is no significant relationship between both mental training and injury anxiety.

DISCUSSION

The aim of the study was to determine the sport injury anxiety and mental training level of the athletes and also the relationship between mental training and sport injury anxiety status.

When analyzed in terms of gender variable, it is seen that there is a significant difference in injury anxiety between male and female athletes (see table 1). In the current study, it was concluded that injury anxiety of male athletes is higher than female athletes. The reason why male athletes have higher injury anxiety may be that men are more actively involved in sports that require physical contact. Tanyeri (25), concluded that male athletes 'injury anxiety was higher than female athletes in their study, which examined athletes' anxiety of injury. It concluded that male athletes may have high levels of physical violence against their opponents in sports branches that require physical contact, in terms of high levels of injury anxiety. This result supports our study findings.

Coping with injury is important for sports performance. The literature has shown that athletes who can cope well with injuries are among the most important factors that distinguish them from those who fail. Arvinen-Barrow et al. (4) study results show that physiotherapists have the practical experience and an awareness of the psychological aspects of injuries and acknowledge the importance of treating a range of psychological conditions. Houston et al. (19) study results show that following acute musculoskeletal injury, the injury-related fear scores decrease as the athletes' condition improves.

However, a significant difference was observed in favor of women only in the sub-dimension of self-talk in the mental training status of athletes (see table 3). The results of the study examining mental training situations in the literature differ according to the gender variable. In the study of Erdoğan and Gülşen (14), no significant differences were found in mental training skills according to the gender variable. Turgut and Yaşar (26) found a statistically significant difference in the Mental Performance Skills sub-dimension in favor of male participants in the study in which they determined whether there was a significant difference between the mental training levels of male and female participants. Çelik and Güngör (10) study results show that male participants are more successful than female participants in the mental performance skills sub-dimension. But also there is no difference between male and female athletes according to their SMTQ average scores.

It is seen that there is no significant difference between individual and team athletes in both anxiety of injury and mental training. This finding shows that athletes who are interested in sports as a team or individually show similar tendency at the point of mental training. It was also determined that athletes experienced similar levels of injury anxiety. When the literature is examined, injury researches mostly involve contact and collision sports, researches related to non-contact sports branches are less (24). However, it is possible to come across some studies examining the level of injury anxiety in team and individual sports branches. Tanyeri (25) study shows that the injury anxiety is not meaningful among athletes who are interested in individual or team sports, as well as the results of the study in which athletes in different sports branches examine injury anxiety. In addition, Erdoğan and Gülşen (14) did not detect significant differences in mental training skills according to the branch variable in their study. This result supports our study findings. However, Çelik and Güngör (10) stated that male participants who are interested in individual sports are more likely to use their mental performance skills than team sports. In the present study, male and female athletes interested in team and individual sports were evaluated together. However, Çelik and Güngör (10) stated that there was no difference between individual sports participants and team sports participants according to their total SMTQ average scores.

Today, a lot of research has been done to understand how anxiety can affect sports performance. It is well known that sports has a high potential for stress and anxiety, and the application and use of various psychological strategies can be beneficial in the management of anxiety (15). However, no relationship was found between the two conditions in the present study. Although there is no statistical significance between the two conditions in the present study, the direction of the expected relationship is similar to the studies examined. In addition, studies on relationship are mostly about whether mental training practice affects anxiety levels or not. In the literature, it is possible to come across many studies that use mental training methods and show that these methods bring anxiety processes to an optimal level. Reese et al. (22) compilation study of "Effectiveness of psychological intervention in sports injuries"

supports the effectiveness of psychological intervention in reducing psychological outcomes after injury and improving psychological coping skills during rehabilitation. Fortes et al. (16) study results showed that mental training is effective in reducing cognitive and somatic anxiety and increasing self-confidence of swimmers.

As a conclusion, male athletes' anxiety of injury is higher than female athletes. Self-talk is used more by female athletes in mental training situations. There is no relationship between mental training and sports injury anxiety scale. Considering that injury anxiety affects performance, it may be useful to include psychological support processes in training. Especially during the training and competition days when the athlete is injured, getting psychological support can prevent the negative effects of anxiety.

In the present study, the mental training status of the athletes was examined using the questionnaire. It is thought that the implementation of mental training programs and determination of injury anxiety levels in future studies will contribute to the literature. Also the researchers can repeat this study with professional athletes.

ACKNOWLEDGMENTS

This study was conducted by obtaining the ethics committee report of Yozgat Bozok University Clinical Research Ethics Committee with the number 2017-KAEK-189_2020.03.09_06

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