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ORIGINAL ARTICLE

Investigation of Kinesiophobia and Depression Levels of Wrestlers Returning to Sports After Injury

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ABSTRACT

Background: The aim of this study is to investigate the kinesiophobia and depression levels of male and female wrestlers in the period following a sports injury.

Methods: This study included a total of 433 athletes with a sports injury history at least 6 months ago and the athletes consisted of 174 male athletes who wrestle in Greco-Roman style, 191 male athletes who wrestle in freestyle and 68 females who wrestle in freestyle. The participating athletes in the study were evaluated by the Beck Depression Inventory and Tampa Scale for Kinesiophobia in a one on one interview way. Furthermore, the participants were asked to fill a form that evaluated the information regarding the injuries they had.

Results: According to the periods of wrestling history of the wrestlers, depending on the type of activity in which the injury occurred, kinesiophobia and depression levels were determined to be statistically significant between the groups in terms of the injuries that occurred during an exercise or a competition.

Conclusion: Following sports injuries, it was determined that depression and kinesiophobia scores were significant. It could be stated that kinesiophobia is not related to the emotional states of athletes.

Keywords: Kinesiophobia, Wrestling Injuries, Returning to Sports, Fear, Depression.

INTRODUCTION

The most commonly observed psychological problem during the initial periods of sports injuries is mood disorders. Sports injuries can result in many negative psychological states such as stress, low self-esteem, depression, fear, anger, clouding of consciousness and anxiety (1-3). Following sports injuries, although the negative psychological state of the athletes and depression can exhibit a tendency to decrease, it is known that the psychological reactions of the athlete towards a successful return to sports have a significant influence (4-6). While positive psychological reactions positively affect the possibility of returning to the states of athletes before the injury and the returning period, fear is a negative reaction that affects the return of athletes to sports in the period of recovery and rehabilitation after a sports injury (5, 6). Fear is also one of the most attention-grabbing psychological factors in the pain experience due to a sports injury (7). Fear can trigger behaviors with flight or evading features as a reaction to previously experienced situations such as a threat of pain or ache. Kinesiophobia, which is defined as the fear of suffering from an injury again, is a type of fear that is related to amygdala and insula areas of limbic system structures (8, 9). Kori et al. reported defined kinesiophobia as a fear of movement and activity that results from the sensitivity to injuries and the belief of fragility and has negative effects (10). In addition to the concepts of fear of movement and activity, the concept of fear of suffering from an injury again is also used synonymously with kinesiophobia. Kinesiophobia can negatively affect the rehabilitation or treatment results following sports injuries (11). Kinesiophobia is also a condition that creates fear of pain due to a movement practiced or the fear of suffering from an injury again.

Conversely, the motivation and perception of returning to sports are among the factors that affect returning to sports positively (12). Several internal and/or external factors play roles in the emergence of sports injuries. One of the external factors in relation to the field of sports is whether the sports practiced include physical contact with the opponent (13, 14). The highest risk factor in injuries due to sports and recreational activities is the nature of the physical activity practiced and the sports with physical contact have the highest risk (15). The rate of sports injuries in sports with physical contact is higher compared to sports without physical contact (16). This rate is 13.2% in sports with physical contact while it is 6.6% in sports without physical contact (17). Several reasons such as the inability of organizing the rehabilitation process well or not achieving the clinic aims completely can result in frequent injuries in the same regions in athletes. Due to these and similar reasons, although it was reported that some athletes could exhibit a tendency to avoid sports or physical activity due to fear of suffering from an injury again (18), in the accessible resources, the data regarding the effects of physical contact in the nature of the sports practiced on kinesiophobia and depression is very little. Determining the levels of kinesiophobia and depression after a sports injury in wrestlers can provide significant contributions to issues such as protection from injuries, the period of rehabilitation following the injury and return to sports. Therefore, the aim of this study was to investigate the kinesiophobia and depression levels of athletes who practice wrestling and suffered from sports injuries. Additionally, it was aimed to determine the frequency of injuries in those who practice wrestling and reveal the type of activities the injuries occur and their relationship with season periods in a proportional way.

MATERIALS AND METHODS

This study included a total of 433 voluntarily participating athletes who had sports injury diagnosis and suffered from sports injuries at least 6 months ago and the athletes consisted of 174 male athletes who wrestle in Greco-Roman style, 191 male athletes who wrestle in freestyle and 68 females who wrestle in freestyle. The mean age of

the male wrestlers was 26.3±5.4 years old while the mean age of the female wrestlers was 22.7±3.5 years old. The mean height of the male wrestlers was 177.8±6.4 cm while the mean height of the female wrestlers was 165.2±6.4 cm. The mean body weight of male wrestlers was 79.5±22.7 kg while the mean body weight of female wrestlers was 68.3±11.4 kg. The mean weekly exercise time of the participants was 12.1±5.7 hours.

Because the level of depression after a sports injury in females is higher compared to males as well as the fact that the rate of sports injury is equal for females and males, except for gymnastics, only male athletes were included in this study (4, 19, 20). The participating individuals in the study were evaluated by using Bech Depression Inventory (BDI) and Tampa Scale for Kinesiophobia (TSK) in a one to one interview way. TKO is a 17-item scale that is used for health problems related to the muscle-skeletal system. For the reliability of the scale, the injury must occur at least six months ago. Athletes receive a total score between 17 and 68. High scores of individuals on the scale mean that the individual has high levels of kinesiophobia (21). In this study, the TSK scale, whose Turkish validity and reliability study was conducted by Yılmaz et al., was used (22). Total scores of 37 or higher were evaluated as high levels of kinesiophobia (23). In order to determine the depression levels of the participants, the BDI scale, whose Turkish validity and reliability study was conducted by Hisli, was used. The inventory consists of a total of 21 items. Each item is scored between 0 and 3 points. As the scores increase, the level of depression is considered to increase (24). In order to determine the information regarding age, height, body weight, sports history, level of weekly exercise, number and time of weekly exercises, the participants were asked to fill a form. Additionally, regarding the injury history of the participants, the form included questions for information such as how long ago the injury occurred, what type of treatment was conducted in the injury period and how long the participants were kept away from sports. For this study, the approval was obtained from the Inonu University Clinic Research Ethics Committee. For statistical analysis, one-way variance analysis was used. The existence of the difference between the groups was tested by independent samples t-test. In order to determine the source of the difference in a situation where the variance was not homogenous, Games Howell post-hoc test was conducted. Arithmetic mean, frequency and standard deviation values were calculated. The level of significance was regarded as $p<0.05$. The relationship between the obtained data was determined by the Pearson Product-Moment Correlation test. In the correlation analysis, the "r" values expressed as the Pearson Correlation was evaluated.

RESULTS

The sports history of the participants was presented in Table 2. In the investigation between the groups in terms of sports history, it was determined that there was a significant difference between the TSK and BDI scores of male athletes who wrestle in Greco-Roman style, male athletes who wrestle in freestyle and athletes who wrestle in freestyle ($p>0.05$).

Table 1: Intergroup comparison of athletes' kinesiophobia and depression levels according to sports history

Sports History	N	MW TSK Scores	FW TSK Scores	p-value	MW BDI Scores	FW BDI Scores	p-value
1-3 years	86	40.4±6.8	45.2±4.9	0.03*	6.68±4.52	11.32±5.39	0.02*
4-6 years	111	37.8±5.2	46.7±8.1	0.01*	5.12±4.06	9.46±4.81	0.01*
7-9 years	109	36.3±7.9	42.3±1.1	0.03*	5.97±3.63	7.76±8.33	0.69
10 years and above	127	38.1±6.5	42.6±9.6	0.04*	4.42±4.98	6.51±3.48	0.52

MW: Male Wrestlers, FW: Female Wrestlers, TSK: Tampa Scale for Kinesiophobia, BDI: Bech Depression Inventory. The values were presented as mean ± standard deviation. The level of statistical significance was regarded as $p<0.05$.

The mean TSK score of male wrestlers was calculated as 38.15±5.3 while the mean score of female wrestlers was calculated as 44.2±7.8. A statistically significant difference was observed between the TSK scores of both groups ($p=0.02$*). The BDI values of wrestlers were scored between 0 and 34. According to BDI scores, the mean values of individuals do not indicate a depression finding. The mean BDI score of male wrestlers was 5.55±6.23 while the mean score of female wrestlers was 8.76±4.52. A significant difference was discovered between the groups in terms of the depression scores ($p=0.01$*). It was observed that the mean BDI scores of female wrestlers were higher compared to male wrestlers.

The mean score of total TSK scores of male wrestlers was calculated as 38.2±5.3 while the mean score of female wrestlers was 44.2±7.8. A statistically significant difference was observed between the TSK scores of both groups ($p=0.02$*). The mean BDE score of male wrestlers was 5.6±6.23 while the mean score of female wrestlers was 8.8±4.52. A significant difference was discovered between the groups in terms of the depression scores ($p=0.01$*). It was observed that the mean BDI scores of female wrestlers were higher compared to male wrestlers (Table 2).

Table 2: Intergroup comparisons of kinesiophobia and depression levels

	Male Wrestlers	Female Wrestlers	p-value
TSK Scores	38.2±5.3	44.2±7.8	p=0.02*
BDI Scores	5.6±6.23	8.8±4.52	p=0.01*

The level of statistical significance was regarded as $p<0.05$.

MW: Male Wrestlers, FW: Female Wrestlers, TSK: Tampa Scale for Kinesiophobia, BDI: Bech Depression Inventory. The values were presented as mean ± standard deviation. The level of statistical significance was regarded as *$p<0.05$.

According to the type of activity for the occurrence of the injury, in terms of the injuries suffered during exercise or competition, TSK scores of male wrestlers demonstrated a statistically significant difference depending on suffering from injury during exercise or competition. Similarly, TSK scores of female wrestlers constituted statistically significant differences depending on suffering from injury during exercise or competition. As can be seen in Table 3, depending on suffering from injury during exercise or competition, there was a statistically significant difference in TSK scores between the groups of female wrestlers and male wrestlers. According to female wrestlers and male wrestlers, it was determined that BDI scores observed following an injury during exercise was significantly higher and this difference was more apparent in the injuries suffered during competition.

Table 3: Intergroup comparisons of kinesiophobia and depression levels in terms of the season period of injury and type of activity

		Rate of Injury (%)		TSK Scores			BDI Scores		
		MW	FW	MW	FW	p-value	MW	FW	p-value
Type of Activity	Exercise	97.4	95.9	38.3±5.1	42.2±5.1	0.02*	5.23±6.23	8.76±4.52	0.02*
	Competition	58.3	46.8	38.6±4.7	43.8±8.2	0.01*	7.19±2.70	9.21±7.04	0.04*
Season Period	Before Season	30.5	35.4	38.2±1.2	40.3±1.6	0.04*	5.04±8.66	10.16±2.55	0.02*
	During Seasons	94.6	98.6	38.1±7.2	42.9±7.4	0.02*	5.13±3.91	10.12±0.94	0.01*
	After Season	3.3	3.7	40.1±2.9	44.1±2.6	0.02*	8.04±7.21	11.96±2.25	0.03*

DISCUSSION

Whatever the sports field is, every athlete is exposed to sports injuries in a small or large scale during their sports lives. The most commonly observed psychological problem during the initial periods of sports injuries is mood disorders (1). Following an injury, the level of physical and psychological preparation for returning to sports cannot always be at a sufficient level. Even though the physical disorders or symptoms disappear, kinesiophobia can affect the recovery of physical disorders by decreasing self-esteem and prevent a successful return to sports (25). In chronic injuries such as anterior cruciate ligament tear, chronic waist and neck pain, kinesiophobia can be frequently observed (5, 26, 27). Following anterior cruciate ligament operation, it was determined that 20-24% of the athletes who could not successfully return to sports suffered from reasons originating from kinesiophobia. The athletes who could return to their performances before the injury had less fear of suffering from injuries originating from movement again (11). Individuals with depression cannot return to the levels before the injury during the year after the injury and these psychological reactions due to injury can result in functional disorders (28). In the muscle-skeletal system pain, there are relationships between kinesiophobia and pain level, functional limitations and psychological features (29). Different from these results, there are results, which report that in patients with cervical discopathy, clinic data related to psychology and pain were not determinant for kinesiophobia (27). Similarly, in this study, it was discovered that kinesiophobia in athletes is related to depression levels.

Previous studies reported that only competition anxiety of psychological factors was effective in sports injuries and general anxiety did not have any influence on these injuries (30). Studies that investigated the effects of psychological features such as the sense of self, style of expressing anger, type A personality, self-esteem, daily problems, physical burnout, interpersonal style, attention, fatigue, self-concept and reaction time on sports injuries do not have clear results and are partially contradictory (30).

According to a study conducted by Brewer et al., it was determined that only 4.8% of the athletes who had sports injuries had depression scores at a clinic level (BDI Score >16) and this rate was 5.7% in the general population (31). Manuel et al. revealed that 27% of youngsters, who suffered from sports injuries, experience moderate levels of depression score (BDI Score >15) right after the injury and these scores decreased in time; this rate was decreased to 21% in the 3rd week, to 17% in the 6th week and to 13% in the 12th week (32). Alternatively, Leddy et al. revealed that athletes who suffered from sports injuries demonstrated higher rates of depression right after the injuries and after two months compared to the control group (33). Hutchison et al. determined that right after sports injuries, depression levels were observed to increase despite being insignificant and this continued for two weeks (34). Appaneal et al. reveal that one week after sports injuries, the depression levels, which were evaluated with “Hamilton Depression Scale”, were increased and this continued for one month. However, according to the “Center for Epidemiological Studies Depression Scale” evaluation, there was no difference with the control group (4). According to these results, even though the athletes demonstrated depression findings during the early periods of injury, it can be stated that these psychological effects are decreased in time (34, 35). In our study, no clinic depression level (BDE Score >16) was observed following the injuries of athletes. It could be believed that the reason for the fact that no depression finding is observed in evaluations conducted with retrospective statements of athletes could be due to the tendency of depression scores to decrease in time just as it was reported in studies conducted by Hutchison et al. (34) and Brewer and Petrie (35). In the study, in the injuries occurring during exercise or competition according to the type of activities, it was determined that even though the depression scores did not reach clinic levels, the scores of female wrestlers were statistically higher compared to male wrestlers. Several researchers advocated that the reasons for the expedited depression symptoms of athletes following injuries could be due to the anxiety of falling behind in sportive competition rather than injuries (36, 37). Two-thirds of injuries of male wrestlers occur during exercise. The reason for this is claimed to be the fact that the time spent exercising is longer than the time spent on competitions. In parallel with this view, in our study, it was determined that the rates of injury occurring during exercise for male wrestlers and female wrestlers were 97.4% and 95.9%, respectively while the rates of injury occurring during competition were 58.3% and 46.8%, respectively. It can be concluded that another

reason for the fact that the injuries occurring during exercising wrestling is higher than the injuries occurring during competition could be due to the fact that more physical contact occurs during extended periods of exercising.

CONCLUSION

In studies investigating the relationship between the kinesiophobia and depression in sports injuries, contributions to literature can be provided by determining the reasons for kinesiophobia following athletes' injuries. In future studies, physicians, physiotherapists and sports professionals can develop suitable strategies for kinesiophobia and similar psychological factors in the rehabilitation period following injuries. It can be stated that kinesiophobia is not related to moods of athletes and kinesiophobia values can be affected by other factors. In rehabilitation programs of athletes, paying more attention to kinesiophobia and depression states of athletes can provide positive contributions to rehabilitation processes.

Conflict of Interest: The authors declare that there is no conflict of interests.

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