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Rumination and Physical Activity Enjoyment in the Long Term After the Kahramanmaraş Earthquake

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Abstract

Apart from the fact that Türkiye is an earthquake country, the earthquake, the epicenter of which was Kahramanmaraş province on 6 February and which covered 11 provinces and was known as the disaster of the century, caused devastating results. In addition to threatening human life, natural disasters such as earthquakes can also affect people's mental states and daily life habits in both the short and long term. In this context, this study aimed to examine the levels of rumination (recurring negative thoughts) and enjoyment of physical activity of the students of the Faculty of Sports Sciences in the long term after the Kahramanmaraş earthquake. The research was cross-sectional in the relational screening model. The sample of the study consisted of (n:253) students studying at Karamanoğlu Mehmetbey University Faculty of Sport Sciences. Demographic information form, Self-Critical Rumination and Physical Activity Enjoyment Scale (PAES) were used as data collection tools in the study. Descriptive analyses, Man Whitney-U test, Kruskal Wallis test and Spearman's correlation test were used to analyze the data. According to the research results, the PAE levels of the participants were significantly higher in males than females and in those who do sports than those who do not do sports ($p<0.5$). A significant negative relationship was found between the participants' enjoyment of physical activity and rumination levels ($p<0.5$). As a result, physical activity can be recommended to protect mental health after natural disasters such as earthquakes.

Keywords: Physical activity, Negative thinking, Natural disaster

Introduction

On 6 February 2023, many of our citizens lost their lives and many of our citizens were injured in the disaster of the century, the epicentre of which was Kahramanmaraş province, and 10 other provinces were affected by this earthquake. This natural disaster deeply grieved the whole of Türkiye and the whole country started an aid mobilisation. More than 1 year has passed since the disaster of the century and the wounds are still being healed. After natural disasters such as earthquakes, the economic status, physiological health and psycho-social status of individuals are affected (Bulut, 2023). It is said to cause negative thinking (rumination) and post-traumatic stress disorder after a traumatising event such as an earthquake (D'Andrea et al., 2011). In one of the first studies on rumination, it was concluded that the probability of acute ruminative reactions in individuals immediately after a natural disaster was high, and the probability of individuals showing ruminative reactions to show long-term depression symptoms was significantly higher (Nolen-Hoeksema & Morrow, 1991).

Rumination is generally associated with mental problems such as depression or anxiety and is explained as the tendency of individuals to think about the negative events they have experienced over and over again in their minds (Shors et al., 2017). After the Maraş earthquake, the transition of universities to distance education, earthquake victims and students changing cities may have increased the likelihood of mental problems and rumination in university students. This situation may have caused differences not only in the daily life habits of individuals after natural disasters but also in their participation in physical activity (Gümüş & Çakır, 2023). Previous studies have reported that university students who regularly engage in physical activity can overcome mental problems better (Zhang et al., 2022). In a large-sample study conducted in the USA, it was concluded that the mental state of university students in the past 1 month was related to the level of physical activity (Chekroud et al., 2011). Studies have shown that not only mental practices but also both mental and physical training practices are beneficial in dealing with rumination (Alderman et al., 2016; Lavadera et al., 2020; Shors et al., 2014).

In recent years, it can be said that research on the effect of physical activity on rumination has increased (Liu et al., 2023). In an experimental study, it was concluded that rumination group counselling and Qigong exercises can reduce anxiety levels of young individuals and increase optimism, hope, resilience and self-efficacy levels (Min & Yao, 2022). In another study, it was found that university students who did not engage in physical activity had higher levels of ruminative thinking, which may increase the amount of negative emotions (Ye et al., 2022). In parallel with this study, in a study conducted in Chinese university students, it was reported that physical activity can reduce students' rumination, anxiety and depression levels (Liu et al., 2023). These research results show the importance of physical activity continuity.

Subjective evaluations at the point of continuity of physical activity may be due to positive reinforcements (liking the activity, enjoyment, etc.), and discontinuation of the activity or avoidance behaviour may be due to negative reinforcements (bad activity experience, boring or uninteresting, etc.) (Teixeria et al., 2021). It is known that sports science students, especially those who have continuous practice courses, keep their physical activity levels high during the distance education process in the Covid-19 pandemic (Al-Mhanna et al., 2024). In a study conducted in young earthquake survivors after the earthquake, it was determined that the motivation of individuals to participate in physical activity was at an average level (Gümüş & Çakır, 2023). At this point, being aware of physical activity and participating in the most enjoyable physical activity may be important in terms of protecting both physical

and mental health (Rodrigues & Teixeira, 2023). On the other hand, the conclusion that there is no difference between the life satisfaction of individuals who do and do not do sports in the literature also creates a contradiction (Kaya et al., 2018). Considering the studies under review, it may be useful to investigate the relationship of physical activity with negative thoughts in university students affected by the earthquake. It is also known that there are differences in regulating the emotions of students of the Faculty of Sports Sciences according to gender, age and athlete background (Güler, 2022). In this context, this research aimed to examine the physical activity enjoyment and rumination levels of Sport Sciences students and to reveal the relationship between these levels.

Material and Method

Research Model: The research design was descriptive and relational survey model. In the descriptive relational survey model, an event or situation is described as it is and the relationship, effect and degree of the variables that cause this situation are tried to be determined (Kaya et al., 2012).

Participants

The sample of the study was determined by random sampling method. A total of 253 (female: 120, male: 133) students studying at Karamanoğlu Mehmetbey University Faculty of Sport Sciences participated in the study voluntarily. The table containing the demographic characteristics of the participants was given below (Table 1).

Table 1. Demographic characteristics of the participants

	Group	f	%
Department	*Coaching*	138	54,5
	Physical Education and Sport	77	30,4
	Sport Management	38	15,1
BMI Classification	*Weak*	27	10,7
	Normal	185	73,1
	Overweight	33	13,0
	Obese	8	3,2
Doing Sport (3 days a week/60 minutes a day)?	*Yes*	173	68,4
	No	80	31,6
Have Chronic Disease?	*Yes*	13	5,1
	No	240	94,9
Have Psychological Disease?	*Yes*	24	9,5
	No	229	90,5
Have Psychological Treatment?	*Yes*	9	3,6
	No	244	96,4
Live Eartquake Province?	*Yes*	130	51,4
	No	123	48,6
Death of Family Member?	*Yes*	14	5,5
	No	239	94,5
Death of Closely Friend/Neighbor?	*Yes*	104	41,1
	No	149	58,9

Data Collection Tools

In the study, demographic information form prepared by the researchers, Self-Critical Rumination and Physical Activity Enjoyment Scale were used. The data in the study were collected face-to-face using a questionnaire form.

1. Demographic Information Form: In the form created by the researchers, there were questions about the participants' gender, age, height, weight, department, residence status in

the provinces affected by the earthquake, whether there was a first-degree family member, relative and neighbor loss in the earthquake, psychological illness, chronic disease and treatment status, and regular exercise status.

2. Self-Critical Rumination Scale: The original version of the scale was developed by Smart et al. in 2016 with a total of 10 items and a single dimension. The scale was scored on a 4-point Likert scale (Never=1, Somewhat=2, Mostly=3, Completely=4) and as the scores obtained from the scale increase, the level of self-critical rumination increases. There were no reverse items in the scale and the Cronbach α internal consistency coefficient of the scale was recorded α=0,92. The validity and reliability study of the scale in Turkish culture was conducted by Eraslan-İngeç et al. in 2020. In this study, the Cronbach α internal consistency coefficient of the scale was determined α=0,87.

3. Physical Activity Enjoyment Scale: The scale was developed by Mullen et al. in 2011. The scale was a 7-point Likert (Strongly disagree=1, ... Strongly agree=7) type scale consisting of 8 items and one dimension. The validity and reliability study of the scale was conducted by Özkurt et al. in 2022. Cronbach's α internal consistency coefficient of the scale α=0,96. In this study, the Cronbach α internal consistency coefficient of the scale was determined α=0,97.

Data Analysis

The 'Shapiro Wilk' test was used to determine whether the data in the study had a normal distribution and it was determined that the data did not show a normal distribution (p<0,05). In the descriptive analyses of the data in the study, frequency (N), percentage (%), mean ($\bar{x}$) and standard deviation values (Sd) were determined. Man Whitney-U test was used in paired group comparisons and Kruskal Wallis test was used in more than two group comparisons. Spearman's correlation analysis was used for correlational comparisons. All analyses of the data were performed in Jamovi 2.3.21.0 statistical programmed with 95% confidence interval and 0,05 significance level.

Results

The mean BMI, rumination and PAE scale scores of the participants in the study were presented below (Table 2).

Table 2. Mean BMI, Rumination and PAE scale scores of the participants

	N	$\bar{X}$	Sd
Body Mass Index	253	22,03	3,39
Rumination	253	18,31	5,42
Physical Activity Enjoyment	253	49,39	8,52

The mean BMI of the participants was (22,03±3,39), the mean rumination score was (18,31±5,42), and the mean enjoyment of physical activity score was (49,39±8,52). Pairwise comparisons of the participants were presented below (Table 3).

Table 3. Mann Whitney U test results of the participants

	Variables	Group	$\bar{X}$	U	p	E.S.
Gender	**BMI**	Female (n:120)	20,52±2,5	3790,0	<**0,000*****	0,3
		Male (n:133)	23,40±3,5			
	PAE	Female (n:120)	48,58±8,89	6714,5	**0,03***	0,16
		Male (n:133)	50,13±8,13			
Doing Sport	**PAE**	Yes (n:173)	49,69±8,92	5759,0	**0,03***	0,17

		No (n:80)	48,74±7,58			
Psychological Disease	**Rumination**	Yes (n:24)	20,79±5,98	1947,0	**0,02***	0,9
		No (n:229)	18,05±5,30			
Psychological Treatment	**Rumination**	Evet (n:9)	24,00±6,00	487,5	**0,004****	0,56
		No (n:244)	18,10±5,29			

E.S: Effect Size

When the BMI scores of the participants were analyzed, the mean of males (23,40±3,5) was significantly higher than the mean of females (20,52±2,5) (p<0,05). When the PAE scores of the participants were analyzed, the mean scores of males (50,13±8,13) were significantly higher than the mean scores of females (48,58±8,89), and the mean scores of those who did sports (49,69±8,92) were significantly higher than the mean scores of those who did not do sports (48,74±7,58) (p<0,05). When the Rumination scores of the participants were examined, the mean scores of those with psychological illness (20,79±5,98) was significantly higher than the mean of those without psychological illness (18,05±5,30). Moreover, the mean of those who received psychological treatment (24,00±6,00) was significantly higher than the mean of those who did not receive treatment (18,10±5,29) (p<0,05). Comparisons of participants in more than two groups were presented below (Table 4).

Table 4. Kruskal Wallis test results of the participants

Variables	**Group**	**X̄**	**W**	**χ^2**	**p**	**Post Hoc**
BMI	1.Coaching (n:138)	21,510±3,31	4,2491	9,17497	**0,007****	1<2
	2.Physical Education (n:77)	22,799±3,33				
Rumination	1.Coaching (n:138)	17,370±5,28	4,5893	10,771768	**0,004****	1<2
	2.Physical Education (n:77)	19,844±5,59				

**p<0,01

When Table 4 was analyzed, in the BMI scores of the participants, the mean scores of the Physical Education students (22,799±3,33) was significantly higher than the mean of the Coaching students (21,510±3,31) (p<0,05). Besides, the mean of the participants' Physical Education department students (19,844±5,59) was significantly higher than the mean of the Coaching department students (17,370±5,28) (p<0,05). The Correlation results of the participants were presented below (Table 5).

Table 5. Spearman's correlation test results of the participants

	1.Body Mass Index	**2.Rumination**	**3.Physical Activity Enjoyment**
1.Body Mass Index	1		
2.Rumination	-0,01	1	
3. Physical Activity Enjoyment	**0,13***	**-0,14***	1

*p<0,05

When Table 5 was analyzed, a statistically significant positive and very weak relationship was found between BMI scores and PAE scores (r=0,13, p<0,05). A statistically significant negative and very weak correlation was found between the participants' Rumination scores

and PAE scores (r=-0,14, p<0,05). The figure related to the correlation results was presented below (Figure 1).

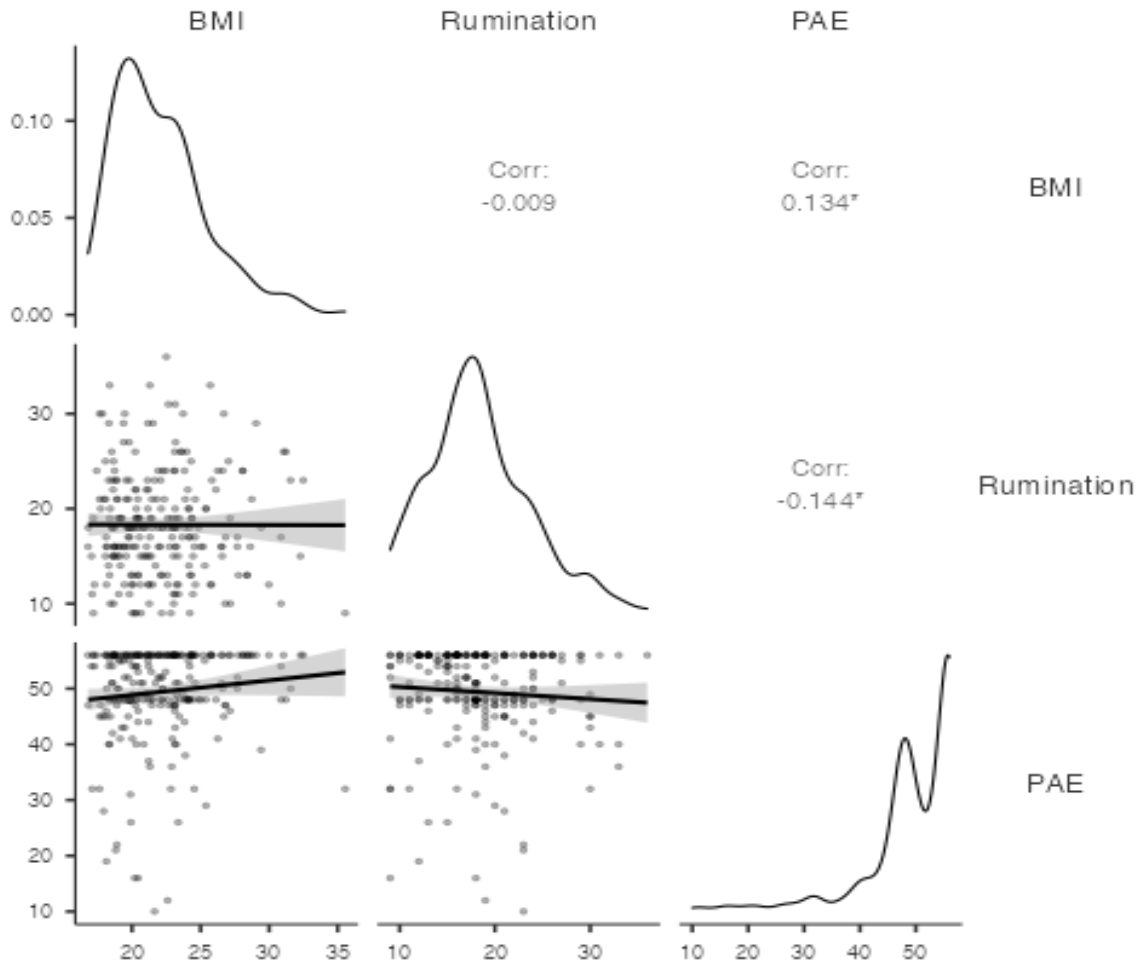

Figure 1. Correlation test results

Discussion and Conclusion

The following results were obtained in this study in which the long-term rumination and physical activity enjoyment levels of sports sciences faculty students were examined after the Kahramanmaraş earthquake.

As the first result of the study, when the participants' levels of enjoyment of physical activity were analyzed, it was found that males were significantly higher than females and those who did sports were significantly higher than those who did not. It was known that exercise intensity affects the amount of enjoyment of physical activity (Teixeira et al., 2021). Enjoyment of physical activity showed different results according to gender. In a study conducted on university students in Qatar, it was found that male students enjoyed exercise more than female students. In addition, green areas and sports facilities within the university were considered to help increase the physical activity levels of students (Chaabna et al., 2022). Again, in a study conducted among university students, it was found that males performed more moderate activity than females and enjoyed physical activity more (Yan et al., 2023). In another study, it was found that 44.3% of middle-aged individuals enjoyed physical activities and there was no difference in terms of gender (Buonsenso et al., 2021). A

study conducted on secondary and higher education students in Türkiye concluded that male students had higher levels of enjoyment of physical activity compared to female students (Özkurt et al., 2022). Sports sciences students were constantly taking applied courses intertwined with sports due to the department in which they receive education; in this context, it was expected that students' physical activity enjoyment would be high. In a review study, when young people in Türkiye were examined, it was seen that female students have a lower level of physical activity than male students (Cengiz & Delen, 2019). It can be said that the reason why male students enjoy physical activity more than female students was that females had higher depressive symptoms than males (Shors et al., 2017).

Another result of the study was that when the rumination levels of the participants were examined, it was determined that those with psychological disorders were significantly higher than those without psychological disorders, those who received psychological treatment were significantly higher than those who did not, and the students of the Physical Education and Sports Teaching Department were significantly higher than the Coaching students. It was known that after natural disasters such as earthquakes, individuals' mental states may change, and negative thoughts may be observed. It is known that there is a negative relationship between the level of physical activity and the level of hopelessness (Cengiz et al., 2019). An experimental study found a relationship between depressive symptoms and ruminative thoughts (Shors et al., 2017). This result supports the fact that participants with psychological disorders and those receiving treatment have higher ruminative levels. Structured physical activity practices were recommended in the treatment of posttraumatic stress disorder and rumination after natural disasters (Koçak et al., 2023). In a previous study conducted in Türkiye, it was concluded that while the problem solving levels of normal university students were moderate (Akpınar & Akpınar, 2017), the mental endurance levels of athletes were high (Akpınar & Akpınar, 2018). It can be said that the fact that the students of physical education and sports teaching department had higher ruminative thoughts may be due to the fact that they have less applied courses compared to coaching students.

The last and most valuable result of the study was determined that as the participants' level of enjoyment of physical activity increased, their rumination levels decreased. It was reported earlier that increased enjoyment of physical activity has positive effects on behaviours such as depressive mood disorders, ruminative thoughts and avoidance (Lewinson et al., 1976). It was found that university students who avoided physical activity experienced more psychological distress, and after doing sports, individuals enjoyed more and experienced less psychological distress (Bevan et al., 2023). In Türkiye, universities have previously switched to distance education during the Covid-19 pandemic, and it has been found that the physical activity levels of students studying at the faculty of sports sciences have decreased and stress levels have increased (Güler et al., 2021). Again, it has been reported that taking 10,000 steps daily for sports science students during the pandemic increased their mental well-being scores (Yanar and Güler, 2021). The fact that universities have switched to distance education after the earthquake disaster in Türkiye may have led to negative psychological problems, especially for students of the faculty of sports sciences. It was also reported that there was a negative relationship between physical activity and rumination in university students (Ye et al., 2022), and exercise increased positive emotions, but a single exercise was not sufficient (Schmitter et al., 2023). Although it was known that individuals with depression enjoyed physical activity less (Kagawa et al., 2022), it was found that physical activity also predicted negative depression as a common mediator of rumination and anxiety in university students (Liu et al., 2023). In a study conducted in Türkiye, it was concluded that university students'

physical activity enjoyment may directly affect their activity satisfaction and happiness levels (Peker et al., 2023).

As a result, sport sciences students' levels of physical activity enjoyment varies according to their gender and sporting status; rumination levels vary according to their psychological status and the department they study. As the students' level of enjoyment of physical activity increases, their rumination levels decrease.

Recommendations

As a result, physical activity activities that university students can enjoy after natural disasters such as earthquakes can be recommended. Activities with physical activity content can be carried out for the earthquake victims living in the provinces affected by the earthquake. In the new studies to be conducted, activities with physical activity activities can be planned, especially for individuals with permanent disabilities after the earthquake. Multidisciplinary studies together with psychologists, sports scientists and public health experts can be designed for individuals in earthquake victims in the new research that will be conducted.

Limitations

There are some limitations in the research; first of all, the data obtained are based on the statements of the participants. Whether the participants received psychological treatment or not was determined according to the statement they gave. the participants' rumination levels were determined by means of a scale based on their own answers, not determined by any psychologist.

Ethical Permission: Ethical permission was obtained from Karamanoğlu Mehmetbey University Social and Human Sciences Scientific Research and Publication Ethics Committee (Number: E-75732670-050.04-181462, Date: 28.02.2024).

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