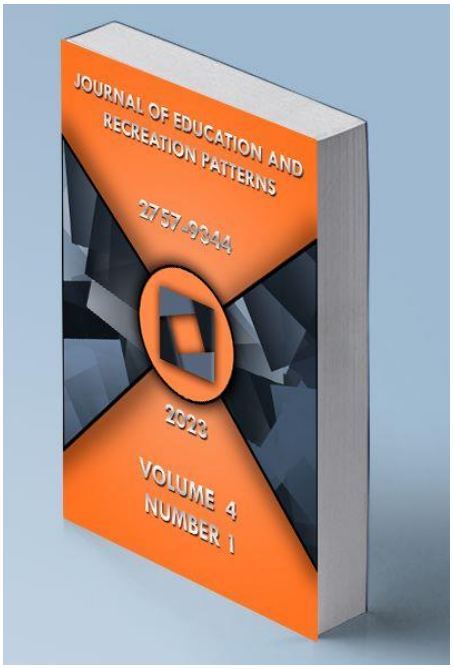

Journal of Education and Recreation Patterns (JERP)

www.jerpatterns.com

The Role of Participation in Sports and Physical Activity in The Effects of Negative Emotions and COVID-19 on Quality of Life

Gökhan ÇAKIR[1]

To cite this article:

Çakır, G. (2023). The Role of Participation in Sports and Physical Activity in The Effects of Negative Emotions and COVID-19 on Quality of Life. *Journal of Education and Recreation Patterns (JERP), 4* (1), 58-74. DOI: https://doi.org/10.53016/jerp.v4i1.111

[1] Gökhan ÇAKIR, Assistant Professor, Recep Tayyip Erdogan University, Faculty of Sport Sciences, gokhan.cakir@erdogan.edu.tr, https://orcid.org/0000-0002-6800-9816

Journal of Education and Recreation Patterns (JERP)
Volume 4, Issue 1, Year 2023 ISSN: 2757-9344

The Role of Participation in Sports and Physical Activity in The Effects of Negative Emotions and COVID-19 on Quality of Life

Gökhan ÇAKIR[1]

ARTICLE INFORMATION
Original Research Paper

Received 14.03. 2023
Accepted 16.04. 2023

https://jerpatterns.com

June, 2023

Volume: 4, No: 1

Pages: 58-74

ABSTRACT

The purpose of this research is to examine the effect of sports participation and physical activity on negative emotions and the quality of life of COVID-19. Data were collected through the personal information form, the International Physical Activity Questionnaire-Short Form, the COV19-Impact on Quality of Life scale, and Positive-Negative Affect Schedule (PANAS). Data were collected through stratified sampling from Recep Tayyip Erdogan University and Kırşehir Ahi Evran University. The sample of the study consisted of 888 students. The obtained data were analyzed using SPSS 26.0. Necessary assumptions were ensured before the analysis. Afterwards, descriptive statistics and MANOVA were used in the research. It has seen that the number of students who do not do sports under license, who passively participate in sports 2-3 times a week, and whose physical activity level is moderate are more in number. The findings show that students who do sports under license, passively participate in sports, and are physically active experienced lower levels of negative emotions and COVID-19 affected their quality of life at lower levels. As a result, it can be said that participation in sports and physical activity have an impact on negative emotions and the quality of life of COVID-19 in the sample of university students.

Keywords: Negative Emotions, Participation in Sports, Physical Activity, Quality of Life

INTRODUCTION

Mental disorders are an important problem among university students (Auerbach et al., 2016). Studies show that university students suffer from negative mood states such as depression, anxiety and stress (Beiter et al., 2015; Eisenberg et al., 2007). The prevalence and adverse effects of anxiety and depression represent the importance of establishing prevention strategies and methods to intervene with these mental disorders (Zhang et al., 2021). At this point, the importance of emotions emerges as they have social and individual value. Although emotions are short lasting, they may have perpetual effects on us. Positive emotions stimulate the formation of new ideas and actions. According to the extension and construction theory, positive emotions expand our ways of thinking and action, and build our personal resources. This way, we can improve our health and well-being in the long run (Fredrikson, 2002).

Emotions can be categorized as positive and negative. Positive emotions include those such as happiness, optimism and success, while negative emotions include the ones such as depression, anxiety and stress (Yilmaz et al., 2017). The negative emotions of individuals can have a negative impact on their quality of life. On the contrary, positive changes in lifestyle are likely to increase the quality of life. Quality of life can be considered as an umbrella that covers life and life-enhancing factors. The components of quality of life are a better environment, the will and ability to live, utility and evaluation. The increase in the quality of these components improves the quality of life as well (Veenhoven, 2013). Holmes and Dickerson (2003) discussed the factors that contribute to the general life quality of individuals under 8 titles and stated that the emotional states and physical activity levels of individuals have an effect on their general quality of life. Moreover Pennington (2021) setting goals that are specific, measurable, attainable, realistic, and time-bound can increase self-efficacy and lead to better decision-making and continued exercise during the maintenance stage of change.

It is a matter of debate that with the spread of the coronavirus, some problems may occur in the basic quality of life of individuals related to their mental health. Although gradually decreasing today, it is difficult to say that the effects of COVID-19 have completely melted away. Different mutations of COVID-19 may cause an increase in the number of cases recently. It is possible to say that this case affects the duration or quality of physical activity negatively and causes people to lead a more sedentary life than before (Wilke et al., 2021; Yeo, 2020). In other words, it can be said that this ongoing state of inactivity, which started with the COVID-19 pandemic, negatively affects the quality of life of individuals physically, emotionally, mentally and socially (Mutz & Gerke, 2021; Ratten, 2020).

As a matter of fact, it was reported in a study that a family member was infected with COVID-19 and it triggered his depression and negatively affected his quality of life (Ma et al., 2020). Similarly, a study conducted with nurses, who fought against COVID-19 at the forefront, showed that the ones caring for COVID-19 patients had high depression scores and low scores of life quality (An et al., 2020). The concept of 'quality of life' is discussed within the scope of the impact of COVID-19, which includes the basic quality of life related to mental health. In addition, it is thought that the negative emotion levels of students and the effect of COVID-19 on their quality of life may be related. Negative emotions and the resultant effect of COVID-19 on quality of life were discussed as dependent variables in this study. In other words, it is proposed that negative emotions and the basic quality of life regard to mental health were related.

Based on these perspectives, the question *"What kind of a role do sports participation and physical activity play on negative emotions and the impact of COVID-19 on quality of life?"* sheds light on this research. Participating regular physical activity habits can develop individuals' physical and mental health positively. Participation in sports is discussed in two forms in this study: Active and inactive participation. While active participation in sports means

whether an individual does sports under license or not, inactive participation deals with the extent to which the individuals do activities such as watching sports competitions on television or social media, reading and following sports news, and talking to others about sports (Lera-Lopez et al., 2021).

Physical activity has positive effects on negative emotions. Physical activity increases the quality of life as well (Nelson et al., 2007). Sports can be considered as a social phenomenon that appeals both to the soul and the body (Balcioglu, 2003). It is claimed in this study that being physically more active and participating in sports enables university students to be less affected by the negative emotions, and thus, the impact of COVID-19 on their quality of life may be lower. Moreover, it is thought that physical activity and participating in sports can partially reduce the negative effects of a sedentary life on individuals. Therefore, it is important to emphasize the role of physical activity and participation in sports in determining the negative emotion levels of students, determining the effect of COVID-19 on their quality of life, and the relationship between these two concepts. As far as known, no studies have been conducted before using these research models with the sample of university students. In addition, it has been found that university students have higher levels of negative emotions such as anxiety, depression and stress compared to the general population (Beiter et al., 2015; Bidwal et al., 2015; Shamsuddin et al., 2013., Zhang, 2021). This may make the results more meaningful.

The purpose of this research is to examine the role of different levels of physical activity and active and inactive participation in sports on the negative emotions and quality of life of university students these days, when the effects of the coronavirus still exist.

Literature Review and Hypotheses

Depression is a serious mental disorder that impairs the health and quality of life of individuals and is also a burden to their families and society (Ferrari et al., 2013). Depression, one of the negative emotions, is associated with low quality of life (Brown et al., 2010). Stress, another negative emotion, has a negative impact on the quality of life because higher stress level appears to be associated with a poorer quality of life (Alkatheri et al., 2020). Gorczynski and her colleagues (2017) emphasized that the levels of stress and depression in university students should be paid attention to and stated that the role of negative emotions is important in providing students with a better quality of life.

It is stated that participation in aerobic exercise programs predicts an increase in quality of life over time in healthy adolescents (Gonipath et al., 2012) and adolescents with asthma (Flapper et al., 2008; Moreira et al., 2008; Sundell et al., 2011). Wanden-Berghe et al. (2015) found a negative relationship between sedentary lifestyle and quality of life. There are studies that examine the relationship between physical activity and quality of life in a sample of university students from different cultures. In a study conducted with Spanish university students, it was reported that individuals who did not meet the physical activity recommendations of WHO underwent worse psychological pain (San Román-Mata et al., 2020).

In their study, investigating the relationships between current exercise participation and quality of life of university students in Taiwan, Chang et al. (2016) found that those who exercise regularly (at least 1 day/week or 2.5 hours/week) have better quality of life. In a study conducted on Italian university students, it was stated that high physical activity level increased the quality of life of both male and female students (Massidda et al., 2015). In another study on medical school students in the Philippines, high levels of depression, stress and burnout in students aged 19-24 were associated with the scores of students with lower quality of life (Domantay, 2014).

Based on the findings on the relationship between physical activity and quality of life, it can be claimed that the effect of COVID-19 on quality of life may be lower in individuals who have high levels of physical activity. In line with all these theoretical and factual studies; it is predicted that the resultant scores of negative emotions and quality of life may differ in accordance with physical activity levels. Accordingly, the following hypothesis was developed: **H1:** The resultant of negative emotion of students with different physical activity levels and the impact of COVID-19 on the quality of life differ.

In a study conducted on a sample of Northeast Mexican university students, it has been determined that participation in sports has a positive effect on the quality of life. In other words, as participation in sports increases, so does the quality of life (Hidalgo-Rasmussen et al., 2013). Therefore, it can be said that participation in sports can reduce the effects of COVID-19 on quality of life.

It was concluded that participation in sports positively supports the medical conditions of children and adolescents while there is insufficient evidence about the psychological and social consequences of sports participation for older adults (Kim et al., 2020). In an experimental study conducted by Cai et al. (2021) a 2-month sports therapy program was applied to individuals aged 20-30 with moderate or higher levels of anxiety, depression and stress disorder. After the sports therapy, it was observed that the anxiety and depression levels of the participants decreased to lower levels, and the stress levels came down to moderate levels. Also, meta-analysis study results show that exercise provides convincing evidence for negative emotion states such as depression, insomnia and anxiety disorders (Wolf et al., 2020).

There is evidence in the literature that students who participate in sports inactively are happier than their peers who do not participate in sports in anyway (Cakir, 2022). Although not directly with negative emotions, the absolute relationship between participation in sports and positive emotions shed light on our study. All these findings indicate that negative emotions and the effects of COVID-19 on quality of life may vary depending on participation cases and levels in sports. Accordingly, the following hypotheses were developed: **H2:** Depending on active participation in sports, the resultant of negative emotion of students and the impact of COVID-19 on their quality of life differs. **H3:** According to the level of inactive participation in sports, the resultant of negative emotion and the impact of COVID-19 on the quality of life differs.

METHOD

Research Method

The descriptive-relational survey model, one of the quantitative research methods, was used in the research. In this model, a case or event is described as it is, and the relationship, effect and degrees of the variables that cause this are determined (İslamoğlu & Alnıaçık, 2019). Two different models were designed and tested in order to determine whether participation in sports and physical activity have a regulatory role in the relationship between negative emotions and quality of life of university students. One of the main assumptions of this analysis is that the independent variables should have independence from the observations, that is, there should be different participants in each group and no participant should be in more than one group. In this context, based on the idea that students with a high level of physical activity can actively participate in sports (doing sports under license), two different models were formed and data were collected from two different samples (Kırşehir Ahi Evran University for Model-1 and RTUE for Model-2).

Model-1

In this research model, the conceptual model in Figure 1 was developed in order to determine the effect of different physical activity levels on negative emotions and quality of life. In other words, this model was formed to evaluate the effect of physical activity, which is the independent variable, on the dependent variables-negative emotions and quality of life.

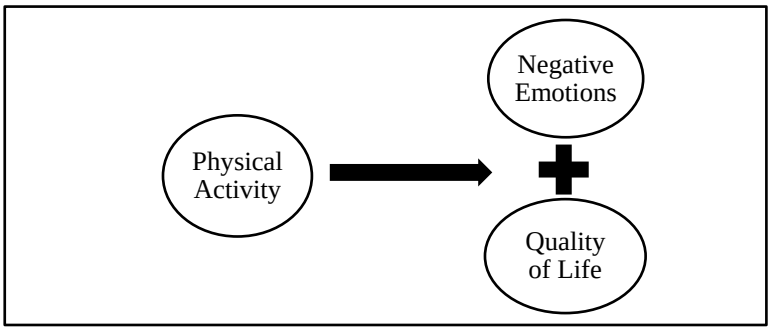

Figure 1: Model-1

The conditional effect means that negative emotions and quality of life will differ depending on low, moderate, or high levels of physical activity (H_1). This regulatory hypothesis, when interpreted within the framework of the research, signifies that the effects of negative emotions and COVID-19 on the quality of life will be lower for students with high physical activity levels.

Model-2

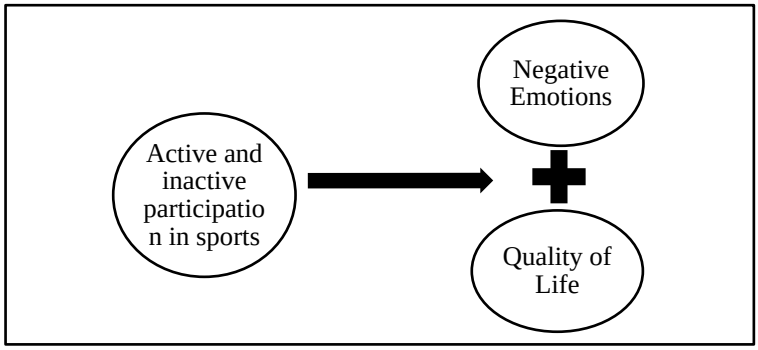

Figure 2: Model-2

The conditional effect here means that negative emotions and quality of life will differ depending on active (H_2) and inactive participation (H_3) in sports. This regulatory hypothesis, when interpreted within the framework of the research, signifies that the effects of negative emotions and COVID-19 on the quality of life will be lower for students who do sports under license and for those who inactively participate in sports at high levels.

Participants and Procedure

As well as the demographic information of the students, the questions used in all scales related to physical activity, negative emotions, and the effects of COVID-19 on quality of life were transferred to the web-based Google forms. Participation was voluntary and all students were informed accordingly. Also, the participants were briefed about the purpose of the research. The forms were arranged in such a way that surveys could not be submitted with missing data.

Stratified sampling method was used in this study (Table 1). In stratified sampling, in practice, the universe is divided into homogeneous layers within itself. Samples are selected from the layers. Elections are combined. Stratified sampling is used in cases where substrates or groups of subunits exist in a universe whose boundaries have been determined (Kılıç, 2013). Student groups were divided into two different strata as undergraduate and associate degree and data were collected according to this division. The population-sample table was used to determine the required sample size. According to the table, if the number of individuals in the population is 20,000, it is stated that at least 377 participants are needed for the sample representation at the 95% confidence level and the 5% confidence interval (Cohen et al., 2018).

Data were collected from 951 students. The data obtained from16 students (1.6%), who had filled in the questionnaire incorrectly, were excluded from the analysis. Since it is known that the MANOVA tests fail owing to extreme values, 5% trimmed value values in the descriptives table were checked to determine the extreme values, and in this context, 47 data (5.0%) were excluded from the analysis. Thus, the data of 888 university students were evaluated within the scope of the analysis. 517 female and 371 male students consisted the total participant number of 888 ($\bar{x}$=20.93, SS=3.31). Student distributions vary according to two different models: It was observed that, out of 508 students ($\bar{x}$=21.17, SD=3.13) in the Kırşehir Ahi Evran University sample for Model-1, 38 (7.5%) had low, 284 (55.9%) had moderate, and 186 had (36.6%) high physical activity levels.

For Model-2, when 380 students ($\bar{x}$=20.62, SD=3.53) in the RTEU sample were examined in terms of active participation in sports, it was seen that 100 of the students (26.3%) were athletes while 280 of them (73.7%) did not do sports under license. In the inactive participation group on the other hand, it was observed that 99 of the students (26.1%) did not participate at all, 172 (45.3%) did 2-3 times a week, and 109 of them (28.6%) participated almost every day.

A survey form, prepared by using a personal information form and a serious leisure scale-short form, was used to obtain the research data. Participants filled out the survey forms in the recreation areas where they play basketball. Data were collected between June and October 2022.

Ethics committee permission was obtained for the study with the decision number 2022/256 from the Non-Invasive Clinical Research Ethics Committee on 25.11.2022. During the current research, it was acted within the framework of "Higher Education Institutions Scientific Research and Publication Ethics Directive".

Table 1. Strata Weight Ratios and Sample Numbers

	Stratum	Total Number of Students	Strata Weight Ratio	Required sample number according to strata weight ratio	Number of samples in the study
RTEU	Associate Degree	5.230	0.319	120	124
	Undergraduate	11.163	0.681	257	256
	Total number of population/sample	16.393		377	380
Kirsehir Ahi Evran University	Associate Degree	7.119	0.367	138	152
	Undergraduate	12.270	0.633	239	356
	Total number of population/sample	19.389		377	508

Data Collection Tools

Personal Information Form

In order to evaluate active participation in sports, participants were classified according to whether they do sports under license or not. Inactive participation in sports, on the other hand, included the extent to which the individuals do activities such as watching sports competitions on television or social media, reading and following sports news, and talking to others about sports within the last week. In addition, the form included questions about the gender and age.

The Scale of the Impact of COVID-19 on Quality of Life

Sümen and Adibelli (2021) adapted the scale into Turkish which was developed by Repišti et al (2020). The scale consists of 6 items and includes the basic areas of life quality related to mental health. The emotions and thoughts of the individuals in the last seven days were evaluated through the five-point likert scale. Scores were calculated by dividing the total score by the number of items. Higher scores obtained from the scale meant that the individuals with those scores were affected by the epidemic more than the others. The Cronbach's alpha coefficient of the scale was found to be 0.856 for the diagnosed sample, 0.905 for the undiagnosed sample, and 0.910 for the data obtained from the general population (Sümen and Adibelli, 2021). The values were determined as .83 for Model-1 and .78 for Model-2 in this research.

Positive-Negative Affect Schedule (PANAS)

The Positive-Negative Emotion Scale, developed by Watson et al., (1988), consists of two subscales of 10 items each. The 5-point likert type subscales evaluate the positive and negative emotions. The scale was adapted into Turkish by by Gençöz (2000). The 10-item negative emotions subscale was used in this study. The internal consistency coefficient for the negative emotion sub-dimension was found to be .86. The values were determined as .83 for Model-1 and .88 for Model-2 in this research.

International Physical Activity Questionnaire-Short Form (IFAQ-SF)

The questionnaire, which includes information about the time spent physically in the last 7 days, consists of 7 questions in total. The questions are about the time intervals that individuals spend on sitting, walking, moderate and high intensity activities. Standard MET values are calculated for these activities. These values vary according to the intensity of the activity; sitting equals 1.5 METs, walking equals 3.3 METs, moderate-intensity physical activity equals 4 METs, and high intensity physical activity equals 8 METs. Therefore, it is possible to categorize the physical activity levels of individuals according to the values obtained. After calculating the MET value, the physical activity levels of the individuals can be categorized as inactive (<600 MET), minimally active (600 MET-3000 MET) and sufficiently active (>3000 MET) (Öztürk, 2005).

Data Analysis

The data obtained were analysed through the SPSS 26.0 statistics program. MANOVA test was used to examine whether the independent variables in two different models were effective on the dependent variables.

MANOVA is very sensitive to assumptions about the data, thus, the researchers should perform assumptions to make sure the data conforms to the statistic to be calculated (Cohen et al., 2018). Before the analysis process, all the controls such as sufficient sample size (at least 20 people in each group), independence of the groups, normal distribution, linear relationship between dependent variables, absence of multicollinearity, and homogeneity of variances were conducted and it was seen that all assumptions were met. In other words, in order to meet the assumptions required for the preliminary analysis, box m test results, skewness and kurtosis values, Levene test results, correlation values between dependent variables were examined and no violations were observed. In addition to the MANOVA test, descriptive statistics were used to reflect the average score of 888 university students. Also, the second level Tukey HSD test was applied to reveal which groups were significantly different. Data were tested at the p= 0.05 significance level.

Ethical Considerations

In this study, all rules stated to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions stated under the title "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, were not taken. The ethics committee approval required for the study was obtained from the Social and Humanitarian Ethics Committee of Recep Tayyip Erdogan University (dated 25.01.2023 and numbered 2023/034).

FINDINGS

Descriptive Statistics

Descriptive statistics of means and standard deviations for each of the groups were reported in Tables 2 and 3 below. Table 2 shows students' scores for active participation in sports, Table 3 for inactive participation, and Table 4 shows the scores of negative emotions and the impact of COVID-19 on quality of life by physical activity level.

Table 2. Negative Emotion and Quality of Life Score Averages with regards to Active Participation in Sports

Variables	Do you do sports under licence?	n	Mean	SD
Negative Emotions	Yes	100	19,85	7,47
	No	280	23,73	8,91
	Total	380	22,71	8,72
Quality of life	Yes	100	2,40	0,91
	No	280	2,73	0,86
	Total	380	2,64	0,88

When Table 2 is examined, it is seen that the average of negative emotion scores of the students who do sports under license are at a lower level. Similarly, the impact of COVID-19 on the quality of life of the students who do sports under license is lower.

Table 3. Negative Emotion and Quality of Life Score Averages with regards to Inactive Participation in Sports

Variables	To what extent did you do activities such as watching sports competitions on television or social media, reading, and following sports news, and talking to others about sports?	n	Mean	SD
Negative emotions	Never	99	24,77	9,24
	2-3 times a week	172	22,70	8,35
	Almost everyday	109	20,86	8,46
	Total	380	22,71	8,72
Quality of life	Never	99	2,83	0,92
	2-3 times a week	172	2,65	0,87
	Almost everyday	109	2,48	0,85
	Total	380	2,64	0,88

When Table 3 is examined, it is seen that the negative emotion score averages of the students who inactively participate in sports almost every day are at a lower level. Similarly, the impact of COVID-19 on the quality of life of the students, who inactively participate in sports almost every day, is lower.

Table 4. Negative Emotion and Quality of Life Score Averages with regards to Physical Activity Levels

Variables	Physical Activity Levels	n	Mean	SD
Negative emotions	Low	38	27,31	9,38
	Moderate	284	23,23	7,20
	High	186	21,66	7,21
	Total	508	22,96	7,51
Quality of life	Low	38	2,83	1,16
	Moderate	284	2,56	0,95
	High	186	2,37	0,84
	Total	508	2,51	0,94

When Table 4 is examined, it is seen that students who do high levels of physical activity have a lower level of negative emotion score averages. Similarly, the impact of COVID-19 on the quality of life of those students is lower.

Hypothesis Tests

Hypothesis 1

MANOVA test was applied to evaluate the effect of physical activity on the resultant of negative emotion and COVID-19 on quality of life **(H_1)**, and p=0.05 significance level was determined. Analysis results are given in Table 5.

Table 5. MANOVA Results of Negative Emotion and the Effect of COVID-19 on Quality of Life by Physical Activity Levels

Wilks' Lambda	F	Hypothesis Df	Fault Df	P	η^2
0,952	6,217	4	1008	**0,000**	.024

MANOVA test results on negative emotion and the effect of COVID-19 on quality of life reveal that the resultant score levels of students differ significantly depending on their physical activity levels (WilksL(λ)=,952; F(4,1008)=6,217; p<0,05; η2=.024). This finding indicates that the scores obtained from the linear component vary depending on the physical activity levels.

Table 6. MANOVA Test Intergroup Effect Results

Source	Dependent Variable	Sum of Squares	df	Mean of squares	F	Sig.	η^2
Validated Model	Negative emotions	1054,234	2	527,11	9,65	0,000	0,037
	Quality of life	8,406	2	4,20	4,81	0,008	0,019
Resultant	Negative emotions	148126,068	1	148126,06	2713,69	0,000	0,843
	Quality of life	1713,988	1	1713,98	1963,23	0,000	0,795
Physical Activity	Negative emotions	1054,234	2	527,11	9,65	0,000	0,037
	Quality of life	8,406	2	4,20	4,81	0,008	0,019

When the results obtained for the dependent variables were evaluated using the Bonferroni-adjusted alpha level of 0.025, it was seen that there were significant differences in students' scores of negative emotions (F(2,505) =9,65, p=0,000; η2=.037) and the effect of COVID-19 on quality of life (F(2,505) =4,81, p=0,008; η2=.019) depending on their physical activity levels. The results are given in Table 6.

According to the Tukey HSD test results conducted in all groups with significant differences, the negative emotions of the students who do high level of physical activity ($\bar{x}$=21.66±0.54) are significantly lower compared to the students who do physical activity at somehow lower levels ($\bar{x}$=27.31±1.19). Similarly, the level of impact of COVID-19 on quality of life of students who do high levels of physical activity ($\bar{x}$=2.37±0.06) was significantly lower than those who do lower levels of physical activity ($\bar{x}$=2.83±0.15) (table 4).

Hypothesis 2

MANOVA test was applied to evaluate the effect of active participation in sports on the resultant of negative emotion and COVID-19 on quality of life **(H_2)**, and p=0.05 significance level was determined. Analysis results are given in Table 7.

Table 7. MANOVA Results of Negative Emotion and the Effect of COVID-19 on Quality of Life by Active Participation in Sports

Wilks' Lambda	F	Hypothesis Df	Fault Df	P	η^2
0,952	9,474	2	377	**0,000**	.048

MANOVA test results on negative emotion and the effect of COVID-19 on quality of life reveal that the resultant score levels of students differ significantly depending on their active participation in sports (WilksL(λ)=,952; $F_{(2,377)}$=9,474; p<0,05; η^2=.048). This finding indicates that the scores obtained from the linear component vary depending on active participation in sports.

Table 8. MANOVA Test Intergroup Effect Results

Source	Dependent Variable	Sum of Squares	df	Mean	F	Sig.	η^2
Validated Model	Negative emotions	1114,587	1	1114,587	15,190	0,000	0,039
	Quality of life	8,452	1	8,452	10,981	0,001	0,028
Resultant	Negative emotions	140001,903	1	140001,903	1907,966	0,000	0,835
	Quality of life	1945,716	1	1945,716	2527,735	0,000	0,870
Active Participation in Sports	Negative emotions	1114,587	1	1114,587	15,190	0,000	0,039
	Quality of life	8,452	1	8,452	10,981	0,001	0,028

When the results obtained for the dependent variables were evaluated using the Bonferroni-adjusted alpha level of 0.025, it was seen that there were significant differences in students' scores of negative emotions ($F_{(1,378)}$ =15,190, p=0,000; η^2=.039) and the effect of COVID-19 on quality of life ($F_{(1,378)}$ =10,981, p=0,001; η^2=.028) depending on active participation in sports. The results are given in Table 8. When the averages are examined, it was observed that the levels of negative emotion ($\bar{x}$=19.85±0.85) and the effect of COVID-19 on quality of life ($\bar{x}$=2.40±0.08) of students who do sports under license are significantly lower than of those who do not do sports under license (table 2).

Hypothesis 3

MANOVA test was applied to evaluate the effect of inactive participation in sports on the resultant of negative emotion and COVID-19 on quality of life **(H_3)**, and p=0.05 significance level was determined. Analysis results are given in Table 9.

Table 9. MANOVA Results of Negative Emotion and the Effect of COVID-19 on Quality of Life by Inactive Participation in Sports

Wilks' Lambda	F	Hypothesis Df	Fault Df	P	η^2
0,965	3,363	4	752	**0,010**	.018

MANOVA test results on negative emotion and the effect of COVID-19 on quality of life reveal that the resultant score levels of students differ significantly depending on their inactive participation in sports (WilksL(λ)=,965; $F_{(4,752)}$=3,363; p<0,05; η^2=.018). This finding indicates that the scores obtained from the linear component vary depending on inactive participation in sports.

Table 10. MANOVA Test Intergroup Effect Results

Source	Dependent Variable	Sum of Squares	df	Mean of Squares	F	Sig.	η^2
Validated Model	Negative emotions	795,380	2	397,690	5,344	0,005	0,028
	Quality of life	6,356	2	3,178	4,088	0,018	0,021
Resultant	Negative emotions	186169,373	1	186169,373	2501,641	0,000	0,869
	Quality of life	2528,279	1	2528,279	3252,437	0,000	0,896
Inactive Participation in Sports	Negative emotions	795,380	2	397,690	5,344	0,005	0,028
	Quality of life	6,356	2	3,178	4,088	0,018	0,021

When the results obtained for the dependent variables were evaluated using the Bonferroni-adjusted alpha level of 0.025, it was seen that there were significant differences in students' scores of negative emotions (F(2,377) =5,34, p=0,005; η2=.028) and the effect of COVID-19 on quality of life (F(2,377) =4,08, p=0,018; η2=.021) depending on inactive participation in sports. The results are given in Table 10.

According to the Tukey HSD test results conducted in all groups with significant differences, the negative emotions of the students who inactively participate in sports almost every day ($\bar{x}$=20,86±0,82) are significantly lower compared to the students who do not participate in sports inactively in anyway ($\bar{x}$=24,77±0,86). Similarly, the level of impact of COVID-19 on quality of life of students who inactively participate in sports almost every day ($\bar{x}$=2,48±0,08) was found significantly lower than those who do not participate in sports inactively in anyway ($\bar{x}$=2,83±1,16) (table 3).

DISCUSSION AND CONCLUSION

Today, COVID-19 still exists with different mutations and affects life in many ways. Under these circumstances, individuals are likely to experience negative emotions. Negative emotions like anxiety and depression are common among university students. Acquiring the routine of doing sports can be a protective factor in preventing depression, and can be recommended to university students (Zhang et al, 2021). As a result, their quality of life is adversely affected. Within the scope of this research, the effect of negative emotions and COVID-19 on quality of life as dependent variables was considered as a single resultant variable. Thus, the question whether active and inactive participation of university students in sports and their physical activity levels is effective on the life quality resultant of negative emotions and COVID-19 was discussed in the study.

It was observed that physically active students experienced lower levels of negative emotions. Similarly, the impact of COVID-19 on the quality of life was found to be lower in the individuals who were physically active. All those results seem to support the H1 hypothesis. It can be said that students with relatively higher physical activity levels are less nervous, restless, stressful and unhappy, and feel less depressed recently. In this scientific study, it was concluded that the increase in the physical activity levels of adolescents and adults decreased their depression levels (Josefsson et al., 2014). In their study Škrlec et al (2021) examined the relationship between negative emotions (depression, anxiety, stress) and physical activity of university students and they concluded that physical activity decreased the high prevalence of negative emotions. These findings are consistent with the results of our research. The reason for reaching similar findings with the literature can be shown as evidence that physical and mental health are related to each other.

The fact that students who do sports under license experience lower levels of negative emotions and the effects of COVID-19 on their quality of life are low reveals the importance of participation in sports today as it was in the past. Therefore, it can be said this finding supports the H2 hypothesis. Negative emotions are common among university students. Sports can be a protective factor to avoid these emotions and can be recommended to university students (Kim et al, 2020). Sports contributes to the development of a more resilient social profile and a better quality of life (Cevada et al., 2012). Johnston et al (2021) examined the effects of team sports on negative emotions in the study they conducted with university students. The research involved students of a large public university in China. The results of the research showed that team sports can help reduce negative emotions in university students. The findings obtained are consistent with the findings of the current study.

It was observed that students who inactively participated in sports experienced lower levels of negative emotions and their life quality was negatively affected. It can be said that this finding supports the H3 hypothesis. In addition to doing sports under license, it can be concluded that doing activities such as watching sports competitions on television or social media, reading and following sports news, and talking to others about sports make students feel less nervous and depressed. In their study conducted with 1,632 Spanish students, Lera-Lopez et al (2021) emphasized the relationship between inactive participation in sports and the state of participants' wellbeing. Although the fact that there are no studies carried about inactive participation in sports, and the effects of negative emotions and COVID-19 on quality of life is an important limitation, it is thought that these research findings will contribute to the literature.

As a result, it can be said that participation in sports and physical activity have a top-line relationship with negative emotions and quality of life. The importance of both active and inactive participation in sports needs to be clearly demonstrated today when the individuals still suffer from the adverse effects of the epidemic. There are some limitations of this study. First of all, cross-sectional studies do not make it possible to determine the direction of the relationship between variables. This can be considered as a limitation regarding the generalizability of the results. The population of the research consists of a limited number of students from two different state universities. Students from other state and foundation universities in Turkey were not included in the sample. However, one of the strengths of this research is that all the hypotheses are supported, that is, the theoretical framework and the results are claimed to be consistent with each other. The results of the study are especially important in terms of guiding future studies as they were obtained within the period when the effects of the epidemic still exist.

Limitations and Recommendation

Based on the results, university students are recommended to participate in sports. In addition to active participation in sports, the level of exposure to the negative effects of COVID-19 can be reduced by participating in sports activities inactively. Students are also advised to adopt a more physically active lifestyle when it is not possible to participate in sports. In this way, they can feel less nervous and depressed.

A regulatory or mediator role model can be created by including different variables in this research model. In this study, variables like gender were excluded from the analysis. The role of gender can be examined with two-way MANOVA analysis. The research can also be reconstructed with a different sampling method with the participation of more public and private university students.

REFERENCES

Alkatheri, A.M., Bustami, R.T., Albekairy, A.M., Alanizi, A.H., Alnafesah, R., Almodaimegh, H., Alzahem, A., Aljamaan, K., Zurnuq, S., & Qandil, A.M. (2020). Quality of Life and Stress Level Among Health Professions Students. *Health Professions Education*, 6(2), 201-210. https://doi.org/10.1016/j.hpe.2019.11.004.

An, Y., Yang, Y., Wang, A., Li, Y., Zhang, Q., Cheung, T., Ungvari, G. S., Qin, M.-Z., An, F.-R., & Xiang, Y.T. (2020). Prevalence of depression and its impact on quality of life among frontline nurses in emergency departments during the COVID-19 outbreak. *Journal of Affective Disorders*, 276, 312–315. https://doi.org/10.1016/j.jad.2020.06.047.

Auerbach, R.P., Alonso, J., Axinn, W.G., Cuijpers, P., Ebert, D.D., Green, J.G., & Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization world mental health surveys. *Psychological medicine*, 46(14), 2955-2970.

Bailey, A.P., Hetrick, S.E., Rosenbaum, S., Purcell, R., & Parker, A.G. (2017). Treating depression with physical activity in adolescents and young adults: a systematic review and meta-analysis of randomised controlled trials. *Psychol Med*, 1–20.

Balcıoğlu, İ. (2003). *Sociology and Psychology of Sports*. Istanbul: Bilge Publications.

Beiter, R., Nash, R., McCrady M, et al. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *J Affect Disord*, 173:90–96. doi:10.1016/j.jad.2014.10.054.

Bidwal, M.K., Ip, E.J., Shah, B.M., & Serino, M.J. (2015). Stress, drugs, and alcohol use among health care professional students: a focus on prescription stimulants. *Journal of pharmacy practice*, 28(6), 535-542.

Brown, L.F., Kroenke, K., Theobald, D.E., Wu, J., & Tu, W. (2010). The association of depression and anxiety with health-related quality of life in cancer patients with depression and/or pain. *Psycho-Oncology*, 19(7), 734-741.

Cai, L., Wang, S., Huang, Z., & Zhou, Q. (2021). Research On Effects Of Sports As An Auxılıary Therapy To Patıents Wıth Anxıety. *Psychiatria Danubina*, 33(suppl 8), 570-576.

Cevada, T., Cerqueira, L.S., Moraes, H.S.D., Santos, T.M.D., Pompeu, F.A.M.S., & Deslandes, A.C. (2012). Relationship between sport, resilience, quality of life, and anxiety. *Archives of Clinical Psychiatry* (São Paulo), 39, 85-89.

Chang, S. P., Shih, K. S., Chi, C. P., Chang, C. M., Hwang, K. L., & Chen, Y. H. (2016). Association between exercise participation and quality of sleep and life among university students in Taiwan. *Asia Pacific Journal of Public Health*, 28(4), 356-367.

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (eight edition). Abingdon, Oxon.

Cakir, G. (2022). The effect of participation in sports on happiness and loneliness: an analysis of university students during the pandemic. *International Sports Studies*, 44(2), 58–72. doi:10.30819/iss.44-2.05.

Domantay, J.A.A. (2014). Health-related quality of life of future physicians at a medical school in the Philippines: across-sectional study. *SAGE Open*, 4(3). [2158244014545459-].

Eisenberg, D. Gollust, S.E., Golberstein, E., & Hefner, J.L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *Am J Orthopsychiatry*, 77(4):534–542. doi:10.1037/0002- 9432.77.4.534.

Ferrari, A.J., Charlson, F.J., Norman, R.E., Patten, S.B., Freedman, G., Murray, C.J., et al. (2013). Burden of depressive disorders by country, sex, age, and year: Findings from the global burden of disease study 2010. *PLoS Medicine*, 10(11). [DOI:10.1371/journal. pmed.1001547] [PMID] [PMCID].

Flapper, B.C., Duiverman, E.J., Gerritsen, J., Postema, K., & van der Schans, C.P. (2008). Happiness to be gained in paediatric asthma care. *Eur Resp J*, 32:1555–1562.

Fredrickson, B.L. (2002). *Positive Emotions.* In C. R.Synder and S.J. Lopez (Eds.), Handbook of positive psychology. New York:Oxford Universy Press.

Gençöz, T. (2000). Positive and Negative Affect Scale: Validity and reliability study. *Turkish Journal of Psycholog*, 15(46), 19-26.

Gonipath, B., Hardy, L.L., Baur, L.A., Burlutsky, G., & Mitchell, P. (2012). PA and sedentary behaviors and health-related quality of life in adolescents. *Pediatrics*, 130:e167–174.

Gorczynski, P., Sims-Schouten, W., Hill, D., & Wilson, J.C. (2017). Examining mental health literacy, help seeking behaviours, and mental health outcomes in UK university students. *The Journal of Mental Health Training, Education and Practice*.

Hidalgo-Rasmussen, C. A., Ramírez-López, G., & Hidalgo-San Martin, A. (2013). Physical activity, sedentary behavior and quality of life in undergraduate adolescents of Ciudad Guzman, State of Jalisco, Mexico. *Ciencia & saude coletiva*, 18(7), 1943.

Holmes, S., & Dickerson. J. (2003). The Quality Of Life: Desing and Evaluation Of A Self-Assessment Instrument For Use With Cancer Patients. *International Journal Of Nursing Studies*, 40(5), 515-520.

İslamoğlu, A. H., & Alnıaçık, Ü. (2019). *Research Methods in Social Sciences*. Istanbul: Beta Publishing House.

Johnston, S. A., Roskowski, C., He, Z., Kong, L., & Chen, W. (2021). Effects of team sports on anxiety, depression, perceived stress, and sleep quality in college students. *Journal of American College Health*, 69(7), 791-797.

Josefsson, T., Lindwall, M., & Archer, T. (2014). Physical exercise intervention in depressive disorders: Meta-analysis and systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 24(2), 259–272. https://doi.org/10.1111/sms.12050.

Kılıç, S. (2013). Sampling methods. *Journal of Mood Disorders*, 3(1), 44-6.

Kim, A.C.H., Park, S.H., Kim, S., & Fontes-Comber, A. (2020). Psychological and social outcomes of sport participation for older adults: A systematic review. *Ageing & Society*, 40(7), 1529-1549.

Lera-López, F., Ollo-López, A., & Sánchez-Santos, J. M. (2021). Is passive sport engagement positively associated with happiness?. *Applied Psychology: Health and Well-Being*, 13(1), 195-218.

Ma, Y.F., Li, W., Deng, H.B., Wang, L., Wang, Y., Wang, P.H., Bo, H.X., Cao, J., Wang, Y., Zhu, L.Y., Yang, Y., Cheung, T., Ng, C. H., Wu, X., & Xiang, Y.T. (2020). Prevalence of depression and its association with quality of life in clinically stable patients with COVID-19. *Journal of Affective Disorders*, 275(1), 145–148. https:// doi.org/10.1016/j.jad.2020.06.033.

Massidda, M., Cugusi, L., & Mathieu, A. (2015). Physical activity levels and health-related quality of life in young Italian population. *J Sports Med Phys Fitness, 55*(5), 506-512.

Moreira, A., Delgado, L., Haahtela, T., Fonseca, J., Moreira, P., Lopes, C., & Castel-Branco, M. G. (2008). Physical training does not increase allergic inflammation in asthmatic children. *European respiratory journal*, 32(6), 1570-1575.

Mutz, M., & Gerke, M. (2021). Sport and exercise in times of self-quarantine: How Germans changed their behaviour at the beginning of the Covid-19 pandemic. *International Review for the Sociology of Sport*, 56(3), 305-316. https://doi.org/10.1177/1012690220934335.

Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., et al. (2007). Physical activity and public health in older adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Circulation*, 116, 1094–1098.

Öztürk, M. (2005). *The validity and reliability of the international physical activity questionnaire and determination of physical activity levels in university students*. Master Thesis. Hacettepe University, Ankara.

Pennington, C.G. (2021). Applying the Transtheoretical Model of Behavioral Change to Establish Physical Activity Habits. *Journal of Education and Recreation Patterns (JERP)*, 2(1), 11-20. DOI: https://doi.org/10.53016/jerp.v2i1.6

Ratten, V. (2020). Coronavirus disease (COVID-19) and sport entrepreneurship. International Journal of Entrepreneurial *Behavior & Research*, 26(6),1379-1388. https://doi.org/10.1108/IJEBR-06-2020-0387.

Repišti, S., Jovanović, N., Kuzman, M. R., Medved, S., Jerotić, S., Ribić, E., & Russo, M. (2020). How to measure the impact of the COVID-19 pandemic on quality of life: COV19-QoL– the development, reliability and validity of a new scale. *Global Psychiatry*, 3(2), 201-210. https://doi.org/10.2478/gp-2020-0016.

San Román-Mata, S., Puertas-Molero, P., Ubago-Jiménez, J.L., & González-Valero, G. (2020). Benefits of Physical Activity and Its Associations with Resilience, Emotional Intelligence, and Psychological Distress in University Students from Southern Spain.

Int J Environ Res Public Health, 22;17(12):4474. doi: 10.3390/ijerph17124474. PMID: 32580322; PMCID: PMC7344387.

Shamsuddin, K., Fadzil, F., Ismail, W.S., Shah, S.A., Omar, K., Muhammad, N.A., Jaffar, A., Ismail, A., & Mahadevan, R. (2013). Correlates of depression, anxiety and stress among Malaysian university students. *Asian journal of psychiatry*, 6(4), 318–323. https://doi.org/10.1016/j.ajp.2013.01.014.

Škrlec, I., Talapko, J., Pustijanac, E., & Meštrović, T. (2021, January). Depression, anxiety, stress and physical activity in health-related university students during COVID-19. *In Proceedings*, (pp. 1-6).

Sundell, K., Bergstro¨m, S., Hedlin, G., Ygge, B.M., & Tunsa¨ter, A. (2011). Quality of life in adolescents with asthma, during the transition period from child to adult. *Clin Respir J*, 5:195–202.

Sümen, A., & Adibelli, D. (2021). Adaptation of the COV19-QoL Scale to Turkish culture: Its psychometric properties in diagnosed and undiagnosed individuals. *Death Studies*, https://doi.org/10.1080/07481187.2021.1925376.

Veenhoven, R. (2013). The Four Qualities of Life Ordering Concepts And Measures Of The Good Life. *The Exploration of Happiness*, 195-226, Springer.

Wanden-Berghe, C., Martín-Rodero, H., Rodríguez-Martín, A., Novalbos-Ruiz, J., Martínez, E., Sanz-Valero, J., & Irles, J. (2015). Calidad de vida y sus factores determinantes en universitarios españoles de Ciencias de la Salud. *Nutrición Hospitalaria, 31*(2), 952-958.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measure of positive and negative affect: The panas scales. *Journal of Personality and Social Psychology*, 54(6), 1063-1070. doi: 10.1037//0022-3514.54.6.1063.

Wilke, J., Mohr, L., Tenforde, A.S., Edouard, P., Fossati, C., González-Gross, M., Ramirez, C. S., Laino, F., Tan, B., Pillay, J. D., Pigozzi, F., Jimenez-Pavon, D., Novak, B., Jaunig, J., Zhang, M., van Poppel, M., Heidt, C., Willwacher, S., Yuki, G. & Hollander, K. (2021). A pandemic within the pandemic? Physical activity levels substantially decreased in countries affected by COVID-19. *International Journal of Environmental Research and Public Health*, 18(5), 2235. https://doi.org/10.3390/ijerph18052235.

Wolf, S., Zeibig, J. M., Giel, K., Granz, H., Sudeck, G., & Thiel, A. (2020). Sports Activity and Mental Diseases. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 70(9-10), 412-428.

Yeo, T. J. (2020). Sport and exercise during and beyond the COVID-19 pandemic. *European Journal of Preventive Cardiology*, 27(12), 1239-1241. https://doi.org/10.1177%2F2047487320933260.

Yılmaz, Ö., Boz, H., & Arslan, A. (2017). Validity-Reliability Study of Turkish Short Form of Depression Anxiety Stress Scale (Dass 21). *Journal of Finance, Economics and Social Studies*, 2(2), 78-91.

Zhang, L., Zhao, S., Weng, W., Lin, Q., Song, M., Wu, S., & Zheng, H. (2021). Frequent sports dance may serve as a protective factor for depression among college students: a real-world data analysis in China. *Psychology research and behaviour management*,14, 405.

Author(s)' statements on ethics and conflict of interest

Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

Conflicts of Interest: There are no conflicts of interest declared by the authors.

Funding: None