# The Effect of Covid-19 Fear on Anxiety, Depression, and Stress in Athlete Students: The Mediating Role of Psychological Resilience

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**Abstract**
*The COVID-19 pandemic is likely to have short- and long-term psycho-social consequences on individuals besides serious physical and mental effects, especially for young people. These days, when psychological problems are more noticeable, especially in young athletes, it is possible to trigger various anxiety disorders such as depression, anxiety, and stress caused by the pandemic. Considering that psychological characteristics such as depression, anxiety, and stress in young people may increase the risk of psycho-social disorders, this study aims to examine the effect of the fear of COVID-19 on the depression, anxiety, and stress levels of undergraduate athlete students and to seek an answer to the question of whether psychological resilience has a mediating role. The research was carried out with 372 athlete students studying at the undergraduate level and continuing their sports lives actively. Structural equation modeling was used to determine the direct and indirect predictive effects between variables in data analysis. The results of the study show that psychological resilience has a significant predictor effect on depression, anxiety, and stress.*
**Keywords: Anxiety Disorders, Covid-19, Psychological Resilience, Structural Equation Modeling**

## Introduction

The coronavirus pandemic (COVID-19), which emerged towards the end of 2019 in Wuhan, China, is a global public health emergency. This epidemic, which was first detected in the United States in January 2020, is a severe acute respiratory viral infection with a highly contagious feature (Holshue et al., 2020). In order to slow the spread of the virus that causes this disease, the World Health Organization (WHO) declared COVID-19 a pandemic (World Health Organization, 2020). As in most countries, policies such as social distance, home isolation, and quarantine were introduced in Turkey as well. Besides the negative physical impact of COVID-19 on individuals, it has also caused serious problems with psychological and mental health (Kocevska et al., 2020; Ornell et al., 2020; Talevi et al., 2020; Taquet et al., 2021; Usher et al., 2020). Factors such as the restrictions and measures taken due to the pandemic, and the fear of contracting COVID-19 have negatively affected individuals psychologically and spiritually (Brooks et al., 2020; Dubey et al., 2020; Lebel et al. 2020; Mandelkorn et al., 2021). Recent studies evaluating the impact of the COVID-19 pandemic on psychological problems have reported depression, anxiety, and stress increased during the first months of the pandemic (Chaturvedi et al., 2021; Pieh et al., 2021; Wang et al., 2020).

COVID-19 is a global problem affecting higher education institutions, and its effects have been reported in universities around the world (Liyanage et al., 2021; Aristovnik et al., 2020). As the pandemic has caused negative effects in all areas, the education process has also suffered serious disruptions. Many universities have suspended face-to-face classes and switched to online teaching.

The stress of COVID-19 has had negative effects on both the mental health and academic processes of students (Husky et al., 2020; Gritsenko et al., 2021). College students are at high risk for symptoms of depression and anxiety (Zivin et al., 2009; American College Health Association, 2018) and students are occasionally exposed to multiple stress factors specific to this developmental period (Drake et al., 2016; Beiter et al., 2015). Different psychological and psychiatric studies conducted in many developed and developing countries over the last decade have shown that the prevalence of stress, anxiety, and depression (SAD) among university students is high compared to the general population (Mayer et al. 2016; Mkize et al., 1998). University students experienced academic difficulties with the sudden cessation of the school term, and also, they faced different problems [such as fear, anxiety, depression, stress, and academic burnout] with the worry of both themselves and their family members' catching COVID-19 (Brooks et al., 2020; Mong & Noguchi, 2021; Son et al., 2020; Li et al., 2021).

Another issue that should be taken into consideration is the students who continue their sports life actively. The COVID-19 pandemic, which came while these students were continuing their academic life with their sports life and the difficulties they faced, may have affected the students' ability to cope with stress and ultimately their mental health. Therefore, students who continue their university education (Jiang, 2021; Copeland et al., 2021) as well as athlete students were adversely affected by this process and experienced different problems (such as fear, anxiety, depression, worry, and stress). Some studies explained the effects of this virus on athletes (Howley, 2020) and made recommendations for the prevention of COVID-19 in athletes (Toresdahl & Asif, 2020). The concept of psychological resilience is an issue of great importance among the emerging mental health problems associated with the COVID-19 pandemic (Killgore et al., 2020). Resilience is defined as the ability to endure difficulties and setbacks, adapt positively, and overcome them (Luthar & Cicchetti, 2001). One of the protective factors against anxiety, depression, post-traumatic stress, and other mental health disorders is the factor of psychological resilience (Blanc et al., 2021). Under these circumstances, resilience has emerged as a fundamental variable in reducing and preventing the negative psychological effects of the pandemic. In general, there is a limited number of research on the impact of this unexpected epidemic process on athlete students and their levels of resilience in coping with it. Besides, we currently have a limited understanding of how athlete students evaluate this change and its relationship with possible predictor variables. In this direction, this research aims to determine the fear, anxiety, depression, and stress effects caused by the COVID-19 pandemic on athletic students and to determine the possible predictor effect of psychological resilience through structural equation modeling.

For this purpose, the following questions were formed.

1. Is the fear of COVID-19 an important predictor of anxiety, depression, stress, and psychological resilience in athlete students?
2. What is the mediating role of psychological resilience in the relationship between fear of COVID-19, anxiety, depression, and stress in athlete students?

## Research Methods

### Research Design

The research design is the relational survey model, one of the survey models. Relational survey models are research models that aim to determine the existence and/or degree of co-variance between two or more variables. Although the relational survey model does not give a real cause-effect relationship, it allows the estimation of the other on condition that the situation in one variable is known (Karasar, 2007). For this purpose, a structural equation model was used to determine the relationships between fear of Covid-19, resilience variable, and depression, anxiety, and stress. Structural equation modeling (SEM) is a multivariate statistical approach that is used to test hypotheses about "causal" relationships between measured variables and latent variables, and that combines analyzes such as variance, covariance analysis, factor analysis, and multiple regression to predict dependency relationships (Sümer, 2000; Dursun and Kocagöz, 2010).

**Study Group**

372 students, aged between 17 and 29 (mean= 20.02, SD= .741), who continue their undergraduate education in sports sciences and actively do sports participated in the research. 109 students, 29.3% of the participants, were women and 263 students, 70.7%, of the participants, were men. During the research, a two-stage process was followed in the determination of the participants. Since the normalization process started in Turkey and the lockdowns were relaxed, the data collection process was carried out face-to-face and online. In this context, data were collected from a total of 372 students who could be reached by convenience sampling method. 61.6% of the sample group were students who were not national athletes in their branch and 38.4% were students who were national athletes in their branch. In terms of the year of sports, 24.5% of students were 3 years and below, 29.8% were 4-7 years, 19.4% were 8-11 years and 26.3% were students with a sports age of 12 years and above.

**Data Collection Tools**

**COVID-19 Fear Scale:** COVID-19 Fear Scale (Ahorsu et al., 2020) was developed to evaluate anxiety and depressive symptoms in individuals due to the COVID-19 outbreak. The scale was adapted to Turkish culture by Satıcı et al. (2020). The scale is in five-point Likert type, consisting of one dimension and 7 items. (One of the sample questions is "My heart starts beating fast when I think I will catch the coronavirus"). There is no reverse item in the scale. The scale preserved seven items in their original form in Turkish culture ($\chi$ 2/SD = 2.17, REMSEA = .051, RMR = .039, SRMR = .038, CFI = .96). The internal consistency value of the scale was calculated as .88. The total score obtained from all items of the scale reflects the level of fear of Coronavirus (Covid-19) experienced by the individual. The scores that can be obtained from the scale range from 7 to 35. A high score on the scale means experiencing a high level of fear of the coronavirus.

**Brief Resilience Scale:** The Brief Resilience Scale (BRS) was developed by Smith et al. (2008). The scale consists of 6 unidimensional items. The adaptation of the scale to Turkish was carried out by Doğan (2015). As a result of exploratory and confirmatory factor analysis, a single factor structure was obtained that explained 54% of the total variance. In the reliability analysis conducted in this study, the Cronbach-Alpha reliability coefficient was obtained as .80. Confirmatory factor analysis (CFA) was performed using research data to determine the scale's suitability for sampling, and it was determined that six items and a one-dimensional structure were preserved in the original version ($\chi$2/SD = 2.41, REMSEA: .068, RMR: .074., SRMR: .068, CFI: .98). Items 2, 4, and 6 in the scale were reverse coded. High scores obtained after the conversion of reverse-coded items indicate a high level of psychological resilience.

**Depression Anxiety and Stress Scale (DASS-21)**

The Depression Anxiety Stress Scale (DASS) was developed by Lovibond and Lovibond (1995) and Yılmaz et al. (2017) conducted a validity and reliability study for the short form of the scale (Dass 21). It is a 21-item 4-point Likert-type scale. In the scale (DASS-21), there are 7 questions each to measure the dimensions of depression, stress, and anxiety. Cronbach's alpha values conducted by Yilmaz et al. (2017) were found .81for the "depression" dimension, .80 for the "anxiety" dimension, and .75 for the "stress" dimension. In the reliability analysis conducted in this study, the Cronbach-Alpha reliability coefficient was obtained as .82 for the overall scale. Data on the construct validity of the scale ($\chi$2/SD = 2.82; REMSEA = 0.055, RMR = 0.040, CFI = 0.98) showed that the 21-item three-factor structure had a good level of agreement. The scores that can be obtained from the scale range from 21 to 84, and high scores indicate higher symptoms of depression, anxiety, and stress.

**Procedure and Data Analysis**

Before starting the research, ethics committee approval to conduct the research was obtained from the Atatürk University Faculty of Sport Sciences Ethics Committee. Adhering to the legal procedures, due to the relaxation of the lockdowns and the start of the normalization process of the COVID-19 epidemic in Turkey, both a face-to-face survey was applied to the students studying at the relevant faculties and a questionnaire was prepared via Google Forms and

delivered to the target students through cognitive communication tool applications. The data collection process was completed within 14 days. The data collected physically and online were analyzed. In 8 of the physically prepared questionnaires, missing data was detected and they were removed. Since the scales sent via the Google form were filled online and each question required an answer, there was no missing data. For this reason, extreme value, normality, and homogeneity tests were applied directly. At the last stage, normality values were examined using AMOS software and it was determined that the data set showed a normal and homogeneous distribution without any transformation.

After providing the parametric conditions, confirmatory measurement and structural equation models were created and tested separately to find answers to the research questions. Relationships between resilience and depression anxiety and stress levels of athlete students in the COVID-19 process were determined by Pearson's product moments correlation coefficient and the effect of resilience on COVID-19 fear on depression anxiety and stress was determined using structural equation modeling. During the research process, all analyzes were made using SPSS 22.00 and AMOS package programs.

## Findings

In the study, first of all, descriptive statistics and correlation results of psychological resilience, fear of COVID-19 and depression, anxiety, and stress variables were given. The direct and indirect effects between these variables were tested with the structural equation model.

## Descriptive Statistics and Correlation Results

Mean, standard deviation, skewness and kurtosis values, Cronbach's Alpha coefficients, and correlation values are given in Table 1. It was observed that the skewness and kurtosis values were within normal ranges (-1.96 <x < 1.96) and all Cronbach's Alpha coefficients were sufficient.

**Table 1 Descriptive Statistics, Cronbach's Alpha, and Correlation Results**

| | α | x | SD | Skewness | Kurtosis | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Psychological Resilience | .639 | 3.28 | .688 | .013 | .607 | 1 | .036 | -.365** | -.416** | -.432** |
| Fear of Covid | .897 | 2.45 | .914 | .545 | .079 | - | 1 | -.080 | -.066 | -.051 |
| Anxiety | .816 | 1.93 | .777 | .762 | -.187 | - | - | 1 | .658** | .664** |
| Depression | .849 | 2.01 | .840 | .528 | -.751 | - | - | - | 1 | .707** |
| Stress | .832 | 2.19 | .744 | .348 | -.560 | - | - | - | - | 1 |

**p<.01

## Structural Equation Modeling

After determining the relationship between the variables in the research, the AMOS program was used to test the hypotheses. The model established for the relationship between variables is presented in Figure 1:

When the fit index values of the model tested in Figure 1 are examined $\chi 2$ (264,607/98)=2.70; CFI =.94; TLI = .92; NFI=.90; GFI= .91), it can be said that there is a significant relationship between the variables in the model established (p < .01). In the model, it is understood that resilience has a significant negative predictor effect on depression, anxiety, and stress of athlete students (β = - .66, p < .01). In the model, the relationship between fear of COVID-19 and depression, anxiety, and stress (β= - .07, p > .01) and the relationship between fear of COVID-19 and resilience (β= - .01, p > .01) were found to be insignificant.

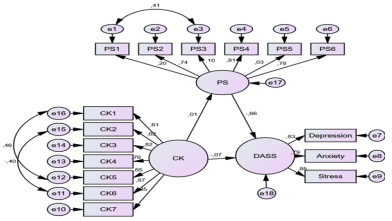


**Figure 1 The Model Established between Fear of COVID-19, Resilience and Depression, Anxiety, and Stress**

In line with the hypotheses established for the research, the findings related to the model established

in examining whether psychological resilience has a mediating role between fear of COVID-19 and depression, anxiety, and stress are presented in Figure 2:

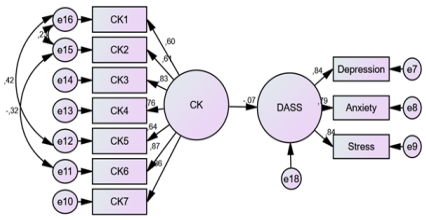


**Figure 2 The Model Established between Fear of COVID-19 and Depression, Anxiety, and Stress**

When the fit index values of the model tested in Figure 2 $\chi 2$ (160.132/ 31)= 5.16; CFI =.94; TLI = .91; NFI=.92; GFI= .91) are examined, the relationship between depression, anxiety, and stress, and fear of COVID-19 was insignificant (β= - .07, p> .01) and there was no significant relationship between the variables. These findings show that psychological resilience does not have a mediating role. In the alternative model prepared in line with these findings, the direct path from fear of COVID-19 to resilience was removed from the model, and the direct effect of fear of COVID-19 and resilience on depression, anxiety, and stress was tested. The tested model and the findings related to the model are presented in Figure 3:

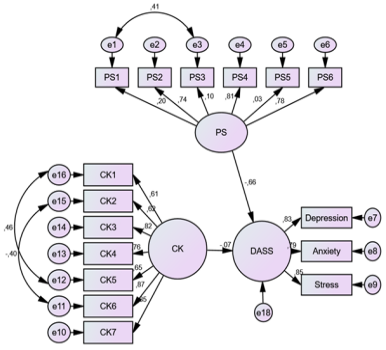


**Figure 3 The Model Established between Fear of COVID-19, Resilience and Depression, Anxiety, and Stress**

When the fit index values of the alternative model tested in Figure 3 are examined $\chi 2$ (264, 633/ 99)= 2.67; CFI =.94; TLI = .92; NFI=.90; GFI= .91), it can be said that the established model fits well and there is a significant relationship between the variables (p < .01). In the model, it is seen that resilience has a negative and significant predictor effect on depression, anxiety and stress of athlete students (β = - .66, p < .01) and fear of COVID-19 has a non significant predictor effect on depression, anxiety, and stress of athlete students (β = . - 0.07, p > .01).

**Discussion and Conclusion**

In this study, the effect of fear developed due to the COVID-19 pandemic on the level of depression, anxiety, and stress symptoms in athlete higher education students is discussed in the context of psychological resilience considering the constructed models.

In the research, different models were created in line with the structural equation model. In the first model created (Model 1), it was determined that psychological resilience had a significant negative predictor effect on depression, anxiety, and stress of athlete students. On the other hand, the relationship between fear of COVID-19 and depression, anxiety, and stress, and the relationship between fear of COVID-19 and psychological resilience were found to be insignificant. Fear, developed in connection with COVID-19, has come to the fore as a significant pressure tool on depressive symptoms, anxiety, and stress that constitute psychological adaptation skills (Seçer et al., 2020). However, this study found that the relationship between the fear of COVID-19 and depressive symptoms of athlete students who actively continued their training during the pandemic was insignificant and this result can be supported by the studies conducted by Herbert (2022) that include the reduction or prevention of depressive symptoms in university students.

Numerous reviews have demonstrated the positive effect of physical activity on mental health in adolescents, with some hypothetical mechanisms related to neurobiological, psychosocial, or behavioral factors (Lubans et al., 2016). With increasing evidence-based research on the role of physical activity and sport in alleviating depressive symptoms (Herbert, 2022; Joshi et al., 2016; Chi et al., 2021), anxiety and depressive symptoms in athletes who en-

gage in intense physical activity can significantly be alleviated (Mammen and Faulkner, 2013; Schuch et al., 2018). On the other hand, evidence of a significant and positive relationship between physical activity and mental health has also been strongly confirmed during the COVID-19 pandemic (Maugeri et al., 2020; Wolf et al., 2021). There are few studies on the relationship between physical activity and the mental health of students studying in sports departments of higher education institutions during the COVID-19 process. Students studying in sports departments of universities belong to a special group, these students generally have better physical quality and habit of participating in sports, and their physical activity levels are higher than students in other departments. Some studies have found that sports department students can cope with various stimuli and effects applied to them by the external environment and their psychological adaptation skills are better than students studying in other departments of universities (Li-xin, 2017). In this context, although it is thought that fear of COVID-19 may negatively affect psychological adaptation skills in the short and long term by triggering stress, anxiety, and depressive symptoms in athlete students, it can be thought that adopting a healthy lifestyle gained through physical activity will help protect students' mental health.

The results of Model 2, which is another model of the research, examined the mediating role of psychological resilience between fear of COVID-19 and depression, anxiety, and stress in athlete students, and it was concluded that resilience did not have a mediating role. In the alternative model (Model 3) prepared in line with this finding, the direct path from fear of COVID-19 to resilience was removed from the model, and the direct effect of fear of COVID-19 and resilience on depression, anxiety, and stress was tested. In the model, it was concluded that psychological resilience had a negative and significant predictor effect on depression, anxiety and stress of university student-athletes, and fear of COVID-19 had an insignificant predictor effect on depression, anxiety, and stress of athlete students. Resilience is often defined as the ability to bounce back from a stressor or adversity (Den Hartigh et al., 2022; Blanc et al. 2021). Identifying protective factors for mental health problems is vital for improving the well-being and psychological health of individuals when they encounter difficulties (Song et al., 2020). Individuals with high resilience are better able to self-regulate and handle events with an optimistic attitude. They can adopt an optimistic and positive attitude to recover from a traumatic situation and fully actuate the resources of their personality and environment when faced with difficulties (Xu et al., 2022).

During the lockdown in the pandemic, athletes' normal physical activity routines are severely disrupted. However, individuals who maintain physical activity during quarantine have been found to exhibit better physical and psychological well-being than those who do not exercise (Slimani et al., 2020; Clemente-Suárez et al., 2020). Athletes with high psychological resilience can exert more effective control over negative emotions (Crust & Clough, 2005). Possibly, besides fear of COVID-19, the flexibility of lockdown is particularly important to athletes as they are accustomed to the benefits of regular exercise and may therefore be particularly susceptible to declines in physical activity. Various research findings in the literature show that participation in sports has positive effects on the psychological structure (Dishman et al., 2006; Babiss and Gangwisch, 2009). On the other hand, it is thought that psychological resilience is an important argument for sportive success that affects sportive performance (Madrigal et al., 2013). It has been started to be thought that physical capacity alone will not be sufficient in sports and that the psychological resilience of the athletes should be high in order to achieve success (Küçük et al., 2015). In this sense, a high level of psychological resilience may appear as a quality that reduces the risk of fear of COVID-19 in athlete students while preserving their psychological adaptation skills. For this reason, it seems possible to limit or even prevent the negative effects of the fear and anxiety caused by the epidemic on athlete students with the help of psychological resilience. In this sense, it is thought that measures to improve the psychological resilience of athlete students can contribute to the prevention of negative effects that may occur in the short and long term.

**Limitations and Future Research**

The findings of this study should be evaluated in the context of its limitations. First, since the research

is relational and cross-sectional, and the sampling process is based on convenience sampling, it is considerably limited in terms of revealing the cause-effect relationship. The non-inclusion of a clinical group in the sampling should also be considered a limitation. On the other hand, it should be noted that all participants are university-level athletes actively engaged in sports. Further research could explore athletes in other age groups. Besides, the results of this study were obtained in certain situations resulting from the COVID-19 pandemic. Therefore, attention should be given when generalizing the present findings to other stressful, uncertain, and unusual situations. Another limitation is that the study was conducted only with athlete students at the higher education level in the sample of Turkey.

**Implications**

The results of this study show that developing psychological resilience in athlete students can alleviate the negative conditions that put pressure on their lives and the level of possible depression, anxiety, and stress symptoms of fear due to the COVID-19 pandemic. In today's world, where the negative reflections of the COVID-19 pandemic are increasing, it is thought that emphasizing the secondary consequences of the pandemic and understanding the possible depression, anxiety, and stress symptoms in athlete students will shed light on the studies to be carried out in planning, and the findings obtained can be an important source of data for experts in this field.

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