

## The relationship between individual and team athletes' anxiety to catch the novel coronavirus (covid-19) and sleep quality

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### Abstract

**Aim:** to examine the relationship between individual and team athletes' anxiety to catch the novel coronavirus (Covid-19) and sleep quality according to different variables. **Method:** a total of 429 volunteer athletes (262 female and 167 male) took a part in the research who are actively involved in sports. Research data were collected through a questionnaire. The survey questions were delivered to the participants by the researcher through face-to-face interview method and via online survey. As for data collection tools, Athletes' Anxiety to Catch Novel Coronavirus (Covid-19) Scale and Pittsburgh Sleep Quality Index (PSQI) and Demographic Information Form prepared by the researcher were used. The obtained data were analyzed with the SPSS package program. In addition to descriptive statistics, the normality structure of the distributions was examined through skewness and kurtosis tests. In the comparison of data between two variables, t-test was applied in independent groups, and one-way analysis of variance was applied in the comparison of three or more variables. In addition, Pearson Moments Correlation test and regression analysis were applied. **Results:** no significant difference was observed between profession, marital status, age of starting sports, smoking status, sports branch and anxiety to catch Covid-19 and PSQI. At the same time, while there was a significant difference between gender, education level, income level and anxiety to catch Covid-19, no significant difference was found with PSQI. In addition, while a significant difference was observed between age and PSQI, there was no significant difference between the anxiety to catch Covid-19. A positive and significant relationship was found between the PSQI scores of the athletes and the anxiety scores to catch Covid-19. Therefore, we can say that as the anxiety levels of catching the novel Coronavirus (Covid-19) increase, their sleep quality decreases. Furthermore, it has been determined that the anxiety to catch Covid-19 has a positive and significant predictive power on PSQI. **Conclusion:** considering these results, a psychosocial

support program should be prepared and implemented to help control the anxiety level of catching Covid-19 and increase the low quality sleep it causes.

**Keywords:** Athlete, Covid-19, Anxiety, Sleep Quality.

## Introduction

Pandemics, wars and natural disasters in today's world, or in other words, positive or negative, sudden and unexpected changes in people's lives cause an increase in people's fear and anxiety. The most striking of these changes is the Covid-19 outbreak, which was declared as a pandemic by the World Health Organization on 11 March 2020 (Gallego et al., 2020). Covid-19 is called enveloped single-stranded positive RNA virus. Since they are viruses with high mutation abilities that are seen in wild animals and transmitted to humans, RNA viruses are defined as pathogens with a high epidemic rate (Carrasco et al., 2017). All countries have been struggling with a major epidemic caused by Covid-19 for over a year. Beside this, the epidemic has taken the whole world under its influence in a short time (WHO, 2020). The first case in Turkey was reported on March 11 (Ministry of Health, 2020). The global epidemic first appeared in China. On 31 December 2019, pneumonia cases of unknown origin were reported in Wuhan city and a novel coronavirus that had not been detected in humans before was identified (WHO, 2020). The novel Coronavirus (Covid-19) disease is transmitted to healthy individuals by the inhalation of droplets spread by the coughing and sneezing of Covid-19 patients. In addition, it is known that droplets emitted from Covid-19 patients fall on the surface and these droplets are transmitted from person to person by touching the face, eyes, nose or mouth of healthy individuals (Ministry of Health, 2020). Due to this unexpected Covid-19 threat, almost all of the countries in the world went into a sudden and unprecedented red alert state.

While governments are implementing various prevention and restriction measures, the sports institution, which has become a part of our lives, has also been under the influence of the epidemic. Sport is a universal product in which individuals around the world engage in activities, watch and consume (Ratten & Ratten, 2011). Considering the sport factor in its impact dimension, the sport sector, which is an important sector in economic, social, psychological, health, cultural and commercial dimensions, has faced a unprecedented crisis. Many national and international sports organizations have been postponed or cancelled. This situation adversely affected both the physical and mental health of the athletes. The economic losses caused by the epidemic, the anxiety of the future, the fear to catch Covid-19, the fear of the effect of Covid-19 on sports success cause an increase in the level of anxiety on the athletes.

The origin of the concept of anxiety is "anxietas" in ancient Greek, meaning fear, curiosity and worry (Köknél, 1988). Anxiety can be defined as a state of expectation that leads to unhappiness about the future, a state of excitement mixed with a feeling of insecurity, or it can also be defined as a feeling experienced in the face of a danger arising from the outside world or any situation that

is perceived and interpreted as dangerous by the person (Alisinanoğlu & Ulutaş, 2003). There are two types of anxiety in human life, normal and pathological. Normal anxiety is experienced when we are faced with realities such as old age, illness and death. If it occurs at levels that will affect the daily functions and performance of the person, it is considered as pathological anxiety (Alisinanoğlu & Ulutaş, 2003). One of the major problems of anxious people is sleep problem. Sleep is a significant process in which body tissues get rid of metabolic processes that are active during the day and prepare the body for effective physiological performance for the next day (Aldabal & Bahammam, 2011). It is thought that sleep has a fundamental role in human health for physical, cognitive performance and well-being (Simpson et al., 2016). In addition, it would not be wrong to think that physical performance will be greatly affected by sleep, as it affects cardiorespiratory endurance (Azboy & Kaygısız, 2009), neuromotor performance (Boonstra et al., 2007), mood, focus, and metabolism (Luke et al., 2011).

Sleep quality is a status when a person wakes up feeling fit and on formed and ready for a new day. Sleep quality is affected by various factors such as lifestyle, environmental factors, work, social life, economic situation, general health, stress and anxiety (Şenol et al., 2012). While it is known by experts and athletes that quality sleep may have certain effects on sports performance, there are relatively few studies on sleep quality (Venter, 2014). When the relevant literature is examined, studies reporting that there are serious concerns that the epidemic will affect the performance of athletes (Brito et al., 2021; Paoli & Musumeci, 2020; Rajpal et al., 2021), studies examining the level of anxiety (Aksu, 2018; Karabulut et al., 2013; Seçer & Sevinç, 2021), studies examining the anxiety to catch Coronavirus (Batu & Aydın, 2020; Polatcan & Kaptangil, 2021; Şahinler & Ulukan, 2020; Yıldız, 2020) were observed.

In the light of present information, the main purpose of sports is to protect the health of athletes, to take preventive measures and to ensure the development of sports. Measures to be taken from this point of view are important in terms of protecting the athlete and preventing the spread of the Coronavirus. Moreover, the importance of protecting the health of athletes was emphasized in the statements made by international sports organizations. In this universal crisis, it is thought that the anxiety to catch the novel Coronavirus (Covid-19) will increase and this will affect the sleep quality of the athletes who play in big clubs and will struggle on the field with the effect of the detection of Covid-19 cases in popular athletes. Therefore, the aim of present study is to examine the relationship between individual and team athletes' anxiety to catch the novel Coronavirus (Covid-19) and sleep quality according to different variables.

## Method

### *1. Research Ethics*

Since the human phenomenon should be used in the study and individual rights should be protected; scientific ethics, principles and rules were followed during the study, and the ethics committee permission was obtained from the Ethics Committee of Erciyes University, dated 27.04.2021 and decision number 2021/231, before our research.

### *2. Research Model*

The research was designed according to the quantitative research model, and a method for descriptive and correlational survey aiming to reveal the current situation was used. Correlational survey model is a research model that aims to determine whether there is a change between two or more variables and the degree of change (Karasar, 2016).

### *3. Research Group*

The sample group of this research consists of 429 athletes, 167 males and 262 females, from individual and team athletes living in Kayseri city. In the selection of the sample, the convenience sampling technique, which is one of the non-random sampling methods, was used (Yıldırım & Şimşek, 2018).

### *4. Data Collection*

As for data collection tool, questionnaire method was used. The questionnaires were applied to the participants by the researchers using face-to-face interviews and online questionnaires. The data collection tools used in the research, which was prepared by the researcher, consist of 3 parts: a) the Demographic Information Form, b) the Athletes' Anxiety to Catch Novel Coronavirus (Covid-19) Scale, and c) the Pittsburgh Sleep Quality Index (PSQI).

#### *a. Demographic Information Form*

The demographic information form prepared by the researcher to collect information consists of variables such as age, marital status, education level, age of starting sports, smoking status, gender, profession, sports branch, income level.

#### *b. Athletes' Anxiety to Catch the Novel Coronavirus (Covid-19) Scale (AACNCS)*

In the study, Athletes' Anxiety to Catch the Novel Coronavirus (Covid-19) Scale developed by Tekkurşun et al. (2020) was used. The scale consists of 2 sub-dimensions as individual anxiety (11 items) and socialization anxiety (5 items) with a total of 16 items. AACNCS is a five-point Likert type. The items were listed as "Strongly Disagree", "Disagree", "Undecided", "Agree", "Strongly Agree"; and were rated as 1, 2, 3, 4 and 5. Only 2<sup>nd</sup> item in the scale contains negative statements. The lowest score that can be obtained from the Individual Anxiety factor consisting of the first 11 items is 11 and the highest score is 55. The lowest score that can be

obtained from the Socialization Anxiety factor consisting of the last 5 items is 5 and the highest score is 25. The Cronbach Alpha coefficient calculated for the entire scale is .917 (Tekkurşun et al., 2020).

### c. Pittsburgh Sleep Quality Index (PSQI)

It was developed by Buysse et al. in 1989 and the validity and reliability of the index was performed by Ağargün et al. in 1996. The Cronbach Alpha coefficient was found to be .80. The PSQI scale consists of seven subcategories (subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep pill, and assessment of daytime functions) and 19 items. The sum of all sub-dimensions is evaluated with a total sleep quality score ranging from 0 to 21, and high scores represent low sleep quality. PSQI total score clearly distinguishes those with good sleep quality (PUKI total score  $\leq 5$ ) from those with poor sleep quality (PUKI  $> 5$ ) (Buysse, 1989; Ağargün et al., 1996).

## 5. Analysis of Data

The obtained data were analyzed with SPSS package program. As a result of the analysis, descriptive statistics are given as f and % distribution. The normality distributions of the data were tested with the Kolmogorov Smirnov Test and the skewness and kurtosis tests, and it was determined that the data showed normal distribution. With these results, it was decided to use parametric statistical test methods in our study. In the comparison of the data obtained between two variables, t-test was applied in independent groups, while one-way analysis of variance was applied in the comparison of three or more variables. Tukey test was applied to determine the difference in the comparisons made in three or more groups. In addition, Pearson Moments Correlation test and regression analysis were applied.

## Findings

**Table 1.** Descriptive statistics-frequency and percentage values.

Variable	Category	f	%
Gender	Female	262	61,1
	Male	167	35,9
Age	18-19	72	16,8
	20-21	65	15,2
	22-23	69	16,1
	24-25	52	12,1
	26 and above	171	39,9
Marital Status	Married	333	77,6
	Single	81	18,9
	Divorced	15	3,5
Education Level	Secondary School	25	5,8
	High School	75	17,5
	Undergraduate	274	63,9
	Postgraduate	55	12,8

Variable	Category	f	%
Profession	Student	167	38,9
	Private sector	100	23,3
	Civil servant	75	17,5
	Self-employed	33	7,7
	Other	54	12,6
Smoking Status	Yes	156	36,4
	No	273	63,6
Sports Branch	Individual Sports	242	56,4
	Team Sports	187	43,6
Age of Starting Sports	6-8	86	20,0
	9-11	130	30,3
	12-14	100	23,3
	15-17	113	26,3
Income Level	2000TL and under	172	40,1
	2001-3000TL	70	16,3
	3001-4000TL	54	12,6
	4001TL and above	133	31,0
Total		429	100

When we look at the socio-demographic characteristics of the athletes participating in the research, 61.1% were women, 39.9% were in the 26 and over age group, and 77.6% were married. Most of the participants are university graduates (63.9%) and live on the hunger limit (56.4%). It was observed that 63.6% of the participants did not smoke, 56.4% did individual sports, and 30.3% started sports between the ages of 9-11.

**Table 2.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Athletes' Gender.

Scale Sub-Dimension	Gender	N	$\bar{x}$	Sd	df	t	P
PSQI	Female	262	13,41	7,82	427	3,212	0,978
	Male	167	10,90	8,03			
Individual Anxiety	Female	262	41,54	8,93	427	5,998	0,004*
	Male	167	35,89	10,35			
Socialization	Female	262	15,60	5,02	427	3,716	0,172
	Male	167	13,71	5,30			
Anxiety Total	Female	262	57,14	12,70	427	5,746	0,113
	Male	167	49,60	14,07			

\*p<0.05, p<0.001

According to the data obtained in Table 2, while there was a statistically significant difference in the Individual Anxiety sub-dimension according to the gender of the athletes (p<0.05), there was no difference between the Socialization, Anxiety Total and PSQI scores (p>0.05).

**Table 3.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Age Groups of Athletes.

Scale Sub-Dimension	Age	N	$\bar{x}$	Sd	F	P	Tukey
PSQI	18-19 <sup>a</sup>	72	12,05	7,95	2,288	0,05*	c<d a<b b>c e<d
	20-21 <sup>b</sup>	65	13,90	8,39			
	22-23 <sup>c</sup>	69	13,18	7,13			
	24-25 <sup>d</sup>	52	14,09	9,22			
	26 and older <sup>e</sup>	171	11,23	7,66			
Individual Anxiety	18-19 <sup>a</sup>	72	37,45	10,03	0,843	0,49	
	20-21 <sup>b</sup>	65	39,44	8,68			
	22-23 <sup>c</sup>	69	39,50	10,33			
	24-25 <sup>d</sup>	52	39,48	10,77			
	26 and older <sup>e</sup>	171	39,98	9,81			
Socialization	18-19 <sup>a</sup>	72	13,72	4,99	1,196	0,31	
	20-21 <sup>b</sup>	65	15,23	5,18			
	22-23 <sup>c</sup>	69	15,07	5,18			
	24-25 <sup>d</sup>	52	14,59	5,18			
	26 and older <sup>e</sup>	171	15,21	5,32			
Anxiety Total	18-19 <sup>a</sup>	72	51,18	13,81	1,130	0,34	
	20-21 <sup>b</sup>	65	54,67	12,41			
	22-23 <sup>c</sup>	69	54,57	14,16			
	24-25 <sup>d</sup>	52	54,07	14,53			
	26 and older <sup>e</sup>	171	55,19	1,74			

\*p<0.05, p<0.001

When Table 3 is examined, there is a statistically significant difference between the PSQI scores of the athletes according to their age groups ( $p<0.05$ ), while there is no difference between the Individual Anxiety, Socialization sub-dimension and Anxiety Total scores ( $p>0.05$ ).

**Table 4.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Marital Status of Athletes.

Scale Sub-Dimension	Marital Status	N	$\bar{x}$	Sd	F	P
PSQI	Married	333	12,47	8,04	0,062	0,94
	Single	81	12,41	7,55		
	Divorced	15	11,73	9,62		
Individual Anxiety	Married	333	39,44	9,63	0,190	0,82
	Single	81	39,20	10,30		
	Divorced	15	37,86	13,45		
Socialization	Married	333	14,71	5,19	0,730	0,48
	Single	81	15,32	4,95		
	Divorced	15	15,86	6,92		
Anxiety Total	Married	333	54,15	13,47	0,034	0,96
	Single	81	54,53	13,60		
	Divorced	15	53,73	20,16		

\*p<0.05, p<0.001

When we look at Table 4, there was no statistically significant difference between the Pittsburgh Sleep Quality Index (PSQI) and the Athletes' Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Marital Status of Athletes ( $p>0.05$ ).

**Table 5.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes' Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Education Level of Athletes.

Scale Sub-Dimension	Education Level	N	$\bar{x}$	Sd	F	p	Tukey
PSQI	Secondary School <sup>a</sup>	25	10,52	7,53	2,333	0,073	
	High School <sup>b</sup>	75	12,18	8,25			
	University <sup>c</sup>	274	13,09	7,95			
	Master <sup>d</sup>	55	10,40	7,74			
Individual Anxiety	Secondary School <sup>a</sup>	25	34,96	10,22	4,457	0,004*	a<b c<d a<d b<d
	High School <sup>b</sup>	75	36,77	10,27			
	University <sup>c</sup>	274	40,13	9,59			
	Master <sup>d</sup>	55	40,87	9,78			
Socialization	Secondary School <sup>a</sup>	25	13,72	4,91	2,327	0,074	
	High School <sup>b</sup>	75	13,69	5,41			
	University <sup>c</sup>	274	15,14	5,17			
	Master <sup>d</sup>	55	15,61	5,06			
Anxiety Total	Secondary School <sup>a</sup>	25	48,68	13,04	4,367	0,005*	a<b c<d d>a b<d
	High School <sup>b</sup>	75	50,46	14,35			
	University <sup>c</sup>	274	55,28	13,51			
	Master <sup>d</sup>	55	56,49	13,05			

\* $p<0.05$ ,  $p<0.001$

When we look at Table 5, there was a statistically significant difference in the Individual Anxiety sub-dimension and Anxiety Total scores according to the education levels of the athletes ( $p<0.05$ ), while the anxiety scores of the athletes with a master education level were found to be high. Moreover, there was no difference between the socialization sub-dimension and PSQI scores. ( $p>0.05$ ).



**Table 6.** Comparison of Athletes' Pittsburgh Sleep Quality Index (Puki) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Profession.

Scale Sub-Dimension	Profession	N	$\bar{x}$	Sd	F	P
PSQI	Student	167	13,05	7,99	1,785	0,131
	Private sector	100	13,43	8,76		
	Civil servant	75	10,92	7,01		
	Self-employed	33	10,66	8,27		
	Other	54	11,90	7,36		
Individual Anxiety	Student	167	39,21	9,70	1,569	0,182
	Private sector	100	40,10	8,93		
	Civil servant	75	40,92	10,48		
	Self-employed	33	36,72	10,14		
	Other	54	37,74	10,89		
Socialization	Student	167	14,61	4,91	1,897	0,110
	Private sector	100	15,12	5,14		
	Civil servant	75	16,10	5,27		
	Self-employed	33	14,30	6,22		
	Other	54	13,79	5,29		
Anxiety Total	Student	167	53,83	13,28	1,924	0,105
	Private sector	100	55,22	12,96		
	Civil servant	75	57,02	14,23		
	Self-employed	33	51,03	14,88		
	Other	54	51,53	14,59		

When Table 6 is examined, there was no statistically significant difference between the Pittsburgh Sleep Quality Index (PSQI) and the Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale according the professions of the athletes ( $p>0.05$ ).

**Table 7.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Income Level of Athletes

Scale Sub-Dimension	Income Level	N	$\bar{x}$	Sd	F	P	Tukey
PSQI	2000 and under <sup>a</sup>	172	13,09	8,40	1,559	0,19	
	2001-3000 <sup>b</sup>	70	11,08	7,49			
	3001-4000 <sup>c</sup>	54	13,46	6,97			
	4001 and above <sup>d</sup>	133	11,89	8,04			
Individual Anxiety	2000 and under <sup>a</sup>	172	39,44	9,29	1,085	0,35	
	2001-3000 <sup>b</sup>	70	37,51	10,03			
	3001-4000 <sup>c</sup>	54	40,40	8,35			
	4001 and above <sup>d</sup>	133	39,74	11,06			
Socialization	2000 and under <sup>a</sup>	172	14,93	5,01	2,611	0,05*	d>a b<a c<d c>b
	2001-3000 <sup>b</sup>	70	13,35	5,29			
	3001-4000 <sup>c</sup>	54	15,20	4,73			
	4001 and above <sup>d</sup>	133	15,44	5,50			
Anxiety Total	2000 and under <sup>a</sup>	172	54,37	12,90	1,808	0,14	
	2001-3000 <sup>b</sup>	70	50,87	13,84			
	3001-4000 <sup>c</sup>	54	55,61	11,39			
	4001 and above <sup>d</sup>	133	55,18	15,37			

\* $p<0.05$ ,  $p<0.001$

**Table 8.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Age Groups of Starting to Sports.

Scale Sub-Dimension	Age of Starting Sports	N	$\bar{x}$	Sd	F	P
PSQI	6-8	86	11,30	7,87	1,179	0,31
	9-11	130	13,29	8,58		
	12-14	100	12,70	7,65		
	15-17	113	12,09	7,65		
Individual Anxiety	6-8	86	37,93	10,66	0,849	0,46
	9-11	130	39,91	10,24		
	12-14	100	39,20	9,34		
	15-17	113	39,88	9,34		
Socialization	6-8	86	14,98	5,54	0,026	0,994
	9-11	130	14,80	5,06		
	12-14	100	14,81	5,00		
	15-17	113	14,89	5,37		
Anxiety Total	6-8	86	52,91	15,12	0,384	0,76
	9-11	130	54,72	14,08		
	12-14	100	54,01	12,77		
	15-17	113	54,77	13,14		

When we look at Table 8, there was no statistically significant difference between the Pittsburgh Sleep Quality Index (PSQI) and the Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale according to the age of starting sports ( $p>0.05$ ).

**Table 9.** Comparison of Pittsburgh Sleep Quality Index (PSQI) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Athletes' Smoking Status.

Scale Sub-Dimension	Smoking Status	N	$\bar{x}$	Sd	df	t	P
PSQI	Yes	156	13,63	8,43	427	2,350	0,312
	No	273	11,75	7,66		2,290	
Individual Anxiety	Yes	156	37,76	10,30	427	-2,516	0,176
	No	273	40,24	9,54		-2,464	
Socialization	Yes	156	14,66	5,45	427	-0,602	0,132
	No	273	14,98	5,08		-0,590	
Anxiety Total	Yes	156	52,42	14,32	427	-2,036	0,212
	No	273	55,22	13,31		-1,996	

\* $p<0.05$ ,  $p<0.001$

When we look at Table 9, there was no statistically significant difference between the Pittsburgh Sleep Quality Index (PSQI) and the Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale according to the smoking status of the athletes ( $p>0.05$ ).

**Table 10.** Comparison of Pittsburgh Sleep Quality Index (Puki) and Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale According to Sports Branch of Athletes.

Scale Sub-Dimension	Sports Branch	N	$\bar{x}$	Sd	df	t	P
PSQI	Team Sports	242	12,19	7,66	427	-0,713	0,307
	Individual Sports	187	12,75	8,41		-0,705	
Individual Anxiety	Team Sports	242	38,16	10,08	427	-2,827	0,209
	Individual Sports	187	40,86	9,45		-2,850	
Socialization	Team Sports	242	14,66	5,21	427	-0,912	0,845
	Individual Sports	187	15,12	5,21		-0,912	
Anxiety Total	Team Sports	242	52,83	13,94	427	-2,378	0,470
	Individual Sports	187	55,99	13,28		-2,393	

\*p<0.05, p<0.001

When we look at Table 10, there was no statistically significant difference between the Pittsburgh Sleep Quality Index (PSQI) and the Athletes'Anxiety to Catch the Novel Coronavirus (Covid-19) Scale according to the the sports branch of athletes ( $p>0.05$ ).

**Table 11.** Pearson Correlation Analysis between Athletes' Anxiety Levels to Catch Novel Coronavirus (Covid-19) and Sleep Quality (PSQI) (n:429).

Scale Sub-Dimension	PSQI	Individual Anxiety	Socialization	Anxiety Total
PSQI	r 1			
	p			
Individual Anxiety	r ,266**	1		
	p ,000			
Socialization	r ,165**	,617**	1	
	p ,001	,000		
Anxiety Total	r ,254**	,954**	,824**	1
	p ,000	,000	,000	

\*\*p<0.001

**Table 12.** Regression Table for Predicting the Anxiety Levels of Athletes to Catch Coronavirus (Covid-19) and Sleep Quality (PSQI).

	B	T	P	R	R <sup>2</sup>	F	P
	0,254	5,431	0,000				
Anxiety Total Puki				,254 <sup>a</sup>	0,65	29,498	,000 <sup>b</sup>

a: Anxiety to catch the novel Coronavirus; b: PSQI (Pittsburgh sleep quality index)

When Table 12 is examined, the model presents a significant relationship between Anxiety to Catch The Novel Coronavirus (Covid-19) and Sleep Quality (PSQI) ( $R=.254$   $R^2=0.65$ ;  $p<0.005$ ). When the t-test results regarding the significance of the regression coefficient are examined, it was seen that Sleep Quality ( $t=5.431$   $p=0.005$ ), Anxiety to Catch the Novel Coronavirus (Covid-19) predicted Sleep Quality (PSQI) and explained 65% of the total variance.

## Discussion and conclusion

Covid-19 continues to be a traumatic experience for humanity. The sports world is also experiencing an unprecedented process. The process becomes boring and difficult for athletes who have adopted living within a certain goal and program all their lives. All athletes from different branches and levels experience great anxiety due to the disruption of their daily routines, lack of motivation and uncertainty in this process. It is thought that this anxiety affects sleep quality and thus sports performance. In the light of this information, the aim of our study is to examine the relationship between individual and team athletes' anxiety to catch the novel Coronavirus (Covid-19) and sleep quality. In this framework, 429 volunteer athletes participated in the study. The data collected for the research were discussed with the relevant literature sources, taking into account the variables of age, starting age to sports, profession, gender, education level, smoking status, and sports branch. When the study data were examined, no difference was observed in terms of the points that the athletes got from PSQI according to the gender variable. At the same time, a significant difference was observed in the individual anxiety sub-dimension of the Athletes' Anxiety to Catch the Novel Coronavirus Scale, while this difference was found to be in favor of female athletes ( $p < 0.05$ ). No significant difference was found in the socialization sub-dimension and the total anxiety score ( $p > 0.05$ ).

Examining the literature, Tekin's (2020) study, in which he examined the effect of Covid-19 anxiety on motivation, observed that the socialization anxiety of the participants negatively affected their motivation. One of the researchers, Gümüşgül et al., (2020), on the other hand, observed in their study that female athletes have higher anxiety about catching Coronavirus than male athletes. Batu and Aydın (2020) observed in their study that female athletes have higher anxiety levels. When the results are evaluated, the responsibilities of female athletes in social and family life, as well as the economic losses caused by the pandemic they encounter in sports life, may cause high levels of anxiety.

When the research findings were examined, there was a statistically significant difference between the PSQI scores of the athletes according to the age variable ( $p < 0.05$ ), and it was determined that this difference was in favor of the athletes in the 25-26 age range. At the same time, there was no difference between individual anxiety, socialization sub-dimension and total anxiety scores ( $p > 0.05$ ). When the relevant literature was examined, it was observed in a study conducted by Hublin et al. (2018) in Finland that sleep quality decreased as age increased. In another study, it was stated that sleep quality was associated with age (Chang & Peng, 2021a,b). On the other hand, one of the researchers, Gümüşgül et al. (2020), did not detect a significant difference between the anxiety of catching the coronavirus and age in their studies. Aksu (2018) found no significant difference between age and anxiety level in his study on karate athletes. These results show parallelism with our study. When the study data were evaluated, the sleep quality of the 24-25 age group was found to be poor. Sleep time decreases with age. We can state that physical and

psychological disorders such as respiratory problems, chronic diseases and emotional disorders that increase with age also reduce and adversely affect sleep quality.

When the study data were examined, there was a statistically significant difference in the individual anxiety sub-dimension and anxiety total scores according to the education levels of the athletes, while there was no difference between the socialization sub-dimension and PSQI scores. In parallel with our results, in a study conducted by Wathélet et al., (2020) with 69.054 participants in France, it was determined that the fear of catching Coronavirus was associated with education level and increased psychological problems such as anxiety and stress. It was observed that the individual anxiety sub-dimension and anxiety total scores differed statistically according to the education level of the athletes. Accordingly, it was seen that the scores of the athletes with a postgraduate education level received high values. The fact that the last stage of education is postgraduate education is the beginning of an uncertain process. It is normal for the individual to be anxious due to the fact that he will enter a new period when his student life ends, the thought of whether this new period can be made qualified or not, and with the effect of the virus threat that affects the whole world. When the research findings were examined, there was a statistically significant difference in the socialization sub-dimension scores of the athletes according to their income levels ( $p < 0.05$ ), while there was no difference between the individual anxiety, anxiety total and PSQI scores ( $p > 0.05$ ).

When the relevant literature is examined, in the study carried out by Cao et al. (2020), a researcher, they did not detect a significant difference between PSQI scores. Smith et al. (2020) emphasized that income level affects the anxiety to catch coronavirus (Covid-19) in a study conducted with 932 people in England. In the study conducted by Seğer and Sevinç (2021), it was stated that as the age and income level of the athletes increased, the anxiety level of catching the coronavirus increased. Aksu (2018) found a difference in favor of those with medium income in his study. In the data of our study, it was observed that the socialization sub-dimension scores of the athletes differed statistically according to their income level. According to this difference, it was seen that the socialization sub-dimension scores of the athletes with an income of 4001 TL and above had high values. We can say that this is due to the fact that those with high income have a more intense social life as they have qualified education and economic security, and their social life is restricted due to the virus.

According to the research findings, there was no statistically significant difference between PSQI and anxiety scores of athletes catching the novel Coronavirus (Covid-19) according to the smoking status of the athletes ( $p > 0.05$ ). In the study carried out by the researchers, Polatcan and Kaptangil (2021) did not find a difference according to alcohol and smoking use. In the study conducted by Tunç and Yapıcı (2019), no significant difference was found in stress, anxiety and depression scores according to the variable of smoking status. Contrary to this information, Saygılı et al. (2011) determined that the sleep quality of students who smoked was poor in their study examining the

sleep quality of university students. Similar to our study, one of the researchers, Çalıyurt (1998) reported that the sleep quality of smokers is worse than non-smokers. Işık et al. (2015) found a significant difference in sleep quality according to smoking and alcohol use, in their study conducted. When the results of our study are evaluated, it can be said that the harms of smoking are known by the athletes and that cigarette has a stimulating effect due to the nicotine it contains and negatively affects the sleep quality, so the athletes do not use it. When the research findings were examined, there was no statistically significant difference between PSQI and athletes' anxiety scale scores of catching the novel Coronavirus (Covid-19) according to the marital status of the athletes ( $p>0.05$ ). When similar studies were examined, one of the researchers, Taşkın (2021), examined the quality of life and sleep of exercise and did not detect a significant difference according to the marital status variable. This result supports our study.

When the research data were evaluated, there was no statistically significant difference between the PSQI scores of the athletes according to the sports branch and the anxiety scores of the athletes to catch the novel Coronavirus (Covid-19) ( $p>0.05$ ). When the relevant literature is examined, although there is a significant difference in the individual anxiety of the athletes who do individual and team sports in the study carried out by Yıldız (2020), no significant difference has been detected in other types of anxiety. In the study carried out by Polatcan and Kaptangil (2021), they could not observe a difference between the anxiety to catch the novel Coronavirus and sports. When we look at the results of the correlation analysis between the anxiety levels of the athletes to catch the novel Coronavirus (Covid-19) and PSQI, it has been seen that there is a positive and significant relationship between the puki scores of the athletes and their individual anxiety, socialization and anxiety total scores. There are studies emphasizing that individuals with high anxiety levels have poor sleep quality (Chang et al., 2012; Preišegolavičiūtė et al., 2010; Wu et al., 2020). In this context, we can say that the sleep quality of the athletes decreases as the anxiety to catch the novel Coronavirus increases. In the study carried out in Morocco by Idrissi et al. (2020), they observed a positive relationship between Covid-19 and poor quality sleep. In a study conducted with 27.424 volunteers in China, it was found that anxiety and sleep quality were inversely related (Wang et al., 2019). In another study conducted with athletes participating in the 2017 World University games, it was stated that the sleep quality of anxious athletes was low (Biggins et al., 2019). In the study conducted by Targa et al. (2021), in Spain, the relationship between Covid-19 and sleep quality was examined and they reported that Covid-19 anxiety negatively affects sleep quality. Our findings are similar to studies in this field. When our study results and other studies are also examined, it is seen that the anxiety to catch the novel Coronavirus (Covid-19) and sleep quality are negatively related.

As seen in Table 12, the regression model established as a result of the multiple linear regression analysis was found to be statistically significant ( $F = 29,498$   $p = .000$ ). Predictive variables together explain 65% of the variation in PSQI scores. When the regression analysis results were evaluated, it was determined that the anxiety to catch the novel Coronavirus had a positive and significant

predictive power on PSQI. When the relevant literature was examined, Memiş and Düzel (2020) found that they were in interaction with a serious rate of 94% in the study in which they examined the fear and anxiety towards Covid-19. At the same time, many studies have been found showing that sleep is affected by many reasons such as physical activity, anxiety, depression, anxiety, and environmental factors (Di Renzo et al., 2020; Huang et al., 2020; Şenol et al., 2012; Yorulmaz et al., 2018). Şengür (2020), one of the researchers, found that there are strong links between Covid-19-based anxiety and individuals' developing protective attitudes. When the data obtained from our study were evaluated, it was determined that the individual was in interaction with the anxiety to catch the novel Coronavirus, which concerns sleep quality.

As a result, during the epidemic experienced, while anxiety, fear and anxiety are observed in all individuals as a reaction, sleep problems occur due to the anxiety experienced. These problems may vary depending on age, gender, education, income level, sports branch, profession and marital status. In addition, it was found that Covid-19 anxiety was negatively related to sleep quality and Covid-19 anxiety largely predicted sleep quality. Considering these results, a psychosocial support program can be prepared and implemented, which will help control the anxiety level of catching Covid-19 and increase the low sleep quality it causes.

### *Suggestions*

- For the necessary Covid measures, cleaning and protection materials should be provided in the gyms and made available to the athletes.
- Athletes should be helped to get through this pandemic process in the most undamaged way by providing physical training as well as psychological support.
- Anxiety and anxiety situations after the Covid-19 pandemic process can be examined by conducting a study covering all athletes in Turkey.
- By comparing Covid anxiety and other athlete performance indicators, it should be ensured that the athlete maintains and sustains his performance in this process.

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