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**Authors' Affiliation:**

<sup>1</sup>Hitit University, Faculty of Sports Sciences, Department of Coach Training, Çorum, Turkey; ORCID: 0000-0001-5123-4286, Email: sblmyldrm@hotmail.com

<sup>2</sup>Hitit University, Erol Olçok Research and Training Hospital, Department of Psychiatry, Çorum, Turkey; ORCID: 0000-0001-9393-6921, Email: drsedakiraz@gmail.com

**Corresponding Author:**

Hitit University, Faculty of Sports Sciences, Department of Coach Training, Çorum, Turkey  
Email: sblmyldrm@hotmail.com

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# The effect of level of doing sports activities and attitude towards recreational activities on burnout level and COVID-19 phobia in physicians

Sibel Yıldırım<sup>1\*</sup>, Seda Kiraz<sup>2</sup>

**ABSTRACT**

It has been recommended to implement physically active lifestyles against the negative consequences of the COVID-19 pandemic. During the pandemic process, many healthcare professionals had to lead a stressful life due to long hours of intensive healthcare. This situation directly affected the burnout levels of physicians as well as indirectly affected patients seeking treatment. The goal of this study was to look into the effects of physicians' levels of participation in sports, their attitudes toward sporting recreational activities, and the effects of COVID-19 phobias on burnout. 272 physicians participated in the study. The Health Belief Scale Regarding Sports Recreational Activities (HBSSRA), Maslach Burnout Scale (MBI), and COVID-19 Phobia Scale (C19P-S) were used during data collection. Spearman correlation coefficient was used for correlation analysis, Kruskal-Wallis test was used to compare groups, and logistic regression analysis was used to establish a model. MBI total and emotional exhaustion scores were significantly different according to the physicians' participation levels in sportive activities ( $P=0.740$ ,  $P=0.136$ ). Statistically significant correlation was found between HBSSRA and MBI total scores ( $r=-0.313$ ,  $P=0.009$ ). The probability of emotional exhaustion was 1.45 times higher in physicians with low level of participation in sports activities. The increase in HBSSRA scores had a protective effect on emotional burnout ( $P=0.028$ , OR: 0.72). We are hopeful that the findings obtained from physicians will highlight the importance of sports and recreational activities, paving the way for improvement strategies that will benefit those who are most affected by the COVID-19 crisis.

**Keywords:** physicians; sports activities; recreational activities; burnout; COVID-19 phobia

**1. INTRODUCTION**

Coronavirus disease-2019 (COVID-19), which caused a major epidemic, first appeared in Wuhan, China on December 31, 2019 and began to spread rapidly

all over the world (Köse et al., 2021). It is not yet known whether the new type of coronavirus will show a seasonal change, such as influenza, or whether it will become a persistent threat throughout the year. This situation has seriously affected people's planning and involvement in various activities, individually or collectively (Denay et al., 2020). The COVID-19 pandemic has forced the world's population to change their daily routines, including their exercise habits. This unusual situation had physical, psychological and behavioural consequences for all individuals, including medical practitioners (Lim and Pranata, 2021).

Participation in regular sportive activities provides many benefits both physically and mentally (Nieman, 2020; Schuch et al., 2018; Warburton et al., 2006). It has been pointed out in many studies that regular and continuous participation in sportive activities is associated with positive mental health in these periods when social distance regarding COVID-19 is important (McDowell et al., 2019; White et al., 2017). To counter the physical and mental consequences of the COVID-19 pandemic, it has been recommended to implement physically active lifestyles (Jiménez-Pavón et al., 2020; Freeman and Eykelbosh, 2020). Sportive recreational activities can be defined as sportive activities that people do to provide physical, mental, spiritual and social benefits in order to be healthy and prevent diseases (Singh and Kiran, 2014; Ertüzün et al., 2013). Recreation activities include all kinds of outdoor sports (football, basketball, volleyball, tennis, etc.) and nature-based activities (hiking, picnic, camping, water sports, etc.) (Ertüzün et al., 2013; Kara and Demirci, 2010). Sportive recreational activities, which are health protection behaviours, are one of the most important factors in human life and happiness and are directly related to health. Recently, sportive recreational activities have gained importance as a preventive health service. Considering this situation, individuals' belief in health has been an important indicator of country policies regarding preventive health services. Physicians' attitudes towards the positive effect of sportive recreational activities on health have a direct impact on their patients and public health (Ertüzün et al., 2013).

During the Covid-19 pandemic process, long hours of health care were provided by many healthcare professionals. Healthcare workers have had to lead a stressful life due to the difficulties caused by the lack of experience, equipment or personnel and the intense health care conditions. These heavy and stressful working conditions increased the risk of mental disorders such as post-traumatic stress disorder (PTSD), depression, other anxiety disorders, substance use and suicide (Greenberg, 2020; Hamer et al., 2020). The concept of burnout is defined as a psychological syndrome characterized by emotional exhaustion, depersonalization and a decreased sense of accomplishment in daily tasks, is increasingly recognized as a factor affecting not only the health of physicians but also the health of the patients under their care (Maslach and Jackson, 1981). Although some studies have been conducted on physicians' burnout levels and COVID-19 phobias, no study has been found in the literature investigating the effects of physicians' participation in sportive activities, their attitudes towards sportive recreational activities, and the effects of COVID-19 phobias on burnout levels.

In this study, we aimed to investigate the effects of physicians' levels of doing sports activities, their attitudes towards sportive recreational activities, and the effects of COVID-19 phobias on burnout levels.

## 2. MATERIAL AND METHODS

### Participants

Personal Information Form and 3 different scales (Health-Belief Scale on Sportive Recreational Activities (HBSSRA), Maslach Burnout Scale (MBI), and COVID-19 Phobia Scale (C19P-S)) were applied to the physicians working in Çorum and the findings were analysed statistically. After obtaining ethical approval from the Ethics Committee of Hitit University (dated 29.12.2021 and numbered 2021-88), necessary explanations about the study were made online via google survey, taking into account the pandemic process and after informed consent forms were obtained, data collection tools were applied to physicians' online.

The criteria for inclusion in the study were determined as "Being a Physician, working in the province of Çorum, being active in any medical institution, being over the age of 18 and under the age of 65, and volunteering to participate in the study".

### Measures

#### *Personal Information Form*

Considering the literature on the subject, the Personal Information Form necessary for testing the research hypotheses was prepared by the authors of the study. The form includes questions on age, gender, institution, working time in the profession, department, title, whether they have been previously diagnosed with COVID-19, and the level of doing sports activities (Low or light, Moderate, High or vigorous).

**Health-Belief Scale on Sportive Recreational Activities (HBSSRA)**

The HBSSRA scale was developed by Ertuzun et al., (2013) considering that sportive recreational activities have also protective effects on health. Ertuzun et al., (2013) showed that HBSSRA is a valid and reliable Likert-type scale consisting of 21 items and 5 sub-dimensions for evaluating the health belief of the society regarding sportive recreation activities (Ertuzun et al., 2013). Scale items are evaluated from 1 to 5 (1 “strongly disagree” to 5 “strongly agree”). The Perceived Seriousness dimension (4 items), one of the sub-dimensions of the HBSSRA scale, evaluates how seriously participating in sportive and recreational activities affects the health of individuals. Perceived Barriers dimension (3 items) reflects the reasons that prevent participation in recreational activities. Physical Benefit dimension (4 items) evaluates the physical benefits obtained from recreational activities. Psycho-social Benefit dimension (6 items) evaluates the psychosocial benefits perceived by individuals. The Self-Efficacy dimension (4 items) assesses what participants are willing to give up in order participating in sportive recreational activities. The HBSSRA scale's Cronbach Alfa internal consistency coefficient was calculated to be 0.88 for all items (Ertuzun et al., 2013).

**Maslach Burnout Inventory (MBI)**

The inventory scale developed by Maslach and Jackson (1981) was adapted to Turkish society by Ergin (1992) (Maslach and Jackson, 1981; Ergin, 1992). The inventory, consisting of a total of 22 items, has a five-point Likert-type scoring ranging from 0 (never) to 4 (always). MBI has three sub-dimensions: “Emotional Exhaustion” (9 items, Cronbach's alpha=0.83), “Depersonalization” (5 items, Cronbach's alpha=0.65) and “Personal Accomplishment” (8 items, Cronbach's alpha=0.72). Scores ranging from 0-88, 0-36, 0-20 and 0-32 are obtained with the inventory for general score, emotional exhaustion, depersonalization and personal achievement, respectively. A high final score is interpreted as indicating extreme emotional weariness based on the inventory ratings (low if  $\leq 16$ ; 17-26 is medium; and  $\geq 27$  high) and depersonalization (low if  $\leq 6$ ; 7-12 is medium; and  $\geq 13$  high) and low personal achievement (low if  $\geq 28.03$ ; 28.02-21.54 is medium; and  $\leq 21.53$  high) (Maslach and Jackson, 1981; Ergin, 1992).

**COVID-19 Phobia Scale (C19P-S)**

C19P-S is a 5-point Likert-type self-assessment scale developed by Arpacı et al., (2020) to measure phobia that may develop against the new type of coronavirus (Arpacı et al., 2020). Scale items are evaluated from 1 to 5 (1 “strongly disagree” to 5 “strongly agree”). The scale has 4 sub-dimensions: Psychological (6 items), Somatic (5 items), Social (5 items), and Economic (4 items). The total C19P-S score is obtained by summing the sub-dimension scores, ranges from 20 to 100 points, and a higher score indicates a greater phobia. With the C19P-S scale, it can also be determined in which dimension more corona phobia is experienced. The Cronbach Alfa internal consistency coefficient of the C19P-S scale was calculated as 0.92 for all items (Arpacı et al., 2020).

**Procedures****Sample size estimation (priori) and post-hoc power analysis**

The sample size was calculated for the correlation analysis, which was used to test the primary hypothesis of our study. The critical sample size required to reveal a statistically significant correlation between the HBSSRA and MBI scales at a minimum level of 0.30 ( $r=0.30$ ) with 90% power ( $1-\beta = 0.10$ ) and  $\alpha = 0.05$  error (95% confidence interval) error was calculated as 112. However, a total of 268 physicians were reached in the cross-sectional period determined for the scale application and the data of 268 physicians were analysed statistically.

Post-hoc power analysis was performed to determine the power of the findings, with a type 1 error value of 0.05 for the main hypotheses that were found to be statistically significant. The G\*power software (Version 3.1.9.7, Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany) was used for sample size estimation and post-hoc power analysis. After the sample size was determined, the research participants were selected by stratified sampling method to reflect the population ratios, taking into account their gender, job title, and institutions. The study's 8 subjects were then added using a straightforward random sampling technique.

**Statistical analysis**

Statistical analysis were performed using SPSS (Version 22.0, SPSS Inc., Chicago, IL, USA, Licence: Hitit University) package program. Descriptive statistics of numerical variables were reported using mean  $\pm$  standard deviation for normally distributed data, and median (minimum-maximum) for non-normally distributed data. Descriptive statistics of categorical data were presented as numbers and percentages (%). The Cronbach Alpha internal consistency coefficient was calculated to determine the reliability of the scales. For the statistical test selection, the normal distribution of the data was evaluated with the Shapiro-Wilk test and the homogeneity of the variances was evaluated with the Levene test. Correlations between numerical data were performed with

Pearson correlation coefficient or Spearman correlation coefficient in accordance with the data normal distribution. Comparison of scale scores between three or more independent groups was performed with Kruskal Wallis test, depending on the normal distribution of data. Following a significant Kruskal Wallis test, the Dunn-Bonferroni Post-hoc test was used for pairwise comparisons to determine which groups caused the difference. Univariate and multivariate binary logistic regression analysis was performed to determine the effects of the level of doing sports activities, the attitude towards sportive recreation activities and some other factors on the burnout levels of the physicians. For statistical significance level,  $P < 0.05$  was accepted.

### 3. RESULTS

272 physicians participated in the study. 48% (n=130) of the physicians were female and 52% (n=142) were male. 70% (n=192) of the physicians were working in Public Hospitals, 15% (n=40) in Family Health Centers and 15% (n=40) in Private Hospitals. 40% (n=109) of the physicians were Assistant/General Practitioners and 60% (n=163) were Specialists/Academicians. The mean age of the physicians was  $34.47 \pm 4.83$  (25-52) and the years of professional experience were  $8.66 \pm 4.76$  (1-23). 35.3% (n=96) of the physicians had previously been diagnosed with COVID-19. 58.8% (n=160) of the physicians stated that they did sportive activities at a low (or light) level, 32.4% (n=88) at a moderate level, and 8.8% (n=24) at a high (or vigorous) level. In our study, the Cronbach Alpha internal consistency coefficient was calculated as 0.911 for HBSSRA, 0.919 for CP19-S, and 0.829 for MBI, respectively.

Statistical results regarding the comparison of MBI and C19P-S total and sub-scores among the research groups formed according to the level of doing sports activities of the physicians are shown in Table 1. C19P-S total and sub-scores were not statistically different between the study groups ( $P=0.109$ ,  $P=0.652$ ,  $P=0.137$ ,  $P=0.348$ ,  $P=0.183$ , respectively, Table 1). MBI sub-scores, Depersonalization and Personal accomplishment were not statistically different between the groups ( $P=0.740$ ,  $P=0.136$ , respectively, Table 1). MBI total scores and Emotional Exhaustion scores were statistically different between the groups ( $P=0.740$ ,  $P=0.136$ , respectively, Table 1). According to the post hoc test results, the MBI Emotional Exhaustion scores of the physicians who did high-level sports activities were significantly lower than the scores of the physicians who did low and moderate level sports activities ( $P=0.001$ ,  $P < 0.001$ , respectively, Table 1, Figure 1).

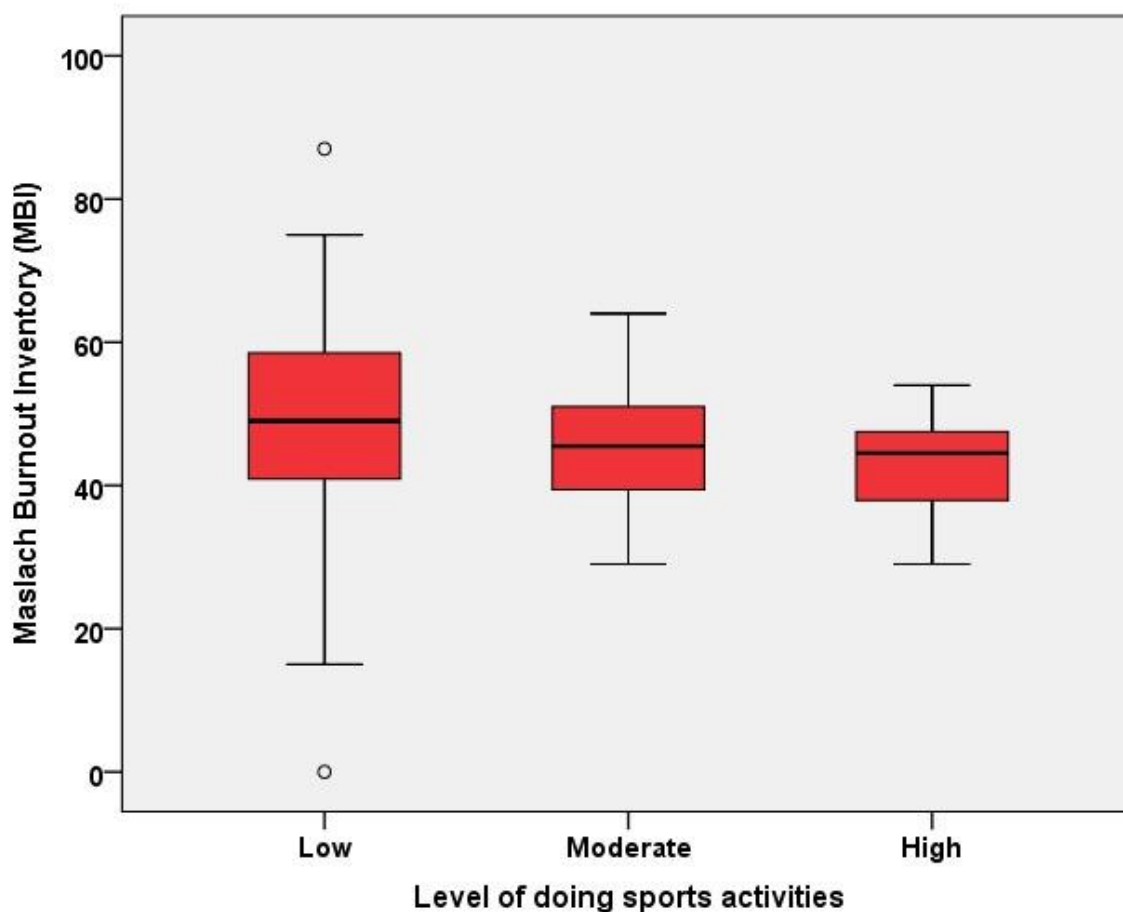
**Table 1** Comparison of Maslach Burnout Inventory (MBI) and COVID-19 Phobia Scale (C19P-S) scores according to physicians' level of doing sports activities

Scales	Sub-scales	Level of doing sports activities			P values	Post-hoc P values
		Low (or light) (n=160)	Moderate (n=88)	High (or vigorous) (n=24)		
MBI						
	Emotional exhaustion	21 (0-36) (19.92±8.80)	17.5 (1-35) (19.31±8.84)	13.5 (5-26) (14.33±8.45)	<0.001	1-3: 0.001 2-3: <0.001
	Depersonalization	8 (0-19) (7.8±5.18)	7.5 (0-16) (7.68±3.90)	6.5 (0-11) (6.16±4.16)	0.740	-
	Personal accomplishment	21.5 (0-32) (20.67±6.11)	22 (12-31) (21.31±5.42)	24 (14-30) (23.16±5.15)	0.136	-
	Total	49 (0-87) (48.40±13.47)	46 (29-64) (48.31±10.92)	45.5 (29-54) (43.66±9.81)	0.001	1-3: 0.004
C19P-S						
	Psychological	13 (6-24) (13.62±4.01)	12 (6-25) (13.13±4.54)	14.5 (11-22) (14.16±4.21)	0.109	-
	Somatic	8 (5-13) (7.52±2.32)	6 (5-17) (7.40±3.11)	6.5 (5-9) (6.83±2.04)	0.652	-
	Social	10 (5-17) (9.87±2.64)	9.5 (5-19) (9.23±3.64)	10.5 (7-14) (10.83±2.48)	0.137	-
	Economic	6 (4-10) (6.05±1.75)	5 (4-15) (6.54±3.05)	8 (4-11) (7.66±2.73)	0.348	-
	Total	39 (20-57) (37.07±9.20)	35.5 (20-70) (36.3±12.38)	42.5 (27-52) (39.48±9.22)	0.183	-

Kruskal-Wallis test with Dunn-Bonferroni post-hoc test

HBSSRA: Health-Belief Scale on Sportive Recreational Activities

MBI: Maslach Burnout Inventory; C19P-S: COVID-19 Phobia Scale



**Figure 1** Box plot showing the distribution of Maslach Burnout Inventory (MBI) scores by physicians' level of doing sports activities

The correlation analysis results between HBSSRA total and C19P-S total scores and MBI total and subscale scores are shown in Table 2. A weak statistically significant negative correlation was found between HBSSRA total scores and MBI Emotional exhaustion and MBI total scores ( $r=-0.407, P=0.001$ ;  $r=-0.313, P=0.009$ , respectively). No significant correlation was found between HBSSRA total scores and MBI Depersonalization and Personal accomplishment scores ( $P=0.107$ ;  $P=0.067$ , respectively). A weak statistically significant positive correlation was found between C19P-S total scores and MBI Emotional exhaustion scores ( $r=0.327, P=0.038$ ). No significant correlation was found between C19P-S total scores and MBI Depersonalization, Personal accomplishment and total scores ( $P=0.458$ ;  $P=0.128, P=0.123$ , respectively).

**Table 2** The results of correlation analysis between Health-Belief Scale on Sportive Recreational Activities (HBSSRA) and COVID-19 Phobia Scale (C19P-S) Scale and Maslach Burnout Inventory (MBI)

Scales	MBI			
	Emotional exhaustion	Depersonalization	Personal accomplishment	Total
HBSSRA Total	$r= -0.407$ $P=0.001$	$r=0.103$ $P=0.107$	$r=0.279$ $P=0.067$	$r= -0.313$ $P=0.009$
C19P-S Total	$r=0.327$ $P=0.038$	$r=0.093$ $P=0.458$	$r=0.087$ $P=0.128$	$r=0.109$ $P=0.123$

HBSSRA: Health-Belief Scale on Sportive Recreational Activities

MBI: Maslach Burnout Inventory

C19P-S: COVID-19 Phobia Scale

SD: Standard deviation



Univariate and multivariate logistic regression (LR) analyses were performed to determine whether physicians' level of doing sports activities, sporting recreational attitudes, gender, age, previous diagnosis of COVID-19, and COVID-19 phobia levels were effective risk factors on physicians' emotional burnout levels, and statistical results were presented in Table 3. According to univariate LR analysis results, the effects of gender, COVID-19 diagnosis status and C19P-S total score on emotional burnout were not significant ( $P=0.765$ ,  $P=0.710$ ,  $P=0.108$ , respectively). The effect of physicians' age on emotional burnout level was significant ( $P=0.018$ ). 1-unit increase in physician age increased the probability of Emotional Exhaustion by 1.23 (1.11-1.34) times (23%) higher. The effect of moderate exercise on Emotional Exhaustion was not significant compared to low-level exercise ( $P=0.126$ ). The possibility of emotional burnout was found 1.57 (1.23-1.89 times) higher in physicians (57%) who do low-level sports activities than physicians who do high-level sports activities. It was determined that the increase in HBSSRA scores had a protective effect on emotional burnout ( $P=0.033$ , OR (95%CI): 0.70 (0.61-0.82)). 1-unit increase in HBSSRA total scores reduced the probability of emotional burnout by 1.43 (1/0.7) times (43%) higher.

According to Multivariate LR analysis results, the effect of physicians' age on emotional burnout was significant ( $P=0.011$ ). 1-unit increase in physician age increased the probability of emotional burnout by 1.18 (1.06-1.29) times (18%). The probability of Emotional Exhaustion in physicians doing low level of sports activities was 1.45 (1.18-1.72) times (45%) higher compared to physicians doing sports activities at high level. 1-unit increase in HBSSRA total scores reduced the probability of emotional burnout by 1.39 (1/0.72) times (39%) higher.

**Table 3** The results of univariate and multivariate binary logistic regression analysis to determine the effects of the level of doing sports activity, the attitude towards sportive recreation activities and some other factors on the burnout levels (Emotional Exhaustion: Low/medium vs. high) of the physicians

	Univariate		Multivariate	
	P values	OR (95 %)	P values	OR (95 %)
Gender	0.765	-	ni	-
Age	0.018	1.23 (1.11-1.34)	0.011	1.18 (1.06-1.29)
Level of doing sports activities				
Low vs. Moderate	0.126	-		
Low vs. High	0.006	1.57 (1.23-1.89)	0.008	1.45 (1.18-1.72)
HBSSRA total	0.033	0.70 (0.61-0.82)	0.028	0.72 (0.84-0.62)
COVID-19 diagnostic status	0.710	-	ni	-
C19P-S total	0.108	-	ni	-

ns: not significant, ni: not included, OR: Odds ratio, CI: Confidence interval

HBSSRA: Health-Belief Scale on Sportive Recreational Activities

C19P-S: COVID-19 Phobia Scale

#### 4. DISCUSSION

In this study, the effect of sports activities and attitudes towards sports on burnout and Covid-19 phobia in physicians was investigated. The issue of burnout in physicians has received increasing attention in recent years (Dyrbye et al., 2014; West et al., 2011). Studies have shown that burnout rates among physicians are higher than among individuals in other professions (Shanafelt et al., 2012; Shanafelt et al., 2015). In addition, studies have emphasized that the COVID-19 pandemic process increases burnout levels in physicians. Fear of being infected and interruption of social support during isolation have been identified as critical factors that may affect burnout (Hossain et al., 2020).

One of the most important findings of our study is that the burnout levels of physicians differ significantly according to their level of doing sports activities (low-medium-high) (Table 1). Various evidence has shown that physical activity can be effective in improving mental health and having the potential to prevent symptoms of mental health disorders that can lead to burnout, such as depression and anxiety (Maugeri et al., 2020). Consistent with the literature, in our study, burnout levels were found to be significantly lower in physicians who did moderate and high levels of sports activities compared to those who did low levels of sports activities (Table 1). However, there was no significant difference in the severity of COVID-19 phobia according to the level of participation of physicians in sports activities. This may suggest that doing sports activities may be a factor that will prevent COVID-19 phobia.

Although the governments of many countries have implemented interventions such as the supply of disposable materials, the establishment of shelter facilities for health personnel, the support of the community, and psychological assistance, they have not been able to solve the burnout problem experienced by health professionals (Kisa, 2020). Timely recognition of this problem and development of adequate prevention or rehabilitation strategies are required (Ho et al., 2019). Wiederhold et al., (2018) emphasized that a successful intervention for burnout should take into account a wide variety of causes and include different therapeutic tools (Wiederhold et al., 2018). As a preventive health service in the world and in our country, sportive recreation activities have started to find value day by day. For this reason, the Health Belief Model plays an important role in determining and measuring people's health protection behaviors. The health benefits of sportive recreation activities are known. Since sports recreation activities are carried out on a voluntary basis and for pleasure, their effect is important in preventing disease, protecting and improving health. Sportive recreation activities, which people willingly participate in with pleasure, lead people to an active life, while at the same time saturating them spiritually (Ertüzün and Karaküçük, 2014). In our study, which supports the literature, it was determined that there was a negative correlation between attitudes towards sportive recreation activities and burnout levels (Table 2).

In a study conducted with healthcare professionals during the pandemic process, working hours, psychological comorbidities, fear of infection, and perceived support by friends were determined as the predictors of the three components of burnout. Being a woman, being a nurse, working in a hospital, being in contact with COVID-19 patients were found to be predictors of both emotional exhaustion and depersonalization (Dinibutun, 2020). In our study, gender and COVID-19 phobia were not found to be predictive factors for emotional exhaustion (Table 3). Physician age was found to increase emotional burnout. Considering the chronic nature of burnout, this finding can be said as a predictable result. On the other hand, according to the results of regression analysis in our study, it was seen that participation in moderate and high level sports activities and engaging in recreational activities decreased the possibility of emotional burnout. This finding suggests that including sports activities and recreational activities in daily life is a protective factor on burnout.

Monitoring the general health conditions, including mental health, of healthcare professionals in times of crisis such as the pandemic process will have a positive effect on the burnout level of physicians. In order to support healthcare professionals working with COVID-19 patients during and after emergencies, working hours regulation programs, implementing strategies to reduce decision-making pressure, planning formal and informal rewards, individual or group psychological support programs are among the important protective factors to both increase the motivation of employees and reduce their burnout levels (Ho et al., 2019). Our study reveals the importance of spending time and participating in sports activities in addition to these strategies.

The limitation of our study includes obtaining information based on the scales and self-reports from the participants and the inability to reach a cause-effect relationship due to the use of a cross-sectional study design in the study. The relatively large sample size, the fact that it was conducted in a special group such as physicians, and there was no previous study on this subject in the literature can be said to be the superior aspects of our study.

## 5. CONCLUSION

The results of our study, which aims to investigate the effects of COVID-19 phobia, doing sportive activity and attitudes towards recreational activities on burnout in physicians, are important because there is no similar study in the literature. Burnout in physicians is an important public health problem. We assume that burnout levels have increased due to the COVID-19 crisis and its consequences. For COVID-19 pandemic and future pandemics, preventive and supportive measures should be taken to protect mental health as well as the physical health of all healthcare workers. As a result of our study, we are hopeful that the findings obtained from physicians will reveal the importance of sports and recreational activities and will pave the way for improvement strategies that will benefit those at the forefront of the COVID-19 crisis.

### **Ethical approval**

The study was approved by the local ethics committee (dated 29.12.2021 and numbered 2021-88) and conducted according to the principles of the Declaration of Helsinki.

### **Informed consent**

All physicians gave written informed consent.

### **Authors' contribution**

All authors contributed equally to the manuscript and read and approved the final version of the manuscript.

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This study has not received any external funding.

**Conflicts of interest**

The authors declare that there are no conflicts of interests.

**Data and materials availability**

All data associated with this study are present in the paper.

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