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Physical activity changes of sport sciences students in terms of covid-19 pandemic

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Highlights

- Covid-19 pandemic lockdown had a negative impact on physical activity levels of sport sciences students in higher education.
- The physical activity levels of sports sciences students decreased during the Covid-19 pandemic.
- Home-based physical activities are recommended for social restrictions that prevent physical activity participation.

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Physical activity changes of sport sciences students in terms of covid-19 pandemic

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ABSTRACT

This study aimed to examine changes in physical activity levels of sport sciences students during covid-19 pandemic in Turkey. A total of 225 (164 females, 61 males) students participated in the study from 15 different cities. An International Physical Activity Questionnaire-Short Form (IPAQ-S) was used for data collection through online. Participants responed the questionnaire for total weekly physical activity energy expenditure before and during quarantine (i.e. the sum of walking, moderate-intensity physical activities, and vigorous-intensity physical activities) using Metabolic Equivalent-minutes/per week (MET–min/wk). When the averages of weekly physical activity durations and frequencies in terms of MET were compared according to the physical activity levels of the students, it was seen that there was significant decrease in both walking, moderate intensity, high intensity and total physical activity participation during the pandemic compared to the pre-pandemic (p=.000). On the other hand sitting and sleeping hour in the day during the pandemic increased significantly (p=000). This study revealed that there was a relative decrease in the rate of physical activity participation of university students studying in the field of sport sciences as well during the COVID-19 pandemic in Turkey.

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Introduction

The coronavirus disease (COVID-19), caused by the SARS-CoV-2 virus, first appeared in China's Wuhan Province in late December 2019, then spread from person to person and spread to all countries of the world. The first case of COVID-19 in our country was detected on March 11, 2020, and in the following process, the number of cases increased in our country as well as in the world (TC Ministry of Health, 2020). According to the World Health Organization statements, as of April 12, 2022, a total of 497,960,492 confirmed cases of COVID-19, including 6,181,850 deaths, have been detected worldwide (World Health Organization, WHO, 2022).

Following the WHO's declaration of COVID-19 as a pandemic, travel restrictions and home quarantine practices brought with the uncertainty and prolongation of the pandemic have limited people's access to gyms, parks and other public places where they can be physically active (Honey-Rosés et al., 2020). Both national (Korkut Gençalp, 2020; Kaya Ciddi and Yazgan, 2020; Ercan and Keklicek, 2020; Tural, 2020; Cihan and Şahbaz Pirinççi, 2020; Ünlü et al., 2020), and international studies (Maugeri, Castrogiovanni et al., 2020; Sallis et al., 2021) revealed that insufficient physical activity has become even more evident during the pandemic especially due to curfews and home quarantines.

The fact that 23% of adults and 81% of young people between the ages of 11 and 17 do not meet WHO's recommended physical activity requirements for health (WHO, 2018) shows that physical inactivity was a global problem even before the pandemic. The rate of overweight in children and young people, which is increasing day by day, is considered a serious public health problem. In the United States, 15 percent of youth are overweight (Troiano, 2002). Guthold et al. (2018) with 1.9 million participants from 168 countries, it was stated that the global level of physical activity deficiency was stable between 2001 and 2016, and the rate of standardized according to age was 27.5%. In order for individuals to be considered physically active, according to the guidelines of the American Dietetic Association and the American College of Sports Medicine (ACSM); individuals are required to do moderate-intensity physical activity for at least 30 minutes every day or most days of the week. The results of Öztürk's (2005) research with 1097 university students to examine the physical activity levels of university students before the pandemic, showed that 15% of university students were inactive, 67% were minimally active, and only 18% participate in physical activity at a level that would increase and protect health. Another study conducted by Ölçücü, Vatansever, Özcan et al. (2015) with 455 university students revealed that 64% of the students were not active or had insufficient physical activity levels. Compared to the rest of the world, the results of the researchs conducted in our country confirmed the fact that the participation rate of young people in physical activity was low.

According to the results of the research, it can be said that the rates of participation in physical activity were even lower during and after the COVID-19 pandemic. For example, in a study conducted by Korkut Gençalp (2020) with 123 university students studying in the first and emergency department in order to examine the physical activity levels of university students during the COVID-19 pandemic process, it was found that 57% of the students were inactive, 32% had low physical activity and only 11% of them had a level of physical activity that could be beneficial for their health. In another study conducted by Tural (2020) with 260 people with an average age of 34 and 49% of whom were university students, it was seen that 51% of the participants were not physically active, 46% had low physical activity levels and had a sufficient level of physical activity for health. It has been revealed that those with a low level of activity had a low rate of only with 3%.

When the results of the research comparing the participation of university students in physical activity in terms of pre-pandemic and pandemic were examined, Ercan and Keklicek (2020)' study with 407 university students indicated that the rate of regular physical activity of the students decreased significantly during the pandemic. It has been revealed that individuals who continue to do physical activity have a tendency to exercises that can be done at home in the choice of physical activity type. In addition, while the rate of those doing regular physical activity was 57% before the pandemic, this rate decreased to 32% during the pandemic. In the research conducted by Kaya Ciddi and Yazgan (2020) with 140 people with an average age of 25, 69% of the participants were inactive individuals with the lowest physical activity levels, It was revealed that 20% of them were minimally active and only 11% were sufficiently active individuals. It was determined that the participants were not doing regular physical activity compared to the pre-isolation period. In the study conducted by Cihan and Şahbaz Pirinççi (2020) with young adults with an average age of 21, it was stated that the daily average number of 2528 steps of the participants was well below the number of steps determined as sedentary behavior (5000 steps). Smilarly, in Ünlü et al. (2020)'s study with 870 people over the age of 18, a significant decrease was found in the physical activity levels of individuals during the pandemic compared to the pre-pandemic.

Based on the results of the research conducted both before and during the pandemic, it was concluded that university students' participation in physical activity was mostly insufficient.

Aim

Based on the need for research on how this situation was especially in university students studying in the sports sciences, the aim of this study was to investigate the changes in physical activity levels of the Faculty of Sports Sciences students during COVID-19 pandemic in Turkey.

Method

The survey model was used in this study because the model aims to describe the subject to be examined as it exists (Karasar, 2009).

Participants

The population of the research was university students studying at Sports Sciences Faculty of public universities in Turkey. Raosoft sample size calculator (Raosoft, 2021) was used to determine the research group, and the required sample size was determined as 264 at 95% confidence level, based on the estimated population and 50% response distribution. An online survey was conducted among students from sport sciences in 15 cities in Turkey: Ankara, Nevşehir, Kayseri, Aksaray, Mersin, Adana, Diyarbakır, Erzurum, Tokat, Samsun, Trabzon, Manisa, İzmir, Bursa, Çanakkale. A total of 264 subjects received the survey, but the only 225 (females %73, males %27) subjects resulted eligible for the study.

Data collection tool

In order to reveal the demographic characteristics of the participants, information on age, gender, height, body weight and exposure to COVID-19 were obtained through a personal information form. The short form of the International Physical Activity Questionnaire (IPAQ), developed by Craig, Marshall, and Sjostrom (2003) was used in order to evaluate the participants' participation in physical activity. Turkish version of the questionnaire for university students were conducted by Öztürk (2005) and valid and reliable results were obtained for this population. Participants were asked to fill out the questionnaire considering the pre-pandemic and pandemic separately. The questionnaire was delivered online to personal contacts of the participants through the social media such as Instagram, Facebook, WhatsApp and e-mails. The questionnaire consisted of seven (7) questions and it gathers information about the time allocated to sitting, low intensity (walking), moderate and high intensity activities. A score was obtained as “MET/minute/week” by multiplying the minute, day and MET value from the survey. 3.3METs for walking, 4.0 METs for moderate-intensity physical activity, and 8.0 METs for vigorous-intensity physical activity were used in calculation. Physical activity levels were considered in three groups; as inactive (physically inactive, <600 MET-min/week), as minimally active (with low physical activity level, 600-3000 MET-min/week) and sufficiently active (with sufficient physical activity level, >3000 MET-min/week). The time spent sitting was considered as a separate question.

Data Collection Process

Data were collected during September - October in 2022 using online survey software (Google Forms). The questionnaire was delivered to all participants via social media channels after obtaining Ethics Committee Approval from Nevsehir Hacı Bektas Veli University (2100121291/2022.07.70). Voluntary participation was the basis on filling out the questionnaire.

Analysis of Data

Body mass index was calculated as weight (kg)/(height (m)^2. SPSS for Windows version 20.0 package program (SPSS Inc., Chicago, IL., USA) was used for statistical analysis and $p<0.05$ was considered statistically significant. Analysis of demographic information was done through descriptive statistics, and comparative analyses were executed through dependent t-test for one sample.

Findings

The average age of the university students participating in the study was 21.07±2.58 (min=16, max=29), average body weight was 61.80±12.91 kg (min=42kg, max= 140kg) and average height was 167.28±8.63 cm (min=150cm, max=208cm). Body Mass Index was calculated as weight (kg)/(height (m)^2. Average Body Mass Index values were found to be 21.97±3.49 kg/m2 (min=15.95, max=45.71). Descriptive statistics of all participants were given in Table 1, and by gender were given in Table 2 and Table 3.

Table 1. Descriptive statistics of all participants (n=225)

Variables	Min	Max	Mean	Sd
Age (years)	16	29	21.07	2.58
Weight (kg)	42.0	140	61.08	12,91
Height (cm)	150.0	208	167.28	8,63
Body Mass Index (kg/m^2)	15.95	45.71	21.97	3.49

Table 2. Descriptive statistics of female participants (n=164)

Variables	Min	Max	Mean	Sd
Age (years)	16	29	21.13	2.61
Weight (kg)	42.0	93.0	57.15	8.36
Height (cm)	150.0	180.0	163.69	5.34
Body Mass Index (kg/m^2)	16.49	36.33	21.33	2.98

Table 3. Descriptive statistics of male participants (n=61)

Variables	Min	Max	Mean	Sd
Age (years)	17	28	20.90	2.49
Weight (kg)	50	140	74.30	14.64
Height (cm)	160.0	208.0	176.92	8.40
Body Mass Index (kg/m^2)	15.95	45.71	23.69	4.17

The personal exposure of the participants to COVID-19 during the pandemic was given in Table 4.

Table 4. Personal exposure of the participants to COVID-19 during the pandemic (n=225)

Personal exposure of the participants	f	%
I went out at least once a day	41	17.9
I went out at least once a week	60	26.8
I went out less than once a week	37	16.5
I went out at least once a month	19	8.5
I went out less than once a month	17	7.6
I have been in contact with a COVID-19 patient or quarantined for 14 days	27	12.1
I have been diagnosed with COVID-19 or have experienced symptoms of COVID-19	24	10.7

When Table 4 was examined, 27% of university students went out at least once a week, 18% went out at least once a day, 12% were in contact with a COVID-19 patient or stay in quarantine for 14 days, 11% seemed to have been diagnosed with COVID-19 or were experienced symptoms of COVID-19.

Participation of university students at Faculty of Sport Sciences in physical activity before and during the pandemic were compared with t-test for the dependent groups were given in Table 5.

Table 5. Comparison of participants' participation in physical activity before and during the pandemic according to their physical activity levels

Physical Activity Level (MET-minutes/week	n	%	Before Pandemic Mean ±Sd	During Pandemic Mean ± Sd	t	p
Walking	112	49.78	924.59±431.25	348.86±276.83	16.839	.000*
Moderate	52	23.11	564.23±190.21	289.62±137.91	9.142	.000*
High	61	27.11	2433.44±291.35	826.23±187.10	6.744	.000*
Total	225	100	3922.26±912.81	1464.71±601.84	10.908	.000*

*p=.000

As can be seen in Table 4, 50% of university students regularly do walking activity, 27% do high-intensity physical activity, and 23% do moderate-intensity physical activity. When the averages of weekly physical activity durations and frequencies in terms of MET were compared according to the physical activity levels of the students, it was seen that there was a significant decrease in both walking, moderate intensity, high intensity and total physical activity participation during the pandemic compared to the pre-pandemic (p=.000).

On the other hand when asked about the time period that university students spend sitting in a day, it was found that it was 4.96 ± 2.89 hours before the pandemic and 7.86 ± 5.52 hours during the pandemic. When compared before and during the pandemic, it was revealed that the time spent sitting down during the pandemic increased significantly (t=-9.015, df=224, p=.000). When students were asked about the time they spent sleeping during the day, it was found that it was 7.24 ± 1.18 hours on average before the pandemic and 8.06 ± 1.63 hours during the pandemic. When compared, it was found that daily sleep time increased significantly during the pandemic (t=-7.230, df=224, p=.000).

Discussion and Conclusion

The present study was designed to examine to changes in physical activity levels of sport sciences students during COVID-19 pandemic in Turkey. When analyzed according to the classification of the World Health Organization, of university students at faculty of sport sciences 12% (n=27) of them were underweight, 73% (n=163) of them were healthy, 14% (n=31) of them were overweight, and 1% (n=3) was obese. This situation, which did not differ according to gender (BMI mean; female = 21.33 ± 2.98 male = 23.69 ± 4.17), was similar to the average of young population living in the USA reported by Troiano (2002).

When considered by the duration of participation in physical activity and the level of physical activity calculated with MET value, even in the simplest form of walking activity, showed a decrease of approximately 1/3 during the pandemic compared to the pre-pandemic. It was seen that the difference between the MET (min/wk) value calculated for walking activity before and after the pandemic was significant (t-16.839 p=.000). The situation was similar for moderate (t=9.142, p=.000) and high-intensity (t=6.744, p<.01) physical activity levels. Considering the total MET value, which includes all physical activity levels, the situation was same during the pandemic (t=10.908, p=.000) for the students of Faculty of Sports Sciences. This result can be evaluated in two different dimensions. The first of this was that the pre-pandemic physical activity levels of sports science students were higher than the sedanter student profile at the university. Regarding this, the results of Öztürk (2005)'s research support our thought. Because he indicated in his study that 15% of the students were inactive and 67% were minimally active from a total of 1097 university students. Similarly, considering the pre-pandemic process, Ölçücü et al. (2015) indicated that 64% of the students had inactive or insufficient physical activity levels in his research with 455

university students. Even though COVID-19 pandemic, considering these data, it can be said that it was not as negative effect as on the students attending the Faculty of Sports Sciences as compared with the sedanter students at another departments of university. In the second dimension, when compared with the national and international literature, the physical inactivity status due to the limitations during the entire pandemic has decreased significantly for sports science students as well. It can be said that this decrease was inversely proportional to the significant increase in the sitting (t=-9.015, df=224, p=.000) and sleep (t=-7.230, df=224, p=.000) times of the students.

The physical activity decrease obtained in the present study was in line with the results obtained literature. For example, in the research conducted by Korkut Gençalp (2020) with university students studying in the first aid and emergency department, only 11% of the students, and in the research of Kaya Ciddi and Yazgan (2020), only 11% of the individuals with an average age of 25, and in the research of Tural (2020) only 3% of individuals with an average age of 34 were found sufficient physical activity level in terms of health. In the present study, 17.9% of sports science students with an average age of 20.90 were individuals who went out at least once a day and exercise. In this sense, when compared with the results of the research, it can be said that they were physically active at a higher rate compared to their peers.

The situation was similar in other research results comparing physical activity levels between university students and the youth population in the community before and after the pandemic. Ercan and Keklicek (2020) reported that the rate of regular physical activity among university students during the pandemic decreased significantly from 57% to 32%. Again, Ünlü et al. (2020) with 870 people over the age of 18, was found a significant decrease in the physical activity levels of individuals during the pandemic compared to the pre-pandemic. Similar results also were obtained from international studies. For example, in the study of Ding et al. (2021a) with a total of 11,775 participants aged between 18 and 34 from 11 different countries examined factors associated with physical activity engagement reported that proportions of participants being insufficiently active, level of physical activity, and decrease in physical activity levels were significant different compared to pre-pandemic. Bourdas and Zacharakis (2020) in their study related with physical activity changes in the Greek population with a mean age of 37.2 before and after the pandemic, they mentioned that during the lockdown, physical activity level decreased 16.3% for overall as compared to a normal week. Clemente-Su´arez et al. (2022) rewieved that, researches they were scanned around international literature concluded that a baseline sedentary lifestyle increased the mortality of hospitalized patients with COVID-19. Additionally, in their study on changes in the physical activity levels during self-quarantine in Italy, Maugeri et al. (2020) found that total physical activity significantly decreased between before and during COVID-19 pandemic (Mean: 2429 vs. 1577 MET–min/wk) Considering the total decrease in physical activity in our study, it was more dramatic than the decrease obtained in the Italian

population (Mean=3922 vs. 1464 MET–min/wk). Of course, it can be said that this decrease was due to the fact that the study group was mostly sports science university students with a high athlete population. In the literature, there were data indicating that a decrease in physical activity may not only have a detrimental advantage related to the body mass index, but also lead to some mental and psychological consequences. For example, Durstine at al. (2013) mentioned that decreased degrees of physical activity might have a negative impact on the management of chronic health issues as well as metabolic, pulmonary, and medical specialty conditions. In fact Ding et al. (2021b) compared anxiety and depression symptoms during the COVID-19 lockdown among adults from 11 countries and found that Greater personal COVID-19 exposure was associated with increased anxiety and depression symptoms. I was not examined in our study from this perspective.

As a conclusion, it can be said that even though the decrease level of physical activity among sports science students during the pandemic was not in very bad condition, it was obvious that COVID-19 pandemic lockdown had a negative impact on this population as well.

Implication and Suggestions

The most prominent limitation of the study was asking participants to report their physical activity participation at the same time point for two different situations as before and during COVID-19. On the other hand, the fact that the measurement tool used in this study was the strength of the research as for was proven to be valid and reliable on different groups. The results can be supported by qualitative studies in order to reveal the reasons for not being able to participating in physical activity in depth.

Research Limitations and Future Research

It is recommended to use the mixed method so that the physical activity levels collected by the scale are supported by the qualitative measurement data.

Author Contributions

The "The First author contributed to data collection, statistics and written of the article, second author contributed to ethical committee application, data collection section and writing of the article, last author contributed to the data collection and statistical sections.

Publication Ethics

In this article, the journal writing rules, publication principles, research and publication ethics, and journal ethical rules were followed. The responsibility belongs to the author (s) for any violations that may arise regarding the article.

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