Long-term impact of COVID-19 restrictions on physical activity and social interactions in young adults

Genç yetişkinlerde COVID-19 kısıtlamalarının fiziksel aktivite ve sosyal etkileşimler üzerindeki uzun dönem etkisi

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Abstract

Aim: Coronavirus Disease 2019 (COVID-19) was declared pandemic by World Health Organization on March 11, 2020. Restrictions to prevent the spread of the infection brought about global quarantine process and affected people's physical activity and social interactions. Although COVID-19 restrictions are over today, long-term impact of the restrictions are unclear. The aim of this study is to investigate the long-term impact of COVID-19 restrictions on physical activity and social interactions in young adults, depending on whether they had a history of COVID-19 or not.

Methods: This study was conducted with young adults after COVID-19 restrictions. Young adults answered a demographic form and a COVID-19-related questionnaire created by researchers. Physical activity was evaluated with International Physical Activity Questionnaire-Short Form (IPAQ-SF) and calculated in metabolic equivalent (MET). Social interaction anxiety and social phobia were assessed with Social Interaction Anxiety Scale (SIAS) and Social Phobia Scale (SPS), both scored between 0-80, with higher scores indicating greater severity. Data were analyzed using Statistical Package for Social Sciences (SPSS) 22.0. Normality was assessed by the Kolmogorov-Smirnov test. Parametric data were compared using the Independent Samples t-Test, and categorical variables with the Chi-Square test. $p<0.05$ was considered significant.

Results: A Total of 163 young adults (age: 22.17 ± 1.73 years, COVID-19/non-COVID-19: 71/92, IPAQ-SF: 1660.83 ± 1728.84 MET, SIAS: 28.77 ± 13.53 SPS: 22.60 ± 15.96) participated. We found a statistically significant difference between COVID-19 groups according to the days spent outdoors [52.1% versus 66.3%, COVID-19 (0-3 days) versus non-COVID-19 (4-7 days), $p = 0.025$]. There was no statistically significant difference in IPAQ-SF ($p = 0.428$), SIAS ($p = 0.540$), and SPS ($p = 0.971$) according to having history of COVID-19.

Conclusion: Having history of COVID-19 does not affect physical activity and social interactions after restrictions in young adults. However, considering that COVID-19 group spent outdoors less often, we think that impact of COVID-19 restrictions is still open to research.

Keywords: COVID-19; social interaction; young adult

Öz

Amaç: Dünya Sağlık Örgütü, 11 Mart 2020›de koronavirüs hastalığı-2019›u (COVID-19) pandemi olarak ilan etti. Enfeksiyonun yayılmasını önlemek amacıyla getirilen kısıtlamalar, dünya çapında bir karantina sürecine yol açtı ve insanların fiziksel aktivitelerini ve sosyal etkileşimlerini etkiledi. COVID-19 kısıtlamaları bugün sona ermiş olmasına rağmen, kısıtlamaların uzun vadeli etkileri belirsizdir. Bu çalışmanın amacı, COVID-19 kısıtlamalarının uzun dönem etkilerinin, bireylerin COVID-19 geçmişi olup olmamasına bağlı olarak, genç yetişkinlerde fiziksel aktivite ve sosyal etkileşimler üzerindeki etkisini araştırmaktır.

Yöntemler: Çalışmamız COVID-19 kısıtlamalarından sonra genç yetişkinlerle gerçekleştirilmiştir. Genç yetişkinler, araştırmacılar tarafından oluşturulan demografik bilgi formu ve COVID-19 ile ilgili anketi yanıtladı. Fiziksel aktivite, Uluslararası Fiziksel Aktivite Anketi-Kısa Form (UFAA-KF) ile değerlendirildi ve metabolik eşdeğer (MET) olarak hesaplandı. Sosyal etkileşim kaygısı ve sosyal fobi; Sosyal Etkileşim Kaygı Ölçeği (SEKÖ) ve Sosyal Fobi Ölçeği (SFÖ) ile değerlendirildi; her iki ölçek de 0-80 arasında puanlanır ve daha yüksek puanlar daha büyük şiddeti gösterir. Çalışmanın verileri Statistical Package for Social Sciences (SPSS) 22.0 ile analiz edildi. Normallik analizi, Kolmogorov-Smirnov testiyle gerçekleştirildi. Parametrik veriler Independent Samples t-Test ile karşılaştırıldı. Kategorik değişkenler için Ki-Kare testi kullanıldı. $p<0.05$ anlamlı kabul edildi.

Bulgular: Toplamda 163 genç yetişkin (yaş: 22,17 ± 1,73 yıl, COVID-19 geçirmiş/COVID-19 geçirmemiş: 71/92, UFAA-KF: 1660,83 ± 1728,84 MET, SEKÖ: 28,77 ± 13,53, SFÖ: 22,60 ± 15,96) çalışmaya katıldı. COVID-19 geçirme durumuna göre belirlenen gruplar arasında dışarıda geçirilen günler açısından istatistiksel olarak anlamlı fark bulundu [%52,1'e karşı %66,3, COVID-19 geçirmiş gruba (0-3 gün) karşı COVID-19 geçirmemiş grup (4-7 gün), $p = 0,025$]. COVID-19 geçirme durumuna göre belirlenen gruplar arasında UFAA-KF ($p = 0,428$), SEKÖ ($p = 0,540$) ve SFÖ ($p = 0,971$) açısından istatistiksel olarak anlamlı fark bulunmadı.

Sonuç: COVID-19 geçirme öyküsü, kısıtlamalardan sonra genç yetişkinlerde fiziksel aktivite ve sosyal etkileşimleri etkilememektedir. Ancak, COVID-19 geçirmiş grubun daha az sıklıkla dışarıda zaman geçirdiği göz önüne alındığında, COVID-19 kısıtlamalarının etkisinin araştırmaya açık olduğunu düşünmekteyiz.

Anahtar Sözcükler: COVID-19; genç erişkin; sosyal etkileşim

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INTRODUCTION

Coronavirus Disease 2019 (COVID-19), which started in Wuhan, China, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (1). In order to control the COVID-19 pandemic, some measures have been taken, such as social distancing rules, closure of schools, universities, and workplaces, reducing the use of public places, and restrictions on sports and cultural events. These interventions, recognized for their effectiveness in curtailing the transmission of the virus, successfully addressed the immediate public health crisis (2,3). Although these restrictions were effective in preventing the spread of infection, they caused health problems (4).

The implementation of curfews in response to the COVID-19 pandemic has profoundly disrupted daily routines, significantly impacting individuals' engagement in physical activities. This paradigm shift in lifestyle, a direct consequence of pandemic-induced restrictions, stands as a pivotal factor influencing the physical fitness of diverse populations (5,6). Throughout the pandemic, the dangers associated with physical inactivity and a sedentary lifestyle have emerged as tangible threats, affecting both the health of those infected with the virus and the broader community. Research underscores the critical role of maintaining an active lifestyle, particularly during periods of restricted mobility, to counteract the potential adverse health outcomes associated with sedentary behavior and promote robust physical fitness (7,8). The consequences of prolonged physical inactivity extend beyond the immediate concerns of viral transmission. Long-term physical inactivity can affect biopsychosocial health by affecting many systems in the body (5). Most studies that were conducted in the healthy adult population show that physical inactivity behaviors are prolonged due to the COVID-19 restrictions, and the physical activity level of individuals with chronic diseases, middle-aged people, and especially women decreases significantly (9,10).

Social interaction serves as the lifeblood of human connection, epitomizing the intricate dance of information exchange and interpersonal engagement that binds communities together (11). Communicating and interacting with others is crucial to maintaining social relationships and building social connectedness (12). Also, the exchange of information and shared experiences within social contexts can influence lifestyle choices, including exercise habits and participation in physical activities. In supportive social environments, individuals may be more motivated to engage in fitness-related behaviors, such as joining group exercise classes or participating in recreational sports (13). Health and disease encompass psychosocial states as well as physiological experiences. This reciprocal relationship between health and social interaction underscores the interconnectedness of human experience. Just as health can shape the quality and frequency of social interactions, so too can social connectedness impact individual well-being. Recognizing this symbiotic relationship is essential for fostering environments that support holistic health and resilience. Therefore, factors that negatively affect an individual's health can easily affect a person's communication and relationships (14,15). Accordingly, it can be said that social distance rules and restriction strategies associated with the COVID-19 pandemic have the potential to reduce the frequency or quality of an individual's social interactions (16). As of March 2020, restrictions were applied in Türkiye to ensure physical distancing requirements and prevent the spread of the pandemic. A curfew was initiated due to COVID-19 restrictions. Shopping malls, restaurants, and cafes were closed, and entertainment, art, and cultural activities were postponed. Face-to-face education was paused, and online distance education started. These restrictions have been suspended since March 2021 (17).

There are studies on the impact of quarantine measures taken during the COVID-19 pandemic on individuals' physical or social activities (18-20). Although these studies provide information about physical and social health status during the COVID-19 pandemic, they did not mention the return and adaptation to physical and social activities after COVID-19 restrictions in young adults. We think that individuals with a history of COVID-19 may face difficulties in the adaptation process after COVID-19 restrictions, and this may change their participation in physical and social activities. The aim of this study is to investigate the long-term impact of COVID-19 restrictions on physical activity and social interactions in young adults, depending on whether they had a history of COVID-19 or not.

MATERIAL AND METHODS

Study design

This prospective and cross-sectional study was conducted in accordance with the Declaration of Helsinki. The study was approved by the Bezmialem Vakıf University Non-Interventional Research Ethics Committee (date: 23.06.2022, decision no: 2022/186). This study was registered at ClinicalTrials.gov (#NCT06135623). This study was conducted as an online survey on 'Google Forms'. All young adults took part in the study voluntarily, gave informed consent to participate. Data were collected in June-November 2022.

Participants

Young adults aged 18-25 without intellectual disabilities were included in the study. The online survey was delivered to approximately 2,500 people and viewed by nearly 1,000 people. 563 people excluded due to age. 274 young adults did not fill out the complete survey. The remaining 163 young adults participated in the study. Participants were divided into two groups: COVID-19 and non-COVID-19 group, depending on whether they had a history of COVID-19 or not.

Outcomes

Demographic and COVID-19-related characteristics of young adults were assessed with a questionnaire constituted by the researchers. Physical activity levels were scored with the International Physical Activity Questionnaire-Short Form (IPAQ-SF). The anxiety and phobia experienced by the participants during their social interactions were evaluated with the Social Interaction Anxiety Scale (SIAS) and Social Phobia Scale (SPS). Evaluations in the study used self-reported data.

Demographic characteristics and COVID-19-related questionnaire

Demographic information form included questions about gender, age, height, weight, smoking, using alcohol, chronic disease, and accommodation (dormitory, family home, alone). In the COVID-19-related questionnaire, which was constituted by the researchers, questions were asked about the post-COVID-19 pandemic. In this questionnaire, the presence of a COVID-19 history, vaccination status, frequency of days spent outdoors, and frequency of participation in cultural and social activities after restrictions were questioned.

International physical activity questionnaire short form

The short form of the International Physical Activity Questionnaire (IPAQ-SF) was used to determine the physical activity levels. The questionnaire includes a total of 7 questions in 4 separate sections about activities done for at least 10 minutes in the last 7 days. The first two questions are about vigorous physical activity, the next two questions are about moderate physical activity, the next two questions are about walking activity, and the last question is about time spent sitting. The activities in the questionnaire are scored as "Metabolic Equivalent-minutes/week (MET min/wk)" (Total physical activity min/wk: Time spent on vigorous + moderate + walking; MET min/wk: 8 × vigorous + 4 × moderate + 3.3 × walking). Physical activity levels are classified as inactive (< 600 MET min/week), active (600 - 3000 MET min/week), and very active (> 3000 MET min/week) (21-23).

Social interaction anxiety scale

Social interaction anxiety levels were measured with the Social Interaction Anxiety Scale. SIAS, developed by Mattick and Clarke, measures the anxiety that occurs during a person's interactions with others. The scale contains 20 items where the respondent rates how much each item relates to them using a 5-point Likert scale, scored as 0 points (not at all), 1 point (slightly), 2 points (moderately), 3 points (very), 4 points (extremely). The total score is calculated by summarizing all item scores, meaning that all total scores on SIAS vary between zero and 80. A high score indicates a high level of anxiety (24).

Social phobia scale

Social phobia levels were evaluated using the Social Phobia Scale. SPS, developed by Mattick and Clarke, is a scale used to assess symptoms such as fear of being watched that occur during routine activities such as eating, drinking, or writing. SPS is comprised of 20 items, where each item is rated on a five-point scale, ranging

from 0 (not at all) to 4 (extremely). The total score is calculated by summarizing all item scores, meaning that all total scores on SPS vary between zero and 80. A high score indicates a high level of social phobia (24). SIAS and SPS are two interrelated and complementary scales used to measure social situations (25).

Statistical analyses

Statistical Package for Social Sciences (SPSS Inc., Version 22.0, Chicago, IL., USA) statistical program was used in the data analysis of the study. To select the appropriate advanced statistical analyses for this analysis, whether the distribution of the data groups was normal or not was determined by the "One-sam-ple Kolmogorov-Smirnov" test. The one-sample Kol-mogorov-Smirnov test is used to test whether a sample comes from a specific distribution. We can use this procedure to determine whether a sample comes from a population that is normally distributed. Parametric variables were expressed as mean ± standard deviation (Mean ± SD), descriptive variables were expressed as percentages. Pearson correlation coefficients were calculated to test for overall relationships between the contributor variables and International Physical Activity Questionnaire Short Form, Social Interac-tion Anxiety Scale, and Social Phobia Scale scores, and between COVID-19 history for defined groups. Group comparison of categorical data was done with Chi-Square test. The demographic characteristics of individuals in both groups and the measurements of the questionnaires were compared with "Independent Samples t-Test (Student Test)". Correlation strength level was evaluated according to Cohen's Kappa coef-ficient. Correlation strength was categorized as "very weak" (0.00 - 0.19), "weak" (0.20 - 0.39), "moderate" (0.40 - 0.59), "strong" (0.60 - 0.79), and "very strong" (0.80 - 1.00) (26). In all analyses, p <0.05 (two-sided) values were considered statistically significant.

RESULTS

Demographic characteristics and COVID-19-related questionnaire

A total of 163 (129 female, 34 male) participants were included in the study. The period from the beginning to the end of the restrictions was one year, and the study was conducted one year after the COVID-19 restrictions. The mean age of participants was 22.17 ± 1.73 years and 91.4% did not have a chronic disease. Demographic characteristics of the participants are presented in table (Table 1.)

While 43.6% (n = 71) of the participants were included in the COVID-19 group, 56.4% (n = 92) were included in the non-COVID-19 group. Participants' 95.1% (n = 155) were vaccinated against COVID-19 infection. There was a significant difference between the two groups in terms of their thoughts on protecting themselves from COVID-19 infection. During the COVID-19 pandemic, 52.1% (n = 37) of the COVID-19 group and 72.8% (n = 67) of the non-COVID-19 group thought they could adequately protect themselves against the risk of contamination (p = 0.008). A statistically significant difference was found between the groups according to the days spent outdoors. After the restrictions, 52.1% (n = 37) of the COVID-19 group spent outdoors 0-3 days a week, while 66.3% (n = 61) of the non-COVID-19 group spent 4-7 days a week (p = 0.025). There was no significant difference between the COVID-19 group and the non-COVID-19 group in terms of attendance at events such as concerts/theatres (p = 0.464) and frequency of going to cafeterias/restaurants (p = 0.995). COVID-19-related questionnaire results of the participants are presented in table (Table 2).

IPAQ-SF, SIAS, and SPS

According to the results of our study, no significant difference was found between the COVID-19 and non-COVID-19 groups regarding IPAQ-SF (p = 0.428), SIAS (p = 0.540), and SPS (p= 0.971). After COVID-19 restrictions, 53.4% (n = 87) of the participants were "active" and 31.3% (n = 51) were "inactive" and there was no statistically significant difference between the COVID-19 and non-COVID-19 groups (p = 0.114). IPAQ-SF (MET), SIAS, and SPS scores of the participants and the comparison results between the groups are given in table (Table 3, Figure 1). No significant relationship was found between the having history of COVID-19 and the IPAQ-SF (MET) (r = 0.062; p = 0.428), SIAS (r = -0.048; p = 0.54), and SPS (r = 0.003; p = 0.971).

Table 2. Results of COVID-19-related questionnaire of participants

Characteristics	Total (n = 163)	COVID-19 Group (n = 71)	Non-COVID-19 Group (n = 92)	*p*
Being vaccinated against COVID-19, n (%)				
Yes	155 (95.1)	65 (91.5)	90 (97.8)	0.080
No	8 (4.9)	6 (8.5)	2 (2.2)	
Thinking that protected from COVID-19 during the pandemic, n (%)				**0.008**
Yes	104 (63.8)	37 (52.11)	67 (72.82)	
No	59 (36.2)	34 (47.89)	25(27.18)	
Worried about entering crowded places after COVID-19 restrictions, n (%)				0.485
Yes	110 (67.5)	50 (70.4)	60 (65.2)	
No	53 (32.5)	21 (29.6)	32 (34.8)	
Reducing social activities after COVID-19 restrictions n (%)				0.910
Never	6 (3.7)	2 (2.8)	4 (4.3)	
Sometimes	72 (44.2)	33 (46.5)	39 (42.4)	
Always	85 (52.1)	36 (50.7)	49 (53.3)	
Going out after COVID-19 restrictions is uncomfortable, n (%)				0.423
Yes	97 (59.5)	45 (63.4)	52 (56.5)	
No	66 (40.5)	26 (36.6)	40 (43.5)	
Number of days spent outdoors per week after COVID-19 restrictions, n (%)				**0.025**
0-3 days	68 (41.72)	37 (52.11)	31 (33.69)	
4-7 days	95 (58.28)	34 (47.89)	61 (66.31)	
Attendance at concert/theatre events after COVID-19 restrictions, n (%)				0.464
Yes	144(88.34)	61 (85.91)	83 (90.21)	
No	19 (11.66)	10 (14.09)	9 (9.79)	
Decrease in the frequency of going to cafes/restaurants after COVID-19 restrictions, n (%)				0.995
Yes	6 (3.68)	2 (2.82)	4 (4.35)	
No	157(96.32)	69 (97.18)	88 (95.65)	
Frequency of meeting with friends after COVID-19 restrictions, n (%)				
None	3 (1.8)	2 (2.8)	1 (1.1)	0.286
Once a week	57 (35)	27 (38.0)	30 (32.6)	
Two or more per week	103 (63.2)	42 (59.2)	61 (66.3)	
Group or individual activity preference after COVID-19 restrictions, n (%)				0.334
Group	65 (39.9)	25 (35.2)	40 (43.5)	
Individual	98 (60.1)	46 (64.8)	52 (56.5)	
Family/friend relationships affected after COVID-19 restrictions, n (%)				
Never	23 (14.1)	9 (12.7)	14 (15.2)	0.507
Sometimes	111 (68.1)	48 (67.6)	63 (68.5)	
Always	29 (17.8)	14 (19.7)	15 (16.3)	
Changes in habits after COVID-19 restrictions, n (%)				
Never	13 (8)	3 (4.2)	10 (10.9)	0.152
Sometimes	103 (63.2)	45 (63.4)	58 (63.0)	
Always	47 (28.8)	23 (32.4)	24 (26.1)	

* COVID-19: Coronavirus Disease 2019, n: number of participants, %: Percentage, p-values <0.05 were considered significant. Bold denotes p<0.05

Table 1. Demographic characteristics of participants

Characteristics	Total (n = 163)	COVID-19 Group (n = 71)	Non-COVID-19 Group (n = 92)	*p*
Age (years), mean ± SD	22.17 ± 1.73	22.44 ± 1.96	21.96 ± 1.50	0.085[a]
Sex, n (%)				
Female	129 (79.1)	58 (81.7)	71 (77.2)	0.562[b]
Male	34 (20.9)	13 (18.3)	21 (22.8)	
Height (cm), mean ± SD	168.30 ± 8.17	168.76 ± 7.51	167.95 ± 8.66	0.535[a]
Weight (kg), mean ± SD	62.62 ± 12.06	61.42 ± 9.92	63.54 ± 13.44	0.267[a]
Smoke, n (%)				
Yes	43 (26.4)	18 (25.4)	25 (27.2)	0.859[b]
No	120 (73.6)	53 (74.6)	67 (72.8)	
Alcohol, n (%)				
Yes	56 (34.4)	26 (36.6)	30 (32.6)	0.621[b]
No	107 (65.6)	45 (63.4)	62 (67.4)	
Chronic diseases, n (%)				
Yes	14 (8.6)	8 (11.3)	6 (6.5)	0.399[b]
No	149 (91.4)	63 (88.7)	86 (93.5)	
Accommodation, n (%)				
Dormitory	39 (23.9)	14 (19.7)	25 (27.2)	0.318[b]
Family Home	105 (64.4)	48 (67.6)	57 (61.9)	
Alone	19 (11.7)	9 (12.7)	10 (10.9)	

* COVID-19: Coronavirus Disease 2019, n: number of participants, SD: standard deviation, cm: centimeter, kg: kilogram. *p*-values were calculated from [a]Independent Samples t-Test and [b]Chi-Square test. *p*-values <0.05 were considered significant.

Table 3. IPAQ-SF, SIAS and SPS scores of participants

Dependent outcomes	Total (n = 163)	COVID-19 Group (n = 71)	Non-COVID-19 Group (n = 92)	*p*
IPAQ-SF MET total score, mean ± SD	1660.83 ± 1728.84	1538.30 ± 1747.84	1760.29 ± 1705.99	0.428[a]
IPAQ-SF MET Category, n (%)				
<600 MET (Inactive)	51 (31.3)	25 (35.2)	26 (28.3)	0.114[b]
600-3000 MET (Active)	87 (53.4)	39 (54.9)	48 (52.2)	
>3000 MET (Very Active)	25 (15.3)	7 (9.9)	18 (19.5)	
SIAS, mean ± SD	28.77 ± 13.53	29.52 ± 13.64	28.20 ± 13.49	0.540[a]
SPS, mean ± SD	22.60 ± 15.96	22.54 ± 16.50	22.64 ± 15.62	0.971[a]

* COVID-19: Coronavirus Disease 2019, SD: standard deviation, IPAQ-SF: International Physical Activity Questionnaire Short Form, MET: metabolic equivalent, SIAS: Social Interaction Anxiety Scale, SPS: Social Phobia Scale, n: number of participants. *p*-values were calculated from [a]Independent Samples t-Test and [b]Chi-Square test. *p*-values <0.05 were considered significant.

DISCUSSION AND CONCLUSION

This study investigated the long-term impact of COVID-19 restrictions in terms of physical activity and social interactions in young adults by comparing COVID-19 and non-COVID-19 groups. As a result of the main findings of the study, no significant relationship was found between the having history of COVID-19 and IPAQ-SF (MET), SIAS, and SPS. To the best of our knowledge, this is the first study to investigate the physical activity and social interaction levels of young adults after COVID-19 restrictions.

The prevailing consensus within studies underscores the critical importance of maintaining physical activity even during the COVID-19 quarantine. This recommendation stems from the well-established understanding that regular exercise is integral to overall health, immune function, and mental well-being. However, certain studies present a contrasting narrative, indicating a discernible decrease in the level of physical

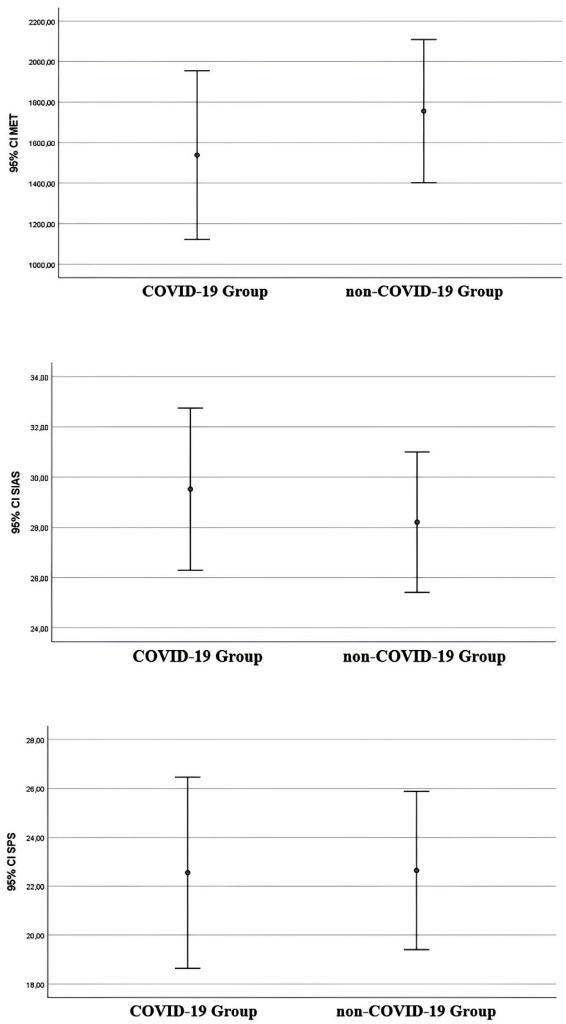

Figure 1. IPAQ-SF (MET) (a), SIAS (b), and SPS (c) results according to the COVID-19 and non-COVID-19 Groups (CI: Confidence Interval, COVID-19: Coronavirus Disease 2019, MET: metabolic equivalent, SIAS: Social Interaction Anxiety Scale, SPS: Social Phobia Scale)

activity associated with the quarantine process (27,28). The reported positive influence of increased physical activity on healthy lifestyle behaviors among college students aged 18-25 unveils a compelling connection that goes beyond mere exercise routines. This observation resonates with the broader understanding that physical activity serves as a linchpin for fostering comprehensive well-being, especially during a pivotal life stage (29). The research conducted by Gjaka et al. offers a poignant glimpse into the repercussions of COVID-19 restrictions on the lifestyle choices of young people, presenting a narrative of decreased physical activity and an upsurge in sedentary behavior (30). In another study conducted with young individuals and students, it was seen that the COVID-19 period led to decreased physical activity and increased sitting time (31). The synthesis of these studies collectively signals a concerning decline in physical activity levels among young adults throughout the COVID-19 pandemic. The implications are far-reaching, emphasizing the need for targeted interventions and tailored public health initiatives to counteract the potential long-term consequences on physical well-being during periods of societal upheaval. According to our study, having a history of COVID-19 does not affect physical activity after COVID-19 restrictions. We think that the reason for this situation is that COVID-19 restrictions are applied equally to the entire society. In addition, the high vaccination rates of our participants may have had an impact on adaptation to physical and social activities.

It is known that the COVID-19 pandemic causes changes in the social anxiety levels of individuals (32). Long et al., emphasized that the COVID-19 pandemic may have an impact on the weakening of social relationships and relational mechanisms (33). Gough et al. showed that COVID-19 restrictions reduced levels of social interaction in older adults in Australia. This empirical evidence underscores the pervasive nature of the pandemic's influence, transcending geographical boundaries and affecting diverse demographic groups (18). A notable revelation emerges when considering the impact of the pandemic on individuals with different personality traits. Contrary to expectations, the pandemic appears to be an equalizer in its effects, impacting both introverted and extroverted individuals uniformly (34). In our study, it was observed that having a history of COVID-19 did not affect social interaction and social phobia after COVID-19 restrictions. The fact that the COVID-19 pandemic occurred in a period when technology was used intensively, and communication could be easily maintained online may be a reason for the lack of difference. The continuous utilization of online platforms for communication, education, and physical therapy during the pandemic may have played a pivotal role in fostering a smoother transition for participants in adapting to physical and social activities post-restrictions. This observation implies that the familiarity and reliance on technol-

ogy served as a bridge to maintain social connections, even in the absence of physical proximity (35, 36). Therefore, participants' adaptation to physical and social activities was easier after the restrictions, whether they had a history of COVID-19 or not. This finding leads to the need for more in-depth investigation of the numerous factors affecting post-pandemic social behavior. It highlights the need for a nuanced understanding of the intricate interplay between personal experiences, societal shifts, and individual resilience in shaping the post-pandemic social landscape.

This study has successfully delved into the complex landscape of sentiments surrounding the reintegration into physical and social activities post-COVID-19 restrictions. The achievement of this goal is underscored by the adoption of a sophisticated multidimensional evaluation method, a strategic approach that scrutinized not only the repercussions on physical health but also the intricate dynamics influencing social well-being. By employing multidimensional evaluation, this study transcends traditional analyses, recognizing the inherent interconnection between physical and social dimensions of human experience. It goes beyond the surface, providing a holistic understanding of how the restrictive measures implemented during the pandemic have shaped individuals' responses to both the altered physical landscapes and the transformed social dynamics. However, the current study has some limitations. Firstly, we did not evaluate the participants before and during the pandemic. Secondly, the research was conducted via the internet, and therefore, the method could not be controlled at an optimum level. However, being online has increased the accessibility of working. Finally, we think that the high gender difference of the participants in our study (79.1% female, 20.9% male) may cause a change in parameters. Also, it should not be ignored that the measures taken during the COVID-19 period differ according to region and population (37). According to the results of our study, multidimensional physical and social evaluations, including possible social problems, should be determined in young adults and, if necessary, their rehabilitation should be provided by health professionals especially physiotherapists (38).

In conclusion having a history of COVID-19 does not affect physical activity and social interactions after COVID-19 restrictions in young adults. However, a noteworthy observation is the reduced time spent outdoors by the COVID-19 group after the restrictions. This observation prompts further inquiries into the nuanced effects of COVID-19 measures on individuals' behaviors, particularly with respect to outdoor activities and their potential ramifications on physical fitness. The implications of reduced outdoor time could have a cascading effect on physical health, potentially influencing overall fitness levels and wellness. It is conceivable that the altered patterns of outdoor engagement may correlate with changes in exercise routines, access to fitness facilities, and motivation for physical activity. Understanding these dynamics is crucial, not just for assessing the immediate post-restriction period but also for anticipating and mitigating potential long-term consequences on the physical well-being of the population. As we navigate the aftermath of the pandemic, it becomes increasingly evident that the full scope of the impact of COVID-19 restrictions is still unclear. Therefore, we assert that comprehensive and longitudinal studies are imperative to unravel the complex interplay between the pandemic, its associated restrictions, and the long-term behaviors, choices, and physical fitness of individuals, especially among the younger demographic. It is only through a thorough exploration of these factors that we can gain a more accurate understanding of the lasting repercussions and inform public health strategies and interventions effectively.

Conflict of interest and financial disclosure

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