**ORIGINAL ARTICLE**

# The Effect of Isolation on Social Physique Anxiety and Fat Phobia in Athletes During the Covid-19 Pandemic

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## ABSTRACT

**Background:** COVID-19 and social isolation have caused quite important changes in the lives of athletes. The uncertainties introduced by this period could lead to various anxieties and phobias in athletes as well as certain mental concerns

**Aim:** This study examined whether social physique anxiety and fat phobia in athletes during the COVID-19 pandemic and isolation period.

**Methods:** The study included 1031 sub-elite athletes (446 females, 585 males) in individual and team sports aged between 18-27. The social physique anxiety scale (SPAS) and fat phobia scale (FPS) were used as data collection tools

**Results:** Significant difference were found in SPAS levels between team and individual sports, the lowest SPAS levels were in the male individual sports athletes ($p<0.05$). There were differences in both male and female athletes according to regular training status ($p<0.05$). In athletes' status of being diagnosed COVID-19, significant difference was found in negative physique evaluation concerns (NPEC) subscale of SPAS between female and male groups without a positive diagnosis ($p<0.05$). Correlations were found between SPAS and FPS levels in all athletes ($p<0.05$).

**Conclusion:** SPAS levels were the lowest particularly in male athletes involved in individual sports. SPAS levels of athletes who did and did not regularly train during the isolation were found to be the lowest in male athletes who regularly trained. It was established that the positive diagnosis of COVID-19 did not affect SPAS levels much in athletes; however, female athletes with a positive diagnosis showed high SPAS levels. None of the independent variables in this study was found to create any difference in FPS scores, but the correlation analysis revealed significantly increased FPS levels with increasing SPAS levels. In general, SPAS and FP levels of all athletes were moderate.

**Keywords:** COVID-19, isolation, physique anxiety, fat phobia, athletes

## INTRODUCTION

Identified through a cluster of pneumonia in China in the last quarter of 2019, the outbreak reached Turkey in March 2020 [1]. The pneumonia in question was named as "Severe Acute Respiratory Syndrome-Coronavirus-2" (SARS-CoV-2) and the resulting disease as COVID-19 (Coronavirus Disease 2019) by the World Health Organization[2,3]. In Turkey, the number of COVID-19 cases rapidly increased which brought along sequential measures. Training and competitions for several sport branches, especially amateur sports, were cancelled or postponed in Turkey, as in many parts of the world. Thus, the isolation period of the athletes began.

COVID-19 and social isolation have caused quite important changes in the lives of athletes. The uncertainties introduced by this period could lead to various anxieties and phobias in athletes as well as certain mental concerns. It is a well-known fact that regular exercise improves mental health, reduces depression and anxiety levels and has generally positive effects against post-traumatic symptoms[4,5,6,7]. Therefore, postponement of sports competitions and athletes' inability to train has naturally led to decreased performance anxiety as well as fear of physical and mental disengagement from sports[8, 9].

Societies, in general, greatly care about physical appearance and it is a fact that the appearance perceived by others is of great importance to people[10]. Considering that athletes are social and prominent individuals in the society, body shape is very important to them and their body shape developed with long-term training may lose its old appearance due to lack of training as a result of various factors and this situation may indicate some negative conditions such as physical appearance anxiety (SPA) and fat phobia (FP)[11,12].

In the literature, the anxiety felt by individuals when their physical appearance is evaluated by others is defined as SPA. FP is described as having negative attitudes towards and stereotypes about overweight individuals[13]. Several studies have demonstrated fat phobic attitudes and behaviours in all segments of the society [14]. This has also affected the sports world[15]. There is a generalisation that overweight individuals cannot exhibit athletic skills. In addition, athletic nature has been assessed based on body size, leading to the exclusion of and discrimination against "overweight" young people in the field of physical education and sports on the grounds that they are not athletic[16].

This study was conducted to examine whether athletes developed SPA and FP during the COVID-19 pandemic and isolation period. The main hypothesis of our study is that among athletes those who could not regularly train during the COVID-19 pandemic and isolation would have higher levels of SPA and FP compared to those who regularly trained. Our primary hypothesis is that team and individual sport athletes will show similar SPA and FP levels. Our secondary hypothesis is that athletes who have COVID-19 positive diagnosis will have higher SPA and FP levels when compared with those who do not. Our tertiary

hypothesis is that there will be significant positive correlations between SPA and FP.

## MATERIAL & METHODS

**Research design:** The study was designed according to a cross-sectional survey model in order to measure social physique anxiety and FP levels.

**Participants:** This study included 1031 sub-elite athletes, 530 of whom (226 females, 304 males) were actively involved in team sports and 501 of whom (220 females, 281 males) were involved in individual sports at various sports clubs in Turkey. All of the participants were athletes who had at least 5 years of active training and competition history. Athletes who had less than 5 years of active training and competition history were excluded from the study.

**Data collection tool:** SPAS and FPS were assessed in athletes who experienced isolation due to the COVID-19 pandemic. The questionnaire items were prepared using Google Form, to ensure that the survey easily reaches the participants. An introductory text of the questionnaire and an online form link were sent to the athletes on their e-mail addresses and social media account. The survey remained open to access for one month (between November 5 and December 5, 2020), three reminder messages were sent to the athletes, to whom the surveys were sent for participation, for a period of one month and was terminated upon data entry; thereafter, the data set was prepared for statistical analysis. Republic of Turkey Ministry of Scientific Research Platform for Health Research by the necessary permits were obtained (T17-52-51). In addition, the research was approved by Ondokuz Mayıs University local ethics committee (2021-177).

Demographic data: Participants were asked questions concerning sex, age, height, body weight, type of sports and

COVID-19 diagnosis and whether they had been actively training during isolation.

Social physique anxiety scale: This scale was developed by Hart et al. (1989)[17] and adapted into Turkish by Mülazımoğlu and Aşçı (2006)[18]. It consists of 12 items and 2 subscales, namely, physique presentation comfort (PPC) with 5 questions and negative physique evaluation concerns with 7 questions (NPEC). The scale has a 5-point Likert-type rating: (1) not at all characteristic of me, (2) slightly characteristic of me, (3) moderately characteristic of me, (4) very characteristic of me and (5) extremely characteristic of me. The possible lowest and highest scores for total SPAS scores from the inventory were 12 and 60, respectively. The lowest possible score was 5 and the highest possible score was 25 for PPC subscale, while the lowest possible score was 7 and the highest possible score was 35 for NPEC subscale. As the scores from the inventory increase, the anxiety about one's appearance also increases. The test–retest reliability coefficients of the scale were 0.87 for the PPC subscale, 0.92 for the NPEC subscale, and 0.88 for the total SPAS.

Fat phobia scale: This scale was developed by Bacon et al. (2001)[14] and adapted into Turkish by Koçak et al. (2005)[19]. FPS consists of 14 pairs of positive and negative adjectives that describe overweight individuals; participants were asked to rate on a scale from 1 to 5 according to the extent to which the adjectives describe them. While evaluating the scale, total score taken from 14 questions is divided by the number of questions and the mean score found determines the FP level of the individual. FP levels also increase as the mean increases from 1 to 5. The internal consistency coefficient of the original scale was 0.91, and the test–retest reliability coefficient in this study was 0.83.

**Analysis of data:** Data were analysed using SPSS 24.0 (SPSS, Inc. Chicago, IL). Before selecting the tests to apply to the study data, a Shapiro–Wilk test for normality was performed to check whether the error terms were normally distributed ($p > 0.05$). The multiple comparisons of the scores from the scales were made using one-way ANOVA and Tukey's HSD tests. The association between SPAS results and FP was determined by using Pearson correlation test. The study findings were expressed as (%), mean and standard deviation, and were considered significant at the significance level of $p < 0.05$.

## RESULTS

**Table 1.** Descriptive information of subjects (n=1031)

| | Mean±SD | f | % |
|---|---|---|---|
| Sex | | | |
| Female | | 446 | 43.3 |
| Male | | 585 | 56.7 |
| Age | | | |
| 18-20 years | | 515 | 50 |
| 21-23 years | | 397 | 38.5 |
| 24-26 years | | 78 | 7.5 |
| 27 and over years | | 48 | 4 |
| Body Mass Index (kg/m$^2$) | | | |
| Female | 20.54±2.56 | 446 | 43.3 |
| Male | 22.90±2.70 | 585 | 56.7 |
| Sports Types | | | |
| Team sports | | 530 | 51.4 |
| Individual sports | | 501 | 48.6 |
| Regularly train | | | |
| Yes | | 582 | 56.5 |
| No | | 449 | 43.5 |
| COVID-19 positive diagnosis | | | |
| Yes | | 129 | 12.5 |
| No | | 902 | 87.5 |

The study included 1152 athletes, but evaluated the responses of 1031 participants. It was found that 21 athletes who were not included in the study did not have 5 years of active training or competition history. The participants consisted of 446 (43.3%) females and 585 (56.7%) males. The type of sports was identified as team sports in 530 (51.4%), and individual sports in 501 (48.6%) athletes. Of the athletes, 582 (56.5%) stated that they regularly trained, while 449 (43.5 %) did not train. Conversely, 129 (12.5 %) of the athletes reported that they had a positive diagnosis of COVID-19. The participants aged between 18 and 27 years and above (Table 1).

**Table 2.** Comparison of SPAS and FPS scores according to regular training status in female and male athletes

| | Female (n=446) | | Male (n=585) | | | |
|---|---|---|---|---|---|---|
| | Yes (n:251) | No (n:195) | Yes (n:331) | No (n:254) | F | Multiple Comparison |
| PPC | 12.27±3.89[ab] | 12.70±4.17[ab] | 11.87±3.40[b] | 12.85±3.85[a] | 3.827 | p[a]= 0.010*<br>p[b]=0.011* |
| NPEC | 16.57±5.38[b] | 17.96±6.44[a] | 15.27±5.03[c] | 17.17±5.58[ab] | 11.152 | p[a]=0.000*<br>p[b]=0.000*<br>p[c]=0.043*<br>p[d]=0.027*<br>p[e]=0.000* |
| SPAS | 28.84±7.94[ab] | 30.66±9.34[a] | 27.14±7.42[b] | 30.02±8.00[a] | 0.182 | p[a]=0.000*<br>p[b]=0.000*<br>p[e]=0.000* |
| FPS | 2.92±0.35 | 2.94±0.33 | 2.93±0.39 | 2.94±0.34 | 9.919 | p[a]=0.909 |

Values are expressed as mean±standard deviation
PPC: Physique Presentation Comfort
NPEC: Negative Physique Evaluation Concerns
SPAS: Social Physique Anxiety Scale
FPS: Fat Phobia Scale
p[a] = Results of Tukey Multiple Comparison, p[b] = Male who train regularly x Male who do not train regularly, p[c]= Female who train regularly x Female who do not train regularly, p[d]= Female who train regularly x Male who train regularly, p[e]= Female who do not train regularly x Male who train regularly.

In this study, there were varying levels of significant differences in SPAS subscale and total scores of athletes who did and did not regularly train during the COVID-19 pandemic ($p < 0.05$). When these significant differences were evaluated, the highest the SPA levels in PPC was found in male and female athletes without training, while male athletes who regularly trained had the lowest mean SPAS score. In terms of FPS scores, there was no statistically significant difference between male and female athletes ($p > 0.05$). Although different statistical significances were found in terms of the state of having regular training, all athletes were found to have moderate total SPAS, PPC, NPEC and FP levels. (Table 2).

**Table 3.** Comparison of SPAS and FPS scores according to types of sports in all athletes

| | Team Sports (n=530) | | Individual Sports (n=501) | | | |
|---|---|---|---|---|---|---|
| | Female (n:226) | Male (n:304) | Female (n:220) | Male (n:281) | F | Multiple Comparison |
| PPC | 12.39±4.05[ab] | 12.76±3.63[a] | 12.51±3.93[ab] | 11.78±3.57[b] | 3.486 | p[a]= 0.015*<br>p[b]=0.009* |
| NPEC | 17.29±5.80[a] | 16.35±5.52[ab] | 17.06±6.01[ab] | 15.80±5.17[b] | 3.698 | p[a]=0.012*<br>p[c]=0.016* |
| SPAS | 29.69±8.39[a] | 29.12±7.89[ab] | 29.58±8.85[a] | 27.59±7.65[b] | 3.693 | p[a]=0.012*<br>p[d]=0.021*<br>p[e]=0.035* |
| FPS | 2.92±0.32 | 2.94±0.32 | 2.92±0.36 | 2.93±0.41 | 0.117 | p[a]=0.912 |

Values are expressed as mean±standard deviation
PPC: Physique Presentation Comfort
NPEC: Negative Physique Evaluation Concerns
SPAS: Social Physique Anxiety Scale
FPS: Fat Phobia Scale
p[a] = Results of Tukey Multiple Comparison, p[b] = Male Individual Athletes x Male Team Athletes, p[c]= Female Individual Athletes x Male Individual Athtletes, p[d]= Female Team Athletes x Male Individual Athtletes, p[e]= Female Individual Athletes x Male Individual Athtletes

Table 4. Comparison of SPAS and FPS scores according to COVID-19 positive diagnosis status in female and male athletes

| | Female (n=446) | | Male (n=585) | | | |
|---|---|---|---|---|---|---|
| | Yes (n:53) | No (n:393) | Yes (n:76) | No (n:509) | F | Multiple Comprasion |
| PPC | 12.66±1.13 | 12.43±3.97 | 11.91±3.59 | 12.36±3.64 | 0.514 | p[a]=0.673 |
| NPEC | 17.49±6.37[a] | 17.14±5.84[ab] | 16.50±4.88[ab] | 16.03±5.43[b] | 3.384 | p[a]=0.018 |
| SPAS | 30.15±9.40 | 29.57±8.51 | 28.41±7.05 | 28.39±7.92 | 2.042 | p[a]=0.106 |
| FPS | 2.95±0.24 | 2.92±0.35 | 2.98±0.41 | 2.93±0.36 | 0.578 | p[a]=0.630 |

Values are expressed as mean±standard deviation
PPC: Physique Presentation Comfort
NPEC: Negative Physique Evaluation Concerns
SPAS: Social Physique Anxiety Scale
FPS: Fat Phobia Scale
p[a] = Results of Tukey Multiple Comparasion,

**Table 5.** Correlation of between PPC, NPEC, SPAS, FPS and BMI scores

| | | PPC | NPEC | SPAS | FPS |
|---|---|---|---|---|---|
| PPC | r | 1 | | | |
| | p | | | | |
| NPEC | r | .492** | 1 | | |
| | p | ,000 | | | |
| SPAS | r | .801** | .915** | 1 | |
| | p | ,000 | .000 | | |
| FPS | r | .107** | .131** | .140** | 1 |
| | p | .001 | .000 | .000 | |
| BMI (kg/m$^2$) | r | .096** | .020 | .058 | -.029 |
| | p | .002 | .531 | .064 | .064 |

**:Correlation is significant at the p<0.01 level
PPC: Physique Presentation Comfort
NPEC: Negative Physique Evaluation Concerns
SPAS: Social Physique Anxiety Scale
FPS: Fat Phobia Scale
BMI (kg/m$^2$) Body Mass Index

Significant differences were found when the PPC, NPEC and SPAS scores of the study participants were compared in terms of team and individual sports. According to the results, female and male athletes involved in team sports had higher SPA levels than male and female athletes involved in individual sports ($p < 0.05$). In contrast, there was no significant difference in FP levels between female and male team and individual athletes ($p > 0.05$). At the same time, total SPAS, PPC, NPEC and FP levels of both female and male athletes were found to be moderate (Table 3).

When the SPAS and FPS results of the athletes were evaluated according to the COVID-19 diagnosis, a significant difference was found in the NPEC subscale of SPAS ($p = 0.018$). According to the NPEC results, the highest mean score was in female athletes with a positive diagnosis of COVID-19, and the lowest mean score was in male athletes without diagnosis. There was no significant difference in the total SPAS score and the PPC subscale score as well as the FPS scores ($p > 0.05$). Although different statistical significances were found in terms of the state of having COVID-19 positive diagnosis, all athletes were found to have moderate total SPAS, PPC, NPEC and FP levels (Table 4).

When the correlations between SPAS and FPS scores of all athletes were examined, the PPC, NPEC, SPAS and FPS scores were found to have positive and highly significant correlations ($p < 0.01$). According to these results, high SPAS scores in the athletes indicated high FPS levels. Moreover, the analysis of correlations between the BMI values of the athletes and the SPAS and FPS values, a positive and highly significant relationship was found only with PPC ($p < 0.01$) (Table 5).

## DISCUSSION

The present study was conducted to find out whether SPA and FP occurred in sub-elite athletes during COVID-19 and isolation process. The results found are remarkable for sport sciences literature. First major finding of this study is that the SPAS results differed in favour of males by the sex of team and individual athletes. Second, the athletes who did not regularly train had higher SPAS values than those who did. Third, is that there was a significant difference only in the SPAS' NPEC subscale scores of the athletes according to the COVID-19 diagnosis. Fourth, there were positive and highly significant correlations between all SPAS total and subscale scores and FPS. Finally, the SPAS PPC subscale score increased with increasing BMI in athletes.

Research shows that the pandemic causes an increase in post-traumatic stress and anxiety symptoms due to changes in people's living conditions and negative thoughts about themselves and those around them[20, 21]. Considering that regular physical activity reduces mental health symptoms such as depression, stress and anxiety in individuals[5, 22], and athletes who reach high SPA levels experience discomfort and a sense of rejection by their teammates due to various factors[23], the development of SPA and FP could have been observed in athletes due to lack of training or inadequate training during the COVID-19 pandemic. The present study showed that athletes had moderate SPA levels during COVID-19 pandemic and isolation process, while they had FP levels above average. Furthermore, the correlations between BMI and PPC subscale of SPAS and between FPS and all SPAS total and subscale scores provided evidence that changes in physical appearance due to immobility can increase the level of SPA in athletes. Despite the moderate SPAS scores, the lowest mean score on both subscales and total scale was found in male individual athletes, while the highest score, especially on NPEC and SPAS, was in female team athletes. Although the development of SPA in athletes is of great importance, previous research has proven that the perceived physical conditioning is more important than SPA in continuing to exercise and sports[24]. Considering these aspects and given that women have a greater perception of physical conditioning compared to men, the higher mean SPAS scores in female athletes in this study could be due to SPA resulting from physical conditioning and a sense of the physical self that might occur during the pandemic. Notably, previous studies reporting similar findings to the present study examined the SPAS scores in women and men with a certain level of physical activity and showed high mean scores in women[25, 26]. Moreover, another study established negative and significant associations between the frequency and duration of exercise and the SPA levels[27]. It has been observed that SPA levels decreased in proportion to the increasing time of exercise especially in females. It is also

a well-known fact that eating disorders occur in athletes after injury and after they retirement[28,29]. These processes cause athletes to gain weight and have a feeling of decreased fitness with the reduced calorie burning sensation and also lead to physical anxiety. This situation is more common in female athletes when compared with male athletes[30,31]. The results of our study show that just like the processes of injury and retirement, eating behaviours may differ due to lack of training or reduced frequency of training during the COVID-19 pandemic and isolation process, and this situation may cause a negative effect on SPA and FP levels especially in female athletes. Likewise, Lantz et al. (1997)[32] found that individuals with higher mean SPAS scores had a lower tendency to exercise; emphasising that SPA could affect the exercise behaviour. This study also shows that athletes who regularly trained during the pandemic had lower rates of SPA compared to those who did not, which suggests that regular training does not decrease the mental and psychological exercise commitment of the athletes, they do not suffer any physical loss, and therefore, they have lower rates of SPA than those who do not train. However, prior literature contains studies that are not consistent with our present findings. Frederick and Morrison (1996)[33] reported that those with higher SPA levels engaged in physical activity more days per week than those with lower levels. However, when the said study is evaluated in terms of study sample and procedure, it is seen that the study group is not composed of elite level athletes. Therefore, it is believed that when exercise is based on the physical appearance and a healthy life, a frequency of exercise that increases over time causes people to increase the level of satisfaction and the perception that exercise is inadequate. In this study, it is believed that the SPA levels in female and male athletes who regularly train reflect a psychological process due to their inability to predict future processes because of the pandemic and isolation. Commitment to an exercise programme also influences regular participation and presumably overcomes any physical anxiety that a person may feel[25]. Furthermore, exercise frequency psychologically expresses commitment to and participation in exercise, which are clearly supported by Thompson and Pasman's opinions[34].

This study found a significant difference only in the NPEC subscale of SPAS according to the athletes' positive diagnosis of COVID-19. Both female and male athletes who were diagnosed positive had high SPA levels than those who were not diagnosed positive; moreover, this rate was the highest in females. Research shows that exercise and training can negatively affect people's lives and mental health through two different mechanisms. The first is the decrease in the perceived satisfaction of psychological needs due to the discontinuation of regular exercise for various reasons or the decrease in its frequency, that is, the reduction in behaviours such as exercise that feeds psychological well-being[35]. The second one is that the increased SPA levels affect the satisfaction of mental health that directly influences life by increasing psychological resilience[23]. Accordingly, we believe that the increased SPA levels especially of the positively diagnosed athletes were due to the lack of training during the isolation and because that they did not know the physical and physiological effects of their positive diagnosis when they would return to training, and how the changes that might occur in their physical appearance in the long term would be perceived within their environment. It is further believed, from a psychological perspective, that the high mean SPAS scores of positively diagnosed female athletes might have caused anxiety due to their high levels of physical conditioning and sense of self. Moreover, Şenışık et al. (2020)[36] examined the effects of the COVID-19 pandemic on the mental health of athlete and nonathlete groups and reported that athletes spent this period with less mental wear than nonathletes and that exercising habits minimised the psychological impact during this time. This study did not include a nonathletes control group, but revealed that athletes with and without positive diagnosis spent this period with the lowest possible levels of SPA and FP depending on their history of training.

In this study, there was no significant difference in any independent variable in terms of FP levels, but all athletes' FP levels were moderate in all independent variables. However, considering the high level of positive correlations between SPAS and FPS, it was clear that both psychological factors were affected by each other. The lack of any significant difference in FPS despite the significant differences in SPAS has suggested the assumption that physical anxiety may be affected by acute or short-term situations, but negative feedback on a certain physical change is required for developing FP, and athletes may develop FP over time especially after they start to perceive themselves as overweight.

## CONCLUSION

In conclusion, the present study established that during the COVID-19 pandemic and isolation, female athletes of both individual and team sports had higher SPA levels than males; all athletes who regularly trained during this period had lower SPA levels than those who did not; athletes with a positive diagnosis of COVID-19 had higher SPA levels than those without a positive diagnosis; the FP levels showed similar results for all independent variables related to athletes; and finally, there were high levels of positive significant correlations between SPAS and FPS, but no significant difference was found in both variables for BMI. These results indicate that, assuming that athletes can have SPA and FP levels at low norms in their normal lives, the pandemic has affected the SPA and FP levels of athletes due to different variables, female athletes have been particularly more affected by this period than males in terms of SPAS, and the positive diagnosis of COVID-19 has further increased the SPA and FP levels in athletes, which is believed to result from the fact that those with a positive diagnosis did not know about the chronic physical effects in the future.

**Conflicts of Interest:** The authors declare no conflict of interest.

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