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THE EARLY PSYCHOLOGICAL IMPACT OF THE COVID-19 PANDEMIC AMONG YOUNG SWIMMERS DURING HOME CONFINEMENT

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SUMMARY

Background: *During the ongoing COVID-19 outbreak, few studies have focused on sport samples. The aim of the study was to investigate the early psychological impacts of the COVID-19 outbreak among young swimmers.*

Subjects and methods: *The sample comprised 429 swimmers (229 boys, 200 girls, mean age 13.88±1.71) from Turkey, with a mean competitive sport experience of 5.22 years. A personal information form was administered to collect data regarding demographics, sport-related experience, and home confinement effects, along with the Beck Anxiety Inventory (BAI).*

Results: *During the first 30 days of home confinement, the swimmers' general BAI scores were low, with only 10 percent showing moderate or severe anxiety levels. Girl swimmers had significantly higher anxiety levels than boys. Girl swimmers also reported positive and negative change in their relationship with their parents and expected closer help from their parents. The 14-15 year age group had significantly higher anxiety levels than the other age groups. The lack of pool training was associated with the swimmers' anxiety.*

Conclusions: *Improving athlete-parent interaction and providing coping programs for adolescent athletes may help to reduce anxiety and other negative effects of home confinement during COVID-19.*

Key words: *adolescent athletes – anxiety - coronavirus*

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INTRODUCTION

The Coronavirus (COVID-19) outbreak was first reported by Chinese authorities on 31 December 2019 in Hubei province. Nearly two weeks later, officials confirmed the first recorded COVID-19 case outside of China (WHO 2020). Over the following 60 days, the virus spread to almost every country across five continents, with exponential increases in cases and deaths.

Previous 20th century epidemics showed similar chronological and geographical characteristics, "but caused fewer deaths than COVID-19" (Werneck & Carvalho, 2020). Because of its highly destructive nature, COVID-19 has been recognized as the greatest crisis of our time (Ryan et al. 2020). Throughout history, epidemics and pandemics have had significant psychosocial effects on the affected populations as people face fears and unknown health risks.

Several rapid-scientific research groups worldwide have conducted COVID-19-related research. Naturally, studies initially focused on the virus itself and patients or medication, although others reported on the psychiatric condition of healthcare workers while coping with COVID-19 (Gautam et al. 2020). One of the most affected countries was Italy, where Rossi et al. (2020) revealed post-traumatic stress disorder (PTSD) and insomnia in frontline healthcare workers. Another COVID-19 study in Spain found that the psychological impact varied, with the 18-25-year age group reporting higher levels of stress, anxiety, and depression than older groups (Ozamiz-Etxebarria et al. 2020).

Currently, the COVID-19 pandemic is in the early recovery stage in most countries. Research is developing rapidly, with the development of a Fear of COVID-19 Scale (Ahorsu et al. 2020), already adapted into other languages (Satici et al. 2020a), and already used for empirical research (Satici et al. 2020b). According to Jakovljevic et al. (2020), to successfully deal with current and future pandemics, we need to learn more about the psychiatric and psychological aspects of COVID-19. Therefore, the researchers suggest that we should reexamine the basic understanding of how societies can deal with the pandemic through a multidisciplinary scientific approach (Jakovljevic et al. 2020).

While athletes may not be among those most impacted by the COVID-19 pandemic, the virus outbreak had had physical, cultural, and psychological effects on the sporting world. Its greatest impact has been the postponement of "mega-sporting events" (Mann et al. 2020), such as the NBA, Euroleague, Champions League, European Football Championships, 2020 Olympics, Wimbledon and Roland Garros tennis grand slams, local sports leagues, and almost all

previously scheduled international competitions. Regarding how previous epidemics affected athletes, only a few studies investigated the effects of SARS. Of these, So et al. (2004) also reported that several sports events were cancelled in China and India in 2003, including the 4th FIFA Women's World cup and other cycling, hockey, archery, snooker, and squash competitions. Various measures and travel restrictions imposed by WHO during the SARS epidemic (Wilder-Smith 2006) probably encouraged the postponement of sport events.

The new COVID-19-influenced sport culture is changing rapidly through new online competitions in some individual sports, such as cycling, shooting, taekwondo, karate, rowing, and chess. Thus, Mann et al. (2020) suggested that "we don't know what a return to sport will look like after this pandemic." Unlike sedentary people, athletes follow a consistent, intensive daily training routine. Swimmers, for example, regularly include both early morning training and a second physical training session in their daily program. It can be expected that disrupting this daily routine has several negative impacts on athletes. The main effect is losing shape and condition level, economic problems such as unpaid or cut salary, missing important competitions that were already prepared for, and the psychological effects of all these developments. Liu (2020), for example, found that athletes are worried about losing fitness during this period, experience negative psychological effects of the pandemic, such as anxiety, depression, and disappointment, and fear that the epidemic will disrupt the next sports season as well. More recently, Pons et al. (2020) showed that COVID-19 has had an overall negative impact on young athletes' living spaces and mental health, highlighting the need to take care of their mental health.

Accordingly, this study aimed to investigate the early psychological impact of the COVID-19-related experience of young swimmers during the first 30 days of the COVID-19 outbreak in Turkey. In collaboration with the Turkish Swimming Federation (TSF), a country-wide, web-based psychological development program was started for swimmers and coaches. A procedure was implemented to collect data on the effects of the pandemic on swimmers under home confinement. The first online athletes' conference was held on April 16, 2020, followed by a swimming coaches' online program on April 17, 2020. These events allowed participants to share and discuss their first impressions and suggestions. The current study's data collection happened before the athlete conference to determine the participants' anxiety levels in relation to their home and family situation, swimming-related situation, and demographic variables. The results of this study can help to understand the early psychological effects of the COVID-19 pandemic on athletes.

SUBJECTS AND METHODS

Participants and Procedure

The participants were 429 swimmers (229 boys, 200 girls). The mean age was 13.88±1.71 while the mean competitive experience in years was 5.22±2.29. During the data collection period, the swimmers were under obligatory home confinement in Turkey imposed by the government based on the advice of the national scientific advisory board for the COVID-19 pandemic. The mean duration of home confinement was 20.51±9.53 days (ranging between 0 to 45). The last swimming pool training day ranged from 0 to 60 days previously (mean = 29.85±7.76). The mean number of individuals in each household was 3.92±0.88. Republic of Turkey Ministry of Health COVID-19 Scientific Research Evaluation Commission approved the study. In collaboration with the Turkish Swimming Federation, an informed consent was obtained from the athletes and their parents.

Measures

Data was collected using a personal information form and the Beck Anxiety Inventory.

Personal Information Form

This was developed by the author under supervision by Turkish Swimming Federation technical committee members. The variables included age, gender, years of competition, duration of confinement, perceived positive or negative relationship change with parents, number of individuals in the household, days since last swimming pool training, national/international competitiveess, and control variables for the COVID-19 confinement's psychological impact. Details are provided in the statistical analyses section. Data collection was announced on the TSF official web site. Under social distancing rules, all questionnaires were administered via Google Forms between April 12, 2020 and April 17, 2020.

Beck Anxiety Inventory (BAI)

This self-report instrument has 21 items rated on a 4-point scale, ranging between 0 ("not at all") to 3 ("severely, I could barely stand"). The Beck scale score is the sum of responses to the 21 items, ranging from 0 to 63 points (Osman et al. 2002). The Cronbach Alpha internal consistency score was .88, which lies within the acceptable range (0.70 to 0.95) for the sample (Tavakol & Dennick 2011). The corrected item total correlations for the BAI items ranged between 0.316 and 0.586.

Statistical Analyses

An ANOVA was used to test for differences during the first 30 days of home confinement, with the independent variables assigned to three groups. The first group related to the confinement environment's impact on swimmers: 1) duration of confinement under social

distancing restrictions; 2) positive or negative changes in the swimmer's relationship with parents; 3) could parents help swimmers better during home confinement; 4) number of individuals in the household. The second group related to swimming experiences: 5) years of official competition and 6) days since last swimming pool training. The third group included 7) gender and 8) age group (12-13, 14-15, and 16-18).

In addition, there were two control variables for perceptions of the COVID-19 situation perception. Self-perception of the COVID-19 pandemic situation (worry level). Participants selected one of the following four statements: a. "The COVID-19 virus seems not to infect me or my relatives" (representing low or minimal worry about COVID-19 threat); b. "I feel a little worry about the possibility of the virus infection" (representing mild worry about COVID-19 threat); c. "I seriously feel the virus infection threat" (representing medium worry about COVID-19 threat); d." I cannot sleep well because of the infection threat of the COVID-19 virus" (representing intense worry about COVID-19). The second control variable measured the effect of COVID-19 under confinement: Participants were asked to report the worst thing about being under home confinement during the COVID-19 outbreak.

Correlations, means, and standard deviation statistics were examined. ANOVA statistics were interpreted with the Levene test for homogeneity of variance, partial Eta Squared scores, and Games-Howell Post-Hoc tests. To analyze the nominal by nominal variables, Pearson Chi-Square tests were used with the Phi statistic due to the number of variable categories boxes and calculated minimum expected frequency scores.

RESULTS

Regarding self-perceptions of the threat of the COVID-19 outbreak (the first control variable), 67.8% of participants were minimally worried; 21.9% of participants were mildly worried; 7.5% were moderately worried; 2.8% were intensely worried. The BAI scores of these subgroups paralleled the swimmers' perceived worry level (Table 1). In general, the participants' self-reported worry and BAI anxiety levels were mostly low. BAI scores of 0-7 represent "minimal" anxiety; 8-15 represent "mild"; 16-25 represent "moderate"; 26-63 represent "severe" (Kumara & Kumar 2016). Based on this classification, 67.8% of participants had minimal anxiety, 21.9% mild anxiety, 7.5% moderate anxiety, and 2.8% severe anxiety.

Table 1. Self-perceptions of the threat of the COVID-19 outbreak

Worry level	Participants (N=429)	BAI mean
Minimally worried	291 (67.8%)	4.93±6.06
Mildly worried	94 (21.9%)	6.8±7.3
Moderately worried	32 (7.5%)	10.09±6.51
Intensely worried	12 (2.8%)	16.2±11.2
Total	429 (100%)	

Regarding the second control variable, the swimmers' perceived worst thing during home confinement, 44.3% reported "lack of training", followed by "cannot go out" with 20.3%, "boring" with 9.8%, "cannot go to school" with 7.0%, "lack of social relationships" with 6.8%, COVID-19 itself with 4.2%, and "no bad thing or other reason" with 7.7% (Table 2). The Pearson $\chi^2_{(6)}$=14.061 (Phi coefficient =0.48*)* was significant at 0.029 level.

The distribution of BAI scores across the independent variables were analyzed by using an ANOVA model. The results revealed that the assumption of homogeneity of variance was violated. To avoid Type-I errors with hon-homogeneous variances, Mendeş and Akkartal (2010) suggest using the Welch test instead of the F test. Accordingly, the analyses with homogeneous variances used the F ratio whereas non-homogeneous results used the robust Welch test (W). Table 3 presents the ANOVA results with means and standard deviations of the related variables.

Regarding the variables for home confinement environment, the ANOVA results showed that duration of home confinement had no significant effect on anxiety level. During the data collection period, young swimmers were confined to their home in most of the cities in Turkey for 30 days. Accordingly, the participants had stayed at home for 20.51±9.5 days during this period. For the perceived relationship change between swimmers and their parents, BAI levels varied significantly in relation to family interaction. Swimmers who perceived a positive relationship change had lower BAI scores (mean=6.44±6.54) than those who perceived

Table 2. The swimmers' perceived worst thing during home confinement

Variables	Girls (N=200)	Boys (N=229)	Total (N=429)
Lack of training	81 (40.5%)	109 (47.6%)	190 (44.3%)
Cannot go out	36 (18.0%)	51 (22.3%)	87 (20.3%)
Boring	28 (14.0%)	14 (6.1%)	42 (9.8%)
Cannot go to school	18 (9.0%)	12 (5.2%)	30 (7.0%)
Lack of social relationships	14 (7.0%)	15 (6.6%)	29 (6.8%)
COVID-19 itself	11 (5.5%)	7 (3.1%)	18 (4.2%)
No bad thing or other reason	12 (6.0%)	21 (9.2%)	33 (7.7%)

Table 3. Means, standard deviations, and ANOVA results for BAI scores

	BAI mean	Std. deviation	n	F(W)	Eta^2	p<
Duration of stay home period				$F_{(2.426)}$=1.11	0.072	0.330
0-13 days	7.68	6.43	87			
14-21 days	6.27	6.88	136			
22 days or above	6.52	7.64	206			
Change in relationship with parents				$W_{(2.187)}$=13.061	0.084	*0.001***
Positive change	6.44	6.54	114			
Negative change	10.49	9.35	93			
Neutral/No change	5.20	5.75	222			
Could parents help better during home confinement				$F_{(1.424)}$=33.938	0.074	*0.001***
Yes	9.64	9.14	131			
No	5.41	5.67	295			
Number of individuals in the household				$W_{(2.166.8)}$=0.679	0.005	0.366
2-3 person	6.48	7.34	121			
4 person	6.44	6.32	232			
5 person or above	7.74	9.14	76			
Time since last pool training				$F_{(2.416)}$=1.293	0.006	0.276
0-14 days	5.18	4.25	33			
15-29 days	6.08	5.82	132			
30 days or above	6.93	7.83	254			
Years of competition				$F_{(2.426)}$=0.709	0.002	0.709
1-3 years	6.22	6.57	96			
4-6 years	6.68	7.69	212			
7 years or above	7.03	6.73	121			
Age group				$W_{(2.200.3)}$=6.878	0.003	*0.001***
12-13	5.43	5.78	218			
14-15	8.43	9.55	124			
16-18	7.31	5.69	87			
Gender				$F_{(1.427)}$=25.53	0.056	*0.001***
Girls	8.5	8.65	220			
Boys	5.09	5.08	229			

** Significant at 0.001 level

a negative change (mean=10.49±9.35). However, the neutral/no change group had the lowest BAI scores (mean=5.20±5.75). The Games Howell post hoc analysis revealed a significant difference between positive and negative change groups (BAI mean diff=-4.05), and between the negative change and neutral/no change group (mean diff=5.29). The difference in BAI scores between the positive and no neutral/no change group was not significant. Regarding participants' beliefs that their parents could help them better during confinement, the results showed that almost a third (30.8%), both girls and boys, believed their parents could help them better during confinement. The BAI scores for these participants were significantly higher (mean=9.64±9.14) than the scores of participants in the no expectation group (BAI mean=5.40±5.67). Additionally, girls who believed their parents could help them better had significantly higher BAI scores (mean=12.07±10.75) than both boys and girls who were satisfied with their parents' support. Finally, the number of people in the household had no significant effect on anxiety. While the BAI scores were slightly higher if the household had five or more individuals, this difference was not significant (Table 3).

Turning to the variables related to swimming itself, a regular pool training regime is the main life cycle activity for the participants. Pearson correlations showed a significant positive relationship between time elapsed since the participants' last swimming pool training and BAI scores ($r=0.195$; $p<0.01$). However, there was no significant difference between non-training period subgroups for 0-14 days, 15-29 days, and 30 days and above. Similarly, while BAI scores decreased with increasing years of competitive experience, this effect was not significant.

Regarding the demographic variables, the BAI scores for the 14-15 year and 16-18 year age groups were significantly higher than for the 12-13 age group. Additionally, the 14-15 age group anxiety scores were significantly higher than the 16-18 age group scores. Finally, girl swimmers' anxiety scores (mean=8.5±8.65) were significantly higher than those of boy swimmers (mean=5.09±5.08).

DISCUSSION

Overall, girl participants had slightly higher BAI scores than boy participants, which is a similar finding to Osman et al. (2002). Research is lacking on the

specific impact of previous pandemics on girl samples. Özdin and Bayrak Özdin (2020) also reported higher depression and anxiety levels in women during the COVID-19 pandemic, concluding that "the pandemic may have a greater effect on women." Saho et al. (2020) reported a single-case study about the COVID-19-related anxiety symptoms of an 18-year-old girl while di Fronso et al. (2020) found higher perceived stress in female athletes during the COVID-19 pandemic. Wu et al. (2005) reported higher PTSD subscale scores for women than men among SARS survivors in Hong Kong. The Pearson correlation analyses in the present study revealed that the BAI scores of girl swimmers increase with age and longer time without pool training whereas boys' scores are not significantly related to these variables. That is, lack of training may affect girl swimmers more than boys.

Nearly half (44.3%) of the swimmers in this study reported that the worst aspect of confinement was "lack of training". In line with this finding, Liu (2020) reported that most athletes are worried about losing fitness during the COVID-19 lockdown and afraid of falling behind in physical preparation. Paradoxically, despite the apparent importance of training needs, the swimmers who were most concerned about the lack of training had the lowest BAI scores whereas swimmers who found boredom the worst thing had higher anxiety. The perceived worst things during home confinement and anxiety levels of boys and girls were significantly different. While boys reported "lack of training" and "cannot go out" most frequently, girls reported "boring", "cannot go to school", and "COVID-19 itself". Similarly, in another study of student athletes during the COVID-19 pandemic, Bullard (2020) found that female athletes found transitioning to online lessons more challenging than male athletes, although separation from teammates was extremely challenging for both genders.

During the unexpected COVID-19 outbreak, one of the main experiences was that swimmers and most of their parents stayed home for the first time for a long period of time. This study aimed to identify the prolonged duration impacts of COVID-19 social distancing measures on swimmers. Specifically, it examined the effects of perceived relationship changes with parents and the number of individuals in the household. ANOVA results revealed duration of confinement did not affect anxiety scores. While BAI scores for the 0-13 day group were highest, none of the groups were significantly different, although hypothetically a time distance effect on BAI scores might be expected.

The second home confinement variable was perceived relationship change between swimmers and their parents. Both the positive change and no change group's BAI scores were significantly lower than the negative change group. Thus, any change in this relationship can apparently affect anxiety levels, although negative change creates a more significant difference. Undoubtedly parental attitudes have an important effect on an adolescent's emotions. Wang et al. (2020) warn that adolescents can experience tensions with parents while Moyer and Sandoz (2015) found that parental inflexibility elevates anxiety in adolescent children while noting that this effect was parent-to-child rather than reciprocal. Coyne et al. (2020) also concluded that psychological flexibility is a core parental attitude within COVID-19-related parental skills. Mothers may be the key parent here. Wu et al. (2008), reported that, after the SARS outbreak, women experienced raised emotional distress levels. On the other hand, despite the scarcity of information, COVID-19 appears to be deadlier for men than women (Gebhard et al. 2020). Girl swimmers were also slightly more likely to perceive either positive or negative changes in their relationship with their parents. This difference may be due to women's greater sensitivity in recognizing emotional changes and expressing feelings more easily.

Another parent-related confinement variable was the swimmers' perceptions about whether their parents could help them better during COVID-19 period. Swimmers who expected better help from their parents showed greater anxiety than those who did not expect this. Parental anxiety is also influenced by the children's behavior (Buheji et al. 2020). In parallel with the previous relationship change variable, girl swimmers who expected better from their parents had higher anxiety levels than both boys and girls who did not expect better from their parents. Among the common pandemic-related constraints, such as spatial distancing, isolation, and home quarantine (Bhuiyan et al. 2020), the "psychosocial aspect has yet to be thoroughly considered" (Ahorsu et al. 2020). Thus, the parents' relationships with young athletes needs further investigation as a key potential factor in fully understanding the psychological effects of COVID-19 on adolescents.

CONCLUSION

During the first 30 days of the COVID-19 outbreak confinement period in Turkey, young swimmers mostly experienced minimal or mild anxiety while only about 10 percent reported moderate or severe anxiety. Girl swimmers' relationships with their parents both improved and deteriorated. Girl swimmers tended to show more anxiety than boys. If the swimmers believed their parents could provide better help them during home confinement, then their anxiety tended to be higher. In relation to this expectation, girls had greater anxiety than boys. Age also significantly affected BAI scores, but this effect was non-linear in that 14-15 year-old swimmers were significantly more anxious than both 12-13 and 16-18 year-olds. Finally, for adolescent swimmers under home confinement, the

worst aspect of the situation differed by gender. While boys most frequently mentioned lack of training and not going out, girls mentioned boredom, not going to school, and COVID-19 itself.

Vijaya et al. (2005) suggest that irrational behavior tendencies emerge when people become cautious and are unable to lead their normal lives**.** For young athletes during the current COVID-19 pandemic, it is important to develop "a response strategy that addresses the needs of athletes" (Timpka, 2020) and ensure that parents provide social support at home (Pajarianto et al. 2020). Thus, future research should focus on girl athletes, their relationship with their parents, and their expectations from the parents. Facilitation of regular training sessions for swimmers may help regulate their anxiety. If home confinement is extended and competitions are postponed further, it will be necessary to design social support programs for athlete families and sport psychology programs for adolescent athletes to help them cope with COVID-19 and its negative effects. Based on the findings of this study, boys and girls need different coping programs and strategies because they perceive and are affected in different ways by COVID-19.

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All authors certify that they have contributed sufficiently in the work to take responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

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