

Comparison of Coping Strategies with Coronavirus Anxiety and Mental Health of Female Athletes in Aerobics and Non-Athletes

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Abstract

Objective:The purpose of this study was to compare the methods of coping with coronavirus anxiety and the mental health of female athletes aged 30-50 years participating in aerobics and non-athletes in Tehran.

Method:This study was descriptive and causal-comparative. The study's statistical population consisted of all female athletes aged 30 to 50 years in the field of aerobics and non-athletes in Tehran in the year 2021-2022. In this study, 50 female athletes from Tehran's 2nd district were selected through a voluntary sampling, while 50 non-athletic women voluntarily participated. Data were collected using the 12-GHQ Mental Health Scale (Goldberg & Williams, 1988) and the Stress Coping Styles Scale (Endler & Parker, 1990). Data analysis was performed using SPSS24 software, employing multivariate statistical analysis of variance.

Results:The research findings indicate a significant difference in coping styles between athlete and non-athlete females. Specifically, the score for problem-oriented coping style in female athletes was higher than non-athletes ($P<0.05$). The score for emotion-oriented coping style was also higher in female athletes compared to non-athletic women ($P<0.05$). However, the score for avoidance coping style in female athletes was lower than in non-athletic women ($P<0.05$). Regarding mental health, the average score for mental health in female aerobics participants was lower than that in non-athletes ($P<0.05$). A lower score in mental health is considered indicative of better mental health. Therefore, it can be concluded that female athletes have better mental health compared to non-athletic females.

Conclusion:The study's results suggest that female athletes and non-athletes have different coping styles when dealing with coronavirus anxiety. Female athletes tend to employ problem-oriented and emotion-oriented coping styles more frequently, while non-athletes are inclined toward avoidance coping styles. Furthermore, female athletes demonstrate better mental health than their non-athletic counterparts.

Keywords: Coping strategies, Coronavirus anxiety, Mental health, Female athletes, Non-athletes, Aerobics.

Introduction

Mental health stands as one of the paramount facets of overall health, wielding profound influence over physical and social well-being (Anoosheh, Forughan & Kazemnejad, 2015). Mental health is encapsulated within the broader concept of health, which emphasizes the ability to fulfill social, mental,

and physical roles rather than the mere absence of disease and impairment. Psychologists contend that personal attributes, psychological and environmental pressures, economic factors, social dynamics, family life, cultural influences, and more all exert a significant impact on individual mental health. With the rise of urbanization and the escalation of life stressors, mental illnesses have surged to the forefront as primary contributors to disability and premature mortality (Yousefi & Mohamadkhani, 2014). Remarkably, the World Health Organization notes that five out of the ten diseases causing the

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most disability globally are linked to mental health. Furthermore, epidemiological data on psychiatric disorders in Iran reveals the prevalence of mental health issues nationwide (Alizadeh, Danesh, Maleki & Javaheri, 2020). Given that women comprise half of society and shoulder significant responsibilities such as childbearing, family management, nurturing a welcoming home environment, and active participation in various social and professional spheres, addressing their mental health becomes imperative. The World Health Organization designates women's health as a key indicator of a nation's development (Nazarpour & Shirini, 2015). Undoubtedly, one of the most profound consequences of the COVID-19 pandemic was its psychological impact (Li, Wang, Xue, Zhao, & Zhu, 2020). Reviewing the results of numerous studies conducted on COVID-19 patients in China during the disease's spread, many psychological disorders, including anxiety, fear, depression, emotional fluctuations, insomnia, and post-traumatic stress disorder, have been reported with a high prevalence among these patients (Bao, Sun, Meng, Shi, & Lu, 2020). Anxiety and depression, in particular, represent significant psychological disorders that can jeopardize the mental well-being of COVID-19 patients. If left unchecked, these psychological disorders may lead to lasting consequences, such as the emergence of distressing memories, avoidance behaviors, and irritability (Chen, Liang, Li, & et al., 2020). To effectively manage and alleviate the stress stemming from these challenging situations, individuals must employ appropriate and effective coping strategies. As per Lazarus and Folkman, coping styles encompass cognitive and behavioral efforts that individuals employ to interpret, manage, and adapt to stressful situations, ultimately resulting in a reduction of suffering and stress related to those specific conditions (Lazarus & Folkman, 1984). In this context, regular moderate-level exercise is frequently recommended by various researchers as a means of maintaining and enhancing mental health

(Keyvanlou, Koushan, Seyedahmadi & Mohammadi Raoof, 2010).

Ample evidence supports the notion that reduced physical activity contributes to the development or exacerbation of chronic diseases, while increased exercise yields positive outcomes, including a reduced risk of illness (Laddu, Lavie, Phillips & Arena, 2021). Consequently, the World Health Organization underscores the significance of exercise in promoting mental health, with its 2002 motto proclaiming "mobility as the key to health." Physical activity not only alleviates symptoms of depression, stress, and anxiety but also substantially enhances mental well-being (Bagheri Sheykhangafshe, Abolghasemi & Kafi Masouleh, 2019). Several theories have explored the relationship between exercise and the reduction of psychological and mood symptoms, highlighting the positive impact of physical activity on mental health (Bagheri Sheykhangafshe, Abolghasemi & Kafi Masouleh, 2019). Moreover, studies reveal that team sports foster social acceptance among individuals by enhancing communication and social interactions. When compared to individual sports, group activities further reduce the incidence of depression and anxiety among athletes (Sabiston, Jewett, Ashdown-Franks, Belanger, Brunet, O'Loughlin & O'Loughlin, 2016).

In this context, the World Health Organization has issued guidelines regarding the minimum physical activity required during the COVID-19 pandemic. For instance, individuals between the ages of 18 and 64, who are more vulnerable to the effects of the virus, are recommended to engage in a minimum of 150 minutes of moderate physical activity per week and 75 minutes of high-intensity physical activity (Wu & McGoogan, 2020). In a cross-sectional study, Schuch et al. investigated the relationship between vigorous, moderate, and sedentary physical activity during the COVID-19 pandemic in Brazil. This study involved approximately one thousand participants, and the results indicated that individuals who

engaged in 15 minutes of intense physical activity and 30 minutes of moderate physical activity daily were less likely to experience depression and anxiety. Conversely, those lacking a consistent exercise routine were more prone to COVID-19-related anxiety (Schuch, Bulzing, Meyer, & et al., 2020). Another study by Maugeri et al. examined the impact of physical activity on the mental well-being of Italians during the 2019 Coronavirus pandemic. Approximately 3,000 individuals participated in this online study, revealing a significant decrease in the level of physical activity compared to the period before the COVID-19 outbreak. However, those who continued to engage in physical activity at home exhibited better mental well-being, enhanced cognitive function, and improved resilience in coping with the stress and anxiety associated with the pandemic (Maugeri, Castrogiovanni, Battaglia, & et al., 2020).

In a separate study, Şenişik et al. explored the psychological health of athletes during the COVID-19 pandemic and home quarantine. This study encompassed 418 athletes participating in both individual and group disciplines, along with 194 non-athletes aged 18 to 38 years. The findings indicated higher levels of depression, stress, and anxiety among non-athletes. Moreover, there was a notable positive correlation between the level of physical activity and individuals' mental health (Şenişik, Denerel, Köyağasıoğlu & Tunç, 2021). In another study, Kürşat et al. investigated the anxiety levels of student-athletes in the context of COVID-19. This study included 166 student-athletes, with results revealing higher levels of COVID-19 anxiety among female students. Conversely, students who engaged in home-based exercise reported lower levels of anxiety (Kürşat, Ahmet, Bayanz & Arslanlu, 2020). Although the COVID-19 pandemic has affected everyone with anxiety and mental fatigue, severe psychological consequences such as anxiety, anorexia, insomnia, and impaired daily functioning are three times more prevalent in women than in

men. Global statistics also demonstrate that women have faced higher rates of unemployment due to the pandemic (Bagheri Sheykhangafshe, Abolghasemi & Kafi Masouleh, 2019). According to Lee et al., gender disparities exist in adaptation and response to potentially traumatic events and life stressors, with men displaying greater flexibility and self-regulated coping responses to stress than women (Kogler, Seidel, Metzler, & et al., 2017). It is crucial to address women's health throughout their life cycle, and the slogan "Women's Health during the COVID-19 Era" underscores the vital role women play in maintaining societal well-being, with their behaviors influencing the health of others (Liu, Kakade, Fuller, Fan, Fang, Kong & et al, 2012). Therefore, during the battle against the coronavirus, adopting a healthy lifestyle, including optimal physical activity, becomes exceptionally important for this group, as inactivity and prolonged sedentary behavior can lead to adverse and detrimental health consequences (Wu & McGoogan, 2020).

Overall, the COVID-19 pandemic, home quarantine measures, and the closure of sports facilities have collectively impacted the mental health of individuals worldwide, including athletes. To date, there has been limited research examining the psychological state of athletes during the COVID-19 outbreak. Nevertheless, studies have consistently indicated that reduced physical activity during the pandemic has resulted in an array of psychological issues, including reduced sleep quality, depression, eating disorders, increased stress levels, and heightened anxiety. Furthermore, no study has specifically investigated the impact of exercise on women during the pandemic. Based on the above, it is hypothesized that differences may exist in coping mechanisms for COVID-19-related anxiety and mental health between female aerobics athletes and non-athletes in Tehran. As such, the current study aims to explore whether disparities exist in coping strategies for COVID-19 anxiety and mental health between female aerobics athletes and non-athletes in Tehran.

Method

The research design employed in this study was descriptive and causal-comparative. The purpose of this study was to compare the methods of coping with coronavirus anxiety and the mental health of female athletes aged 30-50 years participating in aerobics and non-athletes in Tehran. The study's statistical population included all female athletes aged 30 to 50 specializing in aerobics and non-athletes residing in District 1 of Tehran in the year 2021. To ensure the validity and generalizability of the findings (Jafari Nodoushan, Zare, Bidoki & Radpour, 2017), a total of 100 participants were selected (50 in each subgroup)

Participants

Participants in this study consisted of two groups:

Female Aerobics Athletes: A total of 50 female aerobics athletes from Tehran Region 1 were selected using available and voluntary sampling methods.

These athletes willingly participated in the research.

Non-Athletes: An additional 50 non-athlete females were included in the study. Participants were selected based on their willingness to participate.

The inclusion criteria consisted of individuals who were part of the research population, aged between 30 and 50 years, and provided informed consent to participate. Exclusion criteria encompassed the use of psychological medications, regular tobacco and alcohol consumption, and incomplete questionnaire responses.

Procedure

Standardized questionnaires were employed for data collection. To reach non-athletic female participants in the virtual space of the authors, which also boasts a significant following, an initial call for study participation was posted. Subsequently, from those individuals who expressed their willingness to participate, met the inclusion criteria, and lacked any exclusion criteria, a random selection of 50 women was made. Questionnaires were then distributed to them electronically. Data collection for non-athlete participants was conducted online, while for female

athletes, it was conducted in person by visiting the gym. For data analysis, a combination of descriptive and inferential statistics was employed. Descriptive statistics included calculating means and standard deviations. To assess differences between groups, the normality of data was checked using the Kolmogorov-Smirnov test, and a multivariate analysis of variance was conducted at a significance level of 0.05. All data analysis steps were performed using SPSS software version 25.

Ethical statement

All procedures performed in studies involving human participants should be according to the ethical standards of the institutional and/or national research committee and with the 1989 revision of the Helsinki Declaration and its later amendments or comparable ethical standards. All items of the Declaration of Helsinki were observed in this study.

Measures

The following standardized questionnaires were used for data collection:

Andler & Parker coping stress questionnaire : The Andler & Parker Coping Stress Questionnaire, developed in 1990 by Andler & Parker, assesses coping strategies in adolescents and adults during stressful situations. It consists of three scales: problem-oriented coping, emotional-oriented coping, and avoidance-oriented coping. Participants rate their responses on a 5-point Likert scale ranging from "no to never" (1) to "very high" (5). The scale has been validated in an Iranian sample by Ghorraishi Rad, who used factor analysis to account for 58% of the total variance of the scale. Concurrent analysis with the Billings and Mouse scales showed correlation coefficients of 0.62 for problem-oriented and 0.40 for emotional-oriented scales. Additionally, the validity coefficient of the total scale was calculated as 0.83, and for problem-oriented, emotional-oriented, and avoidance subscales, it was 0.86, 0.81, and 0.79, respectively (Chenani, 2020).

In the current study, the reliability coefficients for the stress coping strategies questionnaire were calculated using Cronbach's Alpha and the polygonal method, yielding values of 0.68 and 0.73, respectively, indicating acceptable reliability coefficients.

General health questionnaire GHQ: The General Health Questionnaire (GHQ) comprises 28 items designed to assess an individual's general health across sub-scales such as physical symptoms, anxiety, social function disorders, and depression. Responses are rated on a scale of 0 to 3, with scores exceeding 6 in each sub-scale and a total score exceeding 22 indicating the presence of health-related symptoms. Taghavi reported a reliability coefficient of 0.72 for the questionnaire through validation, while Hooman reported reliability coefficients ranging from 0.84 to 0.92 (Chenani, 2020). In the current study, reliability of the questionnaire was determined using both Cronbach's Alpha and the harmonic method, resulting in values of 0.74 and 0.76, respectively.

Results

The results of the Kolmogorov-Smirnov test indicated that the data distribution in the current study was normal ($p < 0.05$). Table 1 displays the descriptive statistics for the research variables, including the significance level of the Kolmogorov-

Based on the findings presented in Table 1, it is evident that female athletes predominantly employ problem-oriented coping styles, while non-athlete women tend to use avoidant coping styles. Additionally, female athletes are more inclined to use emotion-focused coping styles compared to non-athlete women.

In this study, a multivariate analysis of variance (MANOVA) was employed to compare coping styles and mental health between female athletes and non-athletes. The results of this analysis are summarized in Table 2.

Before conducting the MANOVA, it is essential to assess the assumptions of normality of data distribution and homogeneity of covariance variance matrices. The significance level of the Kolmogorov-Smirnov test and the homogeneity of covariance variance matrices were evaluated using the M Box statistic. The significance level of the Kolmogorov-Smirnov test for all variables was presented in Table 1, and it was found to be greater than 0.05, indicating that the assumption of normality is satisfied (refer to Table 1).

However, the M Box statistic yielded a value of $F = 6.67$ with a significance level of $P < 0.05$, suggesting a violation of the assumption of homogeneity of covariance variance matrices. Consequently, the

Table 1. Descriptive statistics of research variables and significance level of K-S test

Significance level of K-S test		Non-athlete (Standard deviation \pm mean)	Athlete (Standard deviation \pm mean)	variables
Non-athlete	Athlete			
0.052	0.200	3.4324.88 \pm	2.9610.44 \pm	mental health
0.075	0.200	4.3114.50 \pm	3.3232.30 \pm	Problem-oriented coping style
0.200	0.080	5.8220.98 \pm	7.3424.86 \pm	Excitement-oriented coping style
0.067	0.137	4.5128.88 \pm	3.9218.38 \pm	Avoidant coping style

Table 2. M Box test to check the homogeneity of the covariance variance matrix

Sig	DF2	Df1	F	Amount M Box
0.001	45915.5	10	6.67	69.8

Smirnov test.

Wilks lambda row in Table 3 was utilized to proceed

with the multivariate test.

Multivariate Analysis of Variance (MANOVA) was conducted to assess the variations in coping strategies related to COVID-19 anxiety and mental health between female aerobics athletes and non-athletes. This analysis aligns with the approach

Table 3. Multivariate analysis of variance test

Partial Eta Squared	Sig.	Error df	Hypothesis df	F	Value	Effect	
0.994	0.001	95	4	4069.14	0.994	Pillai's Trace	Intercept
0.994	0.001	95	4	4069.14	0.006	Wilks' Lambda	
0.994	0.001	95	4	4069.14	171.33	Hotelling's Trace	
0.994	0.001	95	4	4069.14	171.33	Roy's Largest Root	
0.895	0.001	95	4	202.33	0.895	Pillai's Trace	Individuals
0.895	0.001	95	4	202.33	0.105	Wilks' Lambda	
0.895	0.001	95	4	202.33	8.52	Hotelling's Trace	
0.895	0.001	95	4	202.33	8.52	Roy's Largest Root	

advocated by Tabachnick and Fidell (1997).

Based on the results presented in Table 3 and considering Wilks' Lambda, it is evident that the overall significance level for the variable "individuals" (athlete and non-athlete) in relation to coping strategies for COVID-19 anxiety and mental health is 0.001, which is smaller than the

for COVID-19 anxiety and mental health among the two groups of women, namely athletes and non-athletes.

To identify which specific variables exhibit differences, a one-way analysis of variance (ANOVA) was employed within the context of

MANOVA. The detailed results of this analysis are presented in Table 4.

Based on the results obtained in Table 4:

1. Problem-Oriented Coping Styles ($F = 534.24$, $p \leq 0.001$): The mean scores for problem-oriented coping styles were found to be significantly higher among women athletes compared to non-athlete

Table 4: Results of one-way analysis of variance in Manova text on coping strategies with coronary anxiety and mental health in the study groups

Partial Eta Squared	Sig	F	Mean Square	Df	sum of squares	Component	
0.845	0.001	534.245	7921	1	7921	Intergroup	Problem-oriented coping style
			14.827	98	1453	Error	
0.080	0.004	8.576	376.36	1	376.36	Intergroup	Excitement-oriented coping style
			43.888	98	4301	Error	
0.611	0.001	154.08	2756.25	1	2756.25	Intergroup	Avoidance coping style
			17.888	98	1753.06	Error	
0.838	0.001	507.005	5212.84	1	5212.84	Intergroup	mental health
			10.282	98	1007.60	Error	

significance level of 0.05 ($p \geq 0.001$ and $F = 202.33$ ($F(4,95)$)). Therefore, the null hypothesis (H_0) is rejected. This indicates that there is a statistically significant difference between the coping strategies

women.

2. Emotion-Oriented Coping Styles ($F = 8.58$, $p \leq 0.05$): The mean scores for emotion-oriented coping styles were also significantly higher among women

athletes compared to non-athlete women, although the effect size may be smaller compared to problem-oriented coping.

3. Avoidance Coping Styles ($F = 154.08, p \leq 0.001$): Women athletes exhibited significantly higher mean scores for avoidance coping styles compared to non-athlete women.

4. Mental Health ($F = 507.01, p \leq 0.001$): The results related to mental health indicate that women athletes had a lower average score (18.38) in mental health compared to non-athlete women (28.88). It's worth noting that in the context of mental health, lower scores often indicate better mental well-being. Therefore, it can be inferred that women athletes have better mental health compared to their non-athlete counterparts.

These findings suggest that women athletes tend to employ a combination of problem-oriented, emotion-oriented, and avoidance coping strategies to a greater extent than non-athlete women. Additionally, women athletes exhibit better mental health, as indicated by their lower scores in the mental health assessment.

Discussion and Conclusion

This study aimed to compare coping strategies for COVID-19 anxiety and mental health among adult female athletes in the field of aerobics and non-athletes in Tehran. The study's results revealed that female athletes exhibited higher levels of mental health compared to their non-athlete counterparts. These findings align with previous research conducted by Fu et al. (2020), Sabiston et al. (2016), Schuch et al. (2020), and Şenışık et al. (2021). The explanation for these findings can be attributed to several factors associated with regular physical activity:

1. Immune System and Hormones: Regular physical activity is known to enhance the immune system and promote the secretion of happiness-related hormones such as oxytocin, dopamine, and serotonin. Exercise triggers the release of these hormones in areas of the brain associated with emotions, contributing

to feelings of happiness and well-being (Lee et al., 2015, 2018). 2. Endorphins: During exercise, the brain releases endorphins, often referred to as "happiness hormones," which can induce a sense of happiness and euphoria. Beta-endorphins, a key happiness hormone, are released during exercise, leading to improved mood and mental state. Exercise has been shown to elevate the levels of beta-endorphins in the bloodstream. 3. Hormonal and Immune Adaptation: Physical activity induces changes in hormonal and immune responses. Sub-maximal exercise, for example, can reduce the secretion of the stress hormone cortisol, resulting in reduced anxiety and improved mental well-being. It can also affect regulatory hormones associated with physical immunity, leading to a balanced mental state (Naeimikia & Gholami, 2020). 4. Social Interaction: Physical activities often involve group settings, fostering interpersonal interactions and providing a sense of community. Such interactions contribute to the enhancement of individuals' mental and psychological well-being.

Additionally, engaging in physical activities during the COVID-19 pandemic may help alleviate stress related to the virus's spread. Physical activity can bolster the immune system, enhance mental and psychological resilience, and provide individuals with the capability to better cope with the challenges posed by the virus. The diverse and engaging nature of physical activity, even during periods of home quarantine, can enrich individuals' lifestyles and strengthen their mental resilience. These factors collectively support the notion that regular physical activity can have a positive impact on mental health, making it a valuable strategy for coping with the stress and anxiety associated with the pandemic.

The findings of this study indicate that women athletes employ more problem-oriented strategies to deal with stressful situations. In contrast, non-athlete women tend to lean towards emotion-oriented and avoidant coping strategies. These results align with the research conducted by Viana and de Lira

(2020), Li and Peng (2020), Anshel et al. (2000), and Wang et al. (2020), all of which demonstrate that engaging in sports, as a problem-oriented coping style, significantly contributes to reducing anxiety associated with the Covid-19 virus.

During the coronavirus epidemic, a significant number of people experienced heightened levels of anxiety and stress. Anxiety is a natural response of the body to stressful and uncontrollable conditions. However, excessive and inappropriate anxiety and stress reactions can lead to various psychological disorders, including insomnia, obsession, and severe anxiety. Therefore, individuals who engage in daily activities and allocate time to exercise are less likely to be consumed by the constant stream of COVID-19 news, thus better managing their anxiety through physical activity. Often, inefficient coping strategies in stressful situations can exacerbate anxiety, potentially leading to a loss of control and intense fear. Problem-oriented and effective coping styles are particularly crucial during the Covid-19 pandemic. While it is normal for the general public to experience anxiety due to the pervasive virus, those who gravitate towards emotion-oriented coping styles without taking action to manage their emotions and anxiety may develop generalized anxiety disorders and become more susceptible to COVID-19. One effective problem-solving coping style during the COVID-19 pandemic is engaging in home-based physical activities. Given that most people are confined to their homes, and sports clubs remain closed, regular physical activity at home plays a pivotal role in reducing anxiety related to Covid-19. In contrast, inactivity and excessive consumption of news through various media channels are considered avoidant and arousal-focused coping styles during the 2019 Coronavirus outbreak. Many individuals, particularly those suffering from COVID-19 anxiety disorder and health anxiety, replace their daily activities, including exercise and outdoor walks, with avoidance behaviors and coping mechanisms. Consequently, they perceive the situation as beyond

their control, leading to increased psychological pressure that disrupts their daily lives (Li & Peng, 2020).

In a related study, Anshel et al. examined the coping styles employed by athletes in stressful situations. The findings suggest that professional athletes tend to use more effective coping styles during high-stress situations, such as competitions. Moreover, this study revealed a significant positive correlation between poor performance and avoidance coping styles (Anshel et al., 2000). Wang et al. conducted an internet-based study exploring coping styles among Chinese individuals. The results demonstrated that individuals with high levels of anxiety tended to employ more casual and emotional coping styles. Additionally, the study found significant differences in coping styles based on gender, marital status, and education level (Wang et al., 2020).

In conclusion, it's important to acknowledge the limitations of this study. The research was conducted on a specific demographic group, consisting of female athletes aged 30 to 50, both in the field of aerobics and non-athletes in Tehran. Therefore, caution should be exercised when generalizing these results to other groups and regions. Additionally, relying solely on self-reporting and online questionnaires represents another limitation. Future studies should consider distributing research questionnaires in person while adhering to social distancing and health guidelines. Further research could involve larger samples and an examination of the mental health impact of different sports. Comparing the coping strategies and defense mechanisms of athletes and non-athletes during the COVID-19 crisis is also recommended. If previous research exists comparing the mental health components of athletes and non-athletes before the COVID-19 crisis, conducting a comparative causal study with participants from the pre-pandemic and pandemic periods is advised.

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