



The effect of sports activities on the level of corona anxiety of the treatment staff of Ilam province with the mediator role of professional identity: With structural modeling approach

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Abstract

Background and aims: Sports activities positively reduce mental disorders, especially in critical situations. Therefore, this research aimed to investigate the effect of sports activities on corona anxiety with the mediating role of professional identity in the treatment staff of Ilam province.

Methods: This research was applied, and its method was descriptive-cross-sectional. The statistical population of the research was all the treatment staff of Ilam province, which was selected using Morgan's table and stratified sampling method, with 320 people for the sample. Four standard questionnaires on coronavirus anxiety of Alipour et al, the physical activity of Baecke et al, and the professional identity of Hao et al were used to collect data. The structural equation model (SEM) was used to analyze the data with the help of SPSS-22 and Amos-22 software.

Results: The mean and standard deviation were obtained for the variables of sports activities ($\bar{X}=2.65$, $S=1.72$) corona anxiety ($\bar{X}=3.23$, $S=2.25$), and professional identity ($\bar{X}=3.30$, $S=3.77$). The research showed that sports activities ($\beta=-0.19$, $t=-2.808$) and professional identity ($\beta=-0.29$, $t=-2.624$) have a negative and significant effect on corona anxiety, and the mediating role of professional identity in the relationship between sports activities and corona anxiety was also confirmed ($\beta=0.55$, $t=-3.766$).

Conclusion: Based on the research results, the mediating role of professional identity was confirmed. Therefore, strengthening the professional identity through training causes the treatment staff to understand more about the need to participate in sports activities and, as a result, reduces their anxiety about the coronavirus.

Keywords: Corona anxiety, Professional identity, Sports activities, Treatment staff

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Introduction

In the last days of 2019, health and treatment centers became aware of people suffering from a new type of lung disease, and the continuation of various research led to the identification of a new type of coronavirus. Generally, coronaviruses first cause an infection in the respiratory ciliated mucus in the pharynx and nose, which has symptoms similar to a common cold (1). Also, they may sometimes cause more serious diseases such as terminal bronchial infection and asthma exacerbation, chronic bronchitis, and even lung infection in adults, the elderly, and people with weak immune systems (2). During the outbreak, this disease has had a wide range of psychological and social effects on society. At the individual level, people are likely to experience the fear of getting sick or feeling powerless in front of this disease. As a result, its prevalence can cause significant stress that may adversely affect people's mental and psychological health. The symptoms of this virus vary from mild to very severe and include fever, cough, and difficulty breathing. Anxiety

is common in patients with chronic respiratory disorders, including corona disease (3,4). Therefore, anxiety is one of the most common mental disorders, which means an unpleasant and vague feeling of fear and anxiety of unknown origin in emergencies, and anxiety of Corona is one of the psychological consequences of covid-19, the most important cause of which is due to its unknown nature and the creation of cognitive ambiguity about it (5). The fear of the unknown reduces the perception of safety in humans (5), and the lack of scientific information about this disease intensifies this anxiety (6). Anxiety is an unpleasant feeling that, most of the time, causes worry and apprehension with one or more physical factors such as tachycardia, shortness of breath, restlessness, etc. (7). Normal anxiety is an adaptive and necessary response to stress that prepares a person to face danger and give an appropriate response (8). The treatment staffs are the powerful forces of the healthcare system and play an important role in the development and progress of care, treatment, improvement, and promotion of people's health

(9). The treatment staff consists of general physicians, specialist doctors (physicians), nurses, anesthesiology, operating room technicians, radiology, etc., who are directly related to the health of communities (10). The treatment staff experiences more stress and anxiety due to the special conditions of the work environment and also the nature of the corona disease, such as the speed of transmission and contagiousness of the disease, the physical encounters of the treatment staff with patients, observing the daily death of people, heavy work shifts and being away from the family and the feeling of danger from transmitting the disease to family and friends and they may even transfer this stress and anxiety to their relatives (9,11). The results of Kahvazi's research showed that the level of anxiety about the coronavirus is affected by psychological capital and spirituality (12). The findings of Akhlaghifard and Meraji's research showed a positive and significant correlation between emotional disturbance and corona's anxiety level in the treatment staff of Islamshahr (13). According to Zhou and colleagues' study, the increase in psychological capital has reduced the anxiety of Chinese women's treatment staff during the corona era (14). Wang et al have reported the depression, stress, and anxiety caused by corona disease in China as moderate and severe (15).

One of the most important needs of living beings, which may have received less attention, is the need for exercise and sports activities (16). The results of various research show that the main factors affecting a healthy lifestyle and prevention of COVID-19 are moderate-intensity sports activities, proper nutrition, stress control, and social distancing (17). Neiman and Nelson showed the relationship between the risk of "upper respiratory tract infections" and the amount of sports activities in the form of a "J-shaped" curve. This means that the risk of infection decreases by increasing the amount of exercise (18).

Scientific experiences show that when people are anxious, sports activities can take their minds away from the source of stress and anxiety and may moderate stress by entertaining people (6). Mental and psychological treatments, drugs, and the health care system alone cannot reduce the psychological problems of the treatment staff; therefore, physical activities and sports can be effective ways to improve mental problems (17). Momtazbakhsh et al stated that performing sports activities such as walking can be recommended as a useful and uncomplicated method to reduce patients' anxiety along with drug treatments (19). Lesser and Nienhuis's research in Canada showed that people who did more sports activities during the corona era had less anxiety and better well-being (20). Qin et al research results in China showed that people with more Sports Activities have a better emotional state (21). Brand et al conducted research in 18 countries of the world (statistical sample of 13696 people) and showed that there is a significant positive relationship between the number of sports activities and mood changes of people; This means that people's mood was affected by the amount

of sports activities (22).

Professional identity is one of the most important characteristics of the treatment staff, which is a combination of their personal and social identity. Identity is a part of self-concept defined by a person's constant awareness that he is separate and distinct from others and is the most important factor in proving his territory (23). It is only possible to imagine a profession with a professional identity. Still, there is a possibility that people in any job and profession cannot adapt themselves to their professional values and obligations and, therefore, cannot adhere to the essence of their professional identity (9). A sense of identity in a profession requires continuous presence and a high sense of responsibility (23). The professional identity of the treatment staff is a collection of their abilities and expertise, characteristics, attitudes, and spirits that distinguish their performance compared to others in different situations, such as during the COVID-19 period (24). Valizadeh and Ghorbani's research showed that positive professional identity causes the treatment staff's personal, social, and professional development (25). Karimi Johani et al stated that the professional identity of medical workers is progressing over time and compared to the past, and to achieve a progressive professional identity, education, and research in this field should be developed in universities (26).

The review and summary of the background of the research show that the COVID-19 epidemic has created serious threats to people's lives and physical health, and it has also caused severe psychological problems such as stress, depression, anxiety, and tension in the general public and especially in the group of healthcare workers. Based on this, it is very important to identify the factors that can affect the anxiety caused by the coronavirus. Therefore, the main purpose of this study was to investigate the effect of sports activities on corona's anxiety level with the mediating role of professional identity among the treatment staff of Ilam province.

Materials and Methods

Design

This research was applied, and its method was descriptive-cross-sectional. This research started at the end of 2021 and ended on September 17, 2022. The statistical population of the research was all the treatment staff (general physician, specialist doctors (physician), nurses, practical nurses, anesthesiology, operating room technicians, radiology, etc) of Ilam province (1900 people). The statistical sample was determined to be 320 people using Morgan's table, and the stratified random sampling method (each township was considered as a class) or proportionate to volume method was used for sampling according to [Table 1](#).

Participants and setting

To comply with ethical considerations, the code of ethics was obtained from the research ethics committee of Ilam University. Also, other ethical considerations

Table 1. Population and statistical sample by the cities of Ilam province

Cities	Statistical population	Statistical sample	Percent
Ilam	900	130	41%
Abdanan	150	30	10%
Ivan	200	30	10%
Badreh	50	10	3%
Chardavol	50	10	3%
Dareh shahr	100	20	6%
DehIran	100	20	6%
Sirvan	50	10	3%
Holaylan	50	10	3%
Mehran	200	40	12%
Malekshahi	50	10	3%
Total	1900	320	100%

of this research were the voluntary presence of the respondents, the commitment to feedback on the results to them, obtaining informed consent (verbally), and the confidentiality of the individual results. The inclusion criteria included the treatment staff of Ilam province, and the exclusion criteria included incomplete filling of the questionnaires. In this research, the independent variable was sports activities, the dependent variable was Corona anxiety, and the mediating variable was professional identity.

Data collection

The library method was used to collect the background and theoretical foundations of the research, and four standard questionnaires were used to collect information. The filling of the questionnaires was done by visiting the treatment staff in person (face-to-face referral):

1. *Demographic Questionnaire*: This questionnaire consists of 7 questions about gender, age, marital status, income, work experience, job, and field of study, in which general and demographic information is collected from the statistical sample.

2. *Corona Disease Anxiety Scale (CDAS)*: This questionnaire was prepared and validated by Alipour et al to measure the anxiety of the coronavirus in Iran. The final version of this questionnaire has 18 questions and two subscales (factors): questions 1 to 9 to measure mental symptoms and questions 10 to 18 to measure physical symptoms. This tool is in the four-point Likert scale, where the maximum score is 72, and the minimum score is 18. Using Cronbach's alpha method, the reliability of this tool was 0.91, and its validity was confirmed using exploratory and confirmatory factor analysis (27). Kahvazi reported the reliability of this questionnaire as 0.93

using Cronbach's alpha (12). Also, ten expert professors confirmed the content validity of this research, and its reliability coefficient was 0.86 using Cronbach's alpha.

3. *Baecke et al's physical activity questionnaire (1982)*: This questionnaire was used to collect data about physical activities and sports. This questionnaire has 25 questions that are composed of three subscales of sports activities related to work (7 questions), sports exercises (14 questions), and sports activities related to leisure time (4 questions). This tool is in the five-point Likert scale, where the maximum score is 125, and the minimum score is 25. Baecke et al, using Cronbach's alpha method, obtained the reliability of this questionnaire at 0.73 (28). Ghorbanzadeh and Lotfi reported the reliability of this questionnaire as 0.88 using Cronbach's alpha (29). Also, 10 expert professors confirmed the content validity of this research, and its reliability coefficient was 0.87 using Cronbach's alpha.

4. *Professional identity questionnaire*: Hao et al prepared and validated this questionnaire to measure professional identity among nursing students and the effectiveness of interventions and educational strategies related to professional identity. This questionnaire consists of 17 questions and five subscales (professional personal image (6 questions), job achievements (4 questions), social comparison and self-reflection (3 questions), professional independence (2 questions), and social modeling (2 questions)). This tool is in the five-point Likert scale, where the maximum score is 85 and the minimum score is 17. Hao et al obtained the reliability of this tool as 0.83 using Cronbach's alpha method (30). Also, 10 expert professors confirmed the content validity in this research, and its reliability coefficient was 0.91 using Cronbach's alpha.

Data analysis

Descriptive statistics indicators such as mean, standard deviation, and minimum and maximum score were used for data analysis, and a normality test (skewness and kurtosis) was used to test the normality of the data. The skewness and kurtosis coefficients of all research variables were within the acceptable range (+2 and -2); Therefore, it can be concluded that the data distribution was normal. Also, Pearson's correlation test and structural equation model (SEM) analysis with the help of SPSS-v22 and Amos-v22 statistical software were used to survey the research hypotheses. This article is based on the STROBE checklist.

Results

The results of the descriptive statistics of the research are shown in Table 2.

Table 2. Descriptive statistics of demographic variables

Variable	Gender		Marriage		Education				Age				Total
	Female	Male	Married	Single	Physician	Ph.D	Master's degrees	Bachelor's degrees and below	>40	31-40	21-30	<20	
Frequency	205	115	188	132	35	20	37	228	55	163	102	0	320
Percent	64.1	35.9	58.7	41.3	10.9	6.2	11.6	71.3	17.2	50.9	31.9	0	100%

Also, based on Table 3, the measurements obtained from the factor loadings of the measurement model and their comparison with the desired reliability and validity value, it can be confirmed that the reliability and validity of the research model are appropriate.

In the second part of the model (structural model part), Pearson's correlation coefficient and structural equation modeling have been used to test the proposed hypotheses:

According to Table 4, sports activities significantly correlate with professional identity and Corona anxiety. There is also a significant correlation between professional identity and corona anxiety. Since the correlation method is not a suitable method for predicting the effect of

independent variables on dependent variables, and cannot properly explain the errors in the measurement and also ignores the effect of the variables together; Therefore, to investigate the effect of variables with their simultaneous presence together (in the form of a single model), the method of structural equation modeling has been used:

In the tested model, the significance of the path coefficients and factor loadings was checked at the 0.95 level, as shown in Figure 1. It was observed that all the factor loadings are significant at this confidence level, which means that the correlation coefficient of manifest variables in the estimation of hidden variables related to themselves has the necessary ability. As a result, it shows that the model's validity is confirmed. According to Figure 1, approximately 33% of corona anxiety is explained based on the variables of sports activities and professional identity, and the other 67% is from other dimensions. It can also be stated that Sports Activities explain 62% of professional identity, and 38% of it will be determined by other factors that are not considered in this research.

The hypothesis of the effect of sports activities and sports on the level of anxiety caused by Corona, indirectly through the mediating variable of professional identity, was investigated with the Sobel test, and the result was -3.76. In the Sobel test, the value of t is obtained through the following formula, if this value exceeds 1.96, it can be confirmed at the 95% confidence level that the effect of

Table 3. Reliability and validity indices of variables

Variable	Average variance extracted	Construct validity	Cronbach's alpha	Factor load
Corona Anxiety	0.56	0.72	0.71	0.75
Professional identity	0.66	0.91	0.91	0.81
Corona Anxiety	0.63	0.96	0.96	0.78

Table 4. Correlation coefficient related to research variables

	Frequency	Correlation	P value
Sports activities and professional identity	320	0.684	0.000
Professional identity and corona anxiety	320	-0.584	0.000
Sports activities and corona anxiety	320	-0.531	0.000

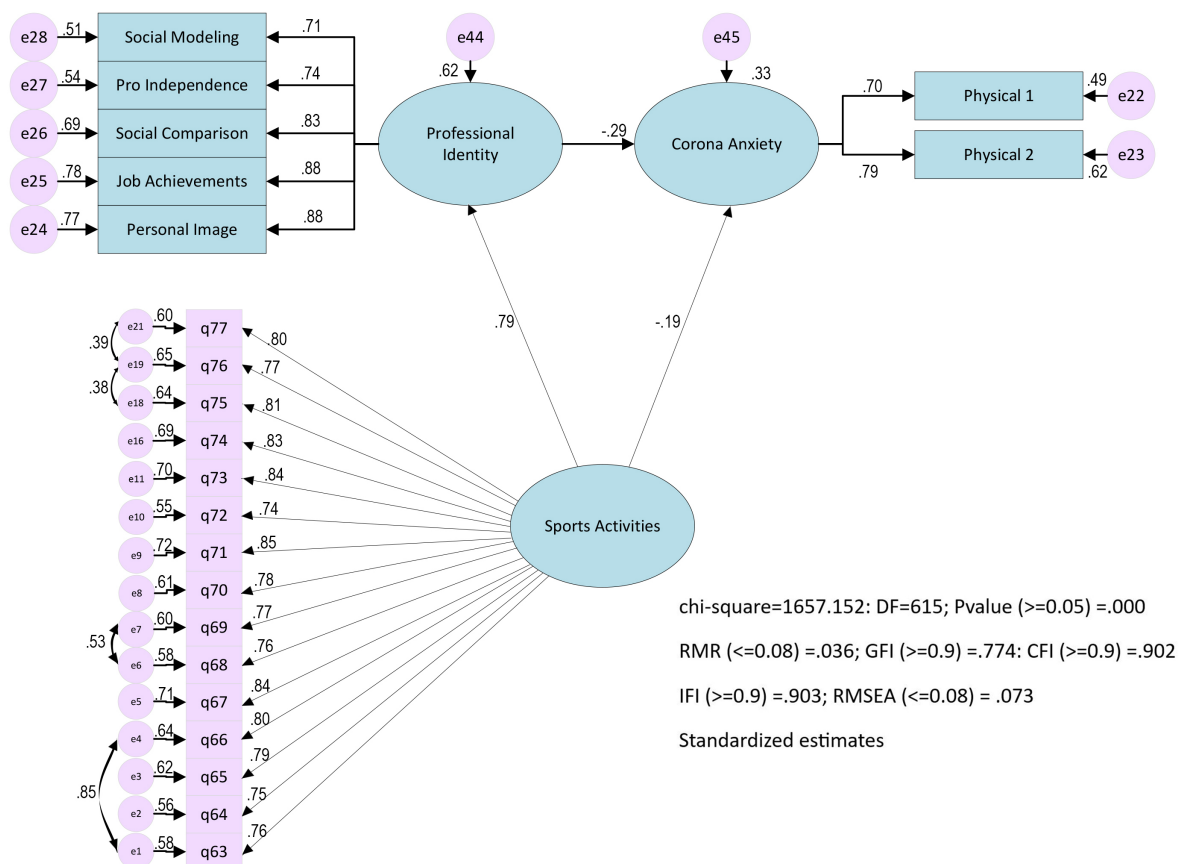


Figure 1. Structural model of the main research hypothesis

the mediator variable is significant:

$$Z - value = \frac{a \times b}{\sqrt{(b^2 \times s_a^2) + (a^2 \times s_b^2) + (s_a^2 \times s_b^2)}} = -3.766$$

Also, Variance Accounted For, or VAF, is used to check the intensity of a variable's mediating role. If the amount of VAF is less than 20%, the role of mediation is rejected, and if it is above 80%, the mediation claim is accepted. There is a partial and medium mediation role where the VAF is between these two values. The VAF formula is:

$$VAF = (P_{12} * P_{23}) / (P_{12} * P_{23} + P_{13}) = 0.55$$

According to the VAF formula, a value of 55% was obtained for the mediating role of professional identity in the relationship between sports activities and sports and the level of corona anxiety. Therefore, the mediating role of professional identity is accepted in both relationships partially and moderately, and we conclude that there is a positive and meaningful relationship between sports activities and sports and the level of corona anxiety through the mediating role of professional identity: According to Table 5, sports activities and professional identity have a significant and negative effect on Corona anxiety and the mediating role of professional identity was also confirmed.

The final part of the conceptual model of this research is the general fit of the model. According to Table 6, the fit of the final model was confirmed:

Discussion

This research was conducted with the aim of the effect of sports activities on the level of anxiety of the treatment staff of Ilam province with the mediator role of professional identity. The descriptive results of the research showed that the amount of sports activities of the treatment staff is very low. In explaining this issue, it should be mentioned that this research was conducted during the time of COVID-19, and one of the important reasons for not doing sports activities was the fear of corona disease. Also, according to the results of Rezaei's research, during the corona period, 88% of indoor sports facilities, 64.9% of outdoor sports facilities, and 22.1% of parks were closed, and this was one of the important reasons for the reduction in sports activities of the treatment staff (17).

The inferential results of this research showed that sports activities have a negative and significant effect on

the level of anxiety of corona, which is consistent with the findings of Hosseinpour and Godarzi, Momtazbakhsh et al, Huang et al and Li et al (19,31-33) and does not agree with the research results of Ströhle, Bartley et al and Pearsall et al (34-36). Perhaps one of the reasons for the lack of effect of sports activities on reducing anxiety in previous research is the level, intensity, and type of anxiety investigated. But regarding the effect of sports activities and sports (aerobic, anaerobic, and all kinds of sports) on reducing the anxiety of the treatment staff, it seems that the anti-anxiety effects of sports activities can be explained based on various mechanisms, including physiological and psychological. From the physiological point of view, sports activities can have anti-anxiety effects by making it possible for a person to achieve physical fitness, affecting the level of neurotransmitters, affecting the levels of stress hormones, and reducing muscle tension. From a mental and psychological point of view, sports activities can reduce anxiety by increasing the intensity of the activity and then providing a basis for increasing self-confidence and feeling of self-sufficiency; stress and anxiety arise due to a lack of self-confidence in people. Also, regular sports activities reduce the function of the sympathetic nervous system and the axial activity of the hypothalamus-pituitary-adrenal gland, which this hormone plays an important role in the development of adaptive responses to physical and psychological stressors, and the disorder and disruption of this hormone for a long time play a key role in the emergence Symptoms of depression and anxiety (37). Research has shown that sports activities can cause changes in the accumulation of monoamine receptors (norepinephrine, dopamine, or serotonin) or endogenous painkillers (endorphin and enkephalin) and thus be effective in positive mood changes. The beneficial psychological and social aspects of sports activities are also significant for stress and anxiety, which includes the opportunity for social interactions, freedom from daily stressors, and the experience of feeling self-efficacy and self-efficacy, as well as physically active people, compared to their inactive counterparts, are less they show symptoms of stress and depression (38).

Another result of this research was the negative and significant effect of professional identity on corona anxiety, which was not found in this field, consistent and inconsistent research. In explaining this issue, it should be mentioned that the treatment staff's awareness and knowledge about the nature of the COVID-19 disease

Table 5. The results of the research hypothesis testing

Hypothesis	Independent variable	→	Dependent variable	Path coefficient	Critical ratio	Result	Description
1	Sports activities and sports	→	Corona Anxiety	-0/19	-2.808	confirm	Negative correlation
2	Professional identity	→	Corona Anxiety	-0.29	-2.624	confirm	Negative correlation
3	Sports activities and sports	→	Professional identity	0.79	1.355	Reject	Lack of correlation
4	The mediating effect of professional identity on the relationship between sports activities and Corona anxiety			0.55	-3.766	confirm	Negative correlation

Table 6. Final model fit

Indicator	RAMSE<0.8	CFI>0.9	RMR<0.8	IFI>0.9
Model indicators	0.073	0.902	0.036	0.903

has probably reduced their anxiety compared to other members of society. Also, full compliance with health and treatment protocols is another topic that has caused more self-confidence and less anxiety and stress for the treatment staff. Various solutions such as revising the job description, developing the participation of the treatment staff in decision-making, delegating authority, respecting and maintaining the value of the treatment staff, developing specialized training, and providing feedback on their professional performance can help to strengthen self-confidence and expand the application of professional knowledge and skills of the treatment staff. As a result of these strategies and in acute and emergencies such as the period of COVID-19, it reduces their stress and anxiety. Also, this research's findings emphasize that professional identity reduces anxiety because it adapts the attitudes and behaviors of the treatment staff to their professional roles. Also, not paying attention to the topic of professional identity in the treatment staff can cause weakness in communication skills, hurt the level of social interaction of the treatment staff with the clients, and destroy the opportunities for acquiring mental, physical, and social skills from the treatment staff; Therefore, he should have been aware of its dangers, and in this context, he carried out extensive culture building in health and treatment centers.

Other research findings showed that sports activities negatively and significantly affect corona anxiety through professional identity. According to the VAF formula, a value of 55% was obtained for the role of professional identity in the relationship between sports activities and anxiety caused by Corona, and the mediating role of professional identity was accepted as moderate.

In explaining this finding, it can be stated that institutionalizing the issue of professional identity is one of the most important issues that can affect the performance of the treatment staff; Therefore, it is necessary to pay attention to factors such as collaborative activities, holding and promoting in-service training courses, logical compatibility between practical and theoretical courses for the development of the professional identity of the treatment staff. Another point that should be paid attention to achieve a professional identity in the treatment staff is to perform team and communication activities; Because teamwork is one of the necessities of the therapy staff's profession due to the creation of professional relationships, increasing motivation, reducing job abandonment, and reducing stress and anxiety. The research results showed that sports activities and professional identity significantly reduce Corona's anxiety, and the mediating role of professional identity was also confirmed. Therefore, strengthening the professional identity through training

causes the treatment staff to understand more about the need to participate in sports activities and, as a result, reduces their anxiety about the coronavirus. The limitations of this research were the spread of corona disease and the limitations of access to the treatment staff, the large number of questions in the questionnaires, the reluctance of the treatment staff to answer, and the possibility of the effects of intervening variables.

Conclusion

Finally, the findings of this research led to the expansion of information in the field of the necessity of doing sports activities, the professional identity of the treatment staff, and the anxiety caused by Corona. They showed that sports activities and professional identity affect the anxiety caused by Corona among the treatment staff of Ilam province and with the variable of professional identity. It is possible to strengthen the relationship between sports activities and Corona anxiety. Therefore, it is suggested to organize training workshops to promote professional identity, provide participation in decision-making for the treatment staff, provide positive and clear feedback on the efforts of the treatment staff, pay attention to moral values and independence in clinical activities, and also participate in sports activities to reduce staff anxiety. Therapy (at least 150 minutes per week of moderate-intensity or 75 minutes of high intensity).

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Authors' Contribution

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Competing interests

None.

Ethical Approval

Ethical considerations in this study included obtaining permission from the Ethics Committee of Ilam University (Ethical code: IR.ILAM.REC.1400.004) and obtaining written consent to participate in the study.

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