

Research Paper

Effect of Rehabilitation Continuous and Interval Aerobic Exercise on Depression and Anxiety in Patients With Cardiac Diseases after Coronary Artery Bypass Surgery



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ABSTRACT

Objectives The current study aimed at serving the effects of continuous and interval exercise training on decreasing the depression and anxiety in patients with heart diseases after coronary artery bypass graft surgery.

Methods The research method was semi-experimental and the statistical population included the cardiac patients after coronary artery bypass graft surgery at Tehran Heart Center. They were referred to the Tehran Heart Center in the first three months of 2010. Twenty patients were selected from Tehran Heart Center and divided into a selected aerobic continuous training (n=10) or an aerobic interval training (n=10) with three intervals, three times a week for eight weeks. Depression and anxiety were measured by Persian version of Castello and Camri questioner. Also T student test was employed for within group analysis. Spss Version 16 was used for statistical analyses.

Results The study results showed that both selected aerobic continuous (pre-exercise 89.16 ± 5.48 , in comparison with post exercise 82.30 ± 4.78 , $P=0.008$) and interval exercise (pre-exercise 83.70 ± 5.01 in comparison with post exercise 77.30 ± 3.80 , $P=0.022$) programs had a decremented beneficial significant effect on depression and anxiety. Also there were no significant differences between the two groups in improving the anxiety and depression ($P=0.381$).

Conclusion It can be concluded that both continuous and interval aerobic exercise programs had a positive effect on reducing the anxiety and depression of patients after coronary artery bypass graft surgery, but no differences were observed between type (continuous, interval, resistance, Aerobics, etc.) and intensity (low, moderate and severe) and their effects on the mental and psychological aspects. Therefore, both types of programs are proposed for clinical centers and psychological rehabilitation.

Extended Abstract

1. Introduction



Chronic depression and anxiety can be risk factors for coronary artery disease and may be created as an emerging agent after

coronary artery disease, hospitalized, and surgery [1, 2]. The symptoms of depression and anxiety are very high in patients with stable heart disease [1]. Chronic depression disrupts the physical and social function of the individual. Its consequent disorders are more severe than consequences of other diseases such as hypertension, pulmonary disease, diabetes and arthritis [3]. However, less rehabilitation

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programs are thrown at them. The importance of exercise training as a treatment for cardiovascular diseases in post CABG patients is identified, but research in this area is limited and the role of the severity and type of the periodic and continuous protocol is not determined. Therefore, the current study aimed at comparing the effects of two methods of exercise program on anxiety and depression in patients with cardiac disease after coronary artery bypass graft surgery.

2. Method

The participants of the current study included post-Coronary Arteries Bypass Graft Surgery (CABG), at least three months after their surgeries. After the call and the initial clinical evaluations (Clinical histories, history of cardiovascular diseases, clinical examinations and electrocardiogram diagnostic procedures, echocardiography, and exercise tests) by an expert physician, 20 patients with a mean age of 57.05 ± 8.91 years, a mean of 1.67 ± 0.62 m, weight of 75.35 ± 9.22 and a mean of 26.28 ± 3.20 (18 males and two females) with eligible conditions, and no motor restriction, were selected and placed in aerobic continuous (n=10) and aerobic interval exercise (n=10) groups. They attended the sessions three times a week for eight weeks. Anxiety and depression were measured in two stages before and after the program using the Persian version of the Costello and Comrey questionnaire [19]. The reliability and validity were acceptable [20]. The independent and paired t-test were employed for the statistical analyses with SPSS version 16.

3. Results

The study findings showed a significant reduction by both continuous exercise programs (before exercise: 89.16 ± 5.48 vs. after of exercise: 82.30 ± 4.78 , $P=0.008$) and interval aerobic exercise (before exercise $83.70 \pm 8.83\%$ compared with after exercise: 77.30 ± 3.80 , $P=0.022$) on anxiety and depression of patients after coronary artery bypass graft surgery. Also, an examination of inter-group differences before the test indicated no significant differences between groups ($P=0.65$) and post-program anxiety and depression showed a significant difference ($P=0.019$) among groups. After analyzing the absolute amount of changes (anxiety and depression in the first stage, anxiety and depression in the second stage), there was no significant difference between the changes in anxiety and depression in the two groups ($P=0.381$).

4. Discussion

The most important finding of the current study was the significant effect of both continuous and periodic exercises

on reducing the anxiety and depression of post Coronary Artery Bypass Grafting surgery (CABG). Both continuous exercise training (7.69% reduction) and interval exercise training (6.6% reduction) had a nearly identical effect on reducing the anxiety and depression of patients. Of course, more studies are needed to prove these findings.

According to authors' best knowledge, no studies examined the effect of the two types of continuous and interval exercise on anxiety and depression of patients with CABG. A recent review also suggested that evidence about the therapeutic effect of exercise on anxiety and depression symptoms of ischemic heart disease is limited. But regular and organized exercise has many positive consequences on reducing negative aspects of psychology. Also, Prager et al. showed that psychological problems had negative effects on the physical activity of patients with cardiac disease, and the rate of regular exercise in patients with coronary artery disease and severe symptoms of depression is very low, and possibly severe symptoms of depression can be observed in patients with vascular disease. It prohibits coronary heart disease from engaging in regular exercise [21].

In a systematic review of 14 studies on the effect of exercise therapy on the symptoms of depression and anxiety in patients with ischemic heart disease, (some with a significant decremented and some with low effect), the researchers concluded that although there are some data available about the effect of exercise on the symptoms of anxiety and depression, it is not concluding about the effectiveness of exercise on the symptoms of patients with depression and anxiety [14]. Pourafkari et al. showed that an exercise rehabilitation program along with psychological counseling can have a positive effect on anxiety and depression in postoperative patients with coronary artery disease [22]. Authors' further research on the effects of the type and intensity of exercise on anxiety and depression in patients with cardiac disease did not have any results.

In summary, the findings of the current study and other researches in general showed that exercise training can be decrease the signs of anxiety and depression in patients with cardiac disease at each stage, either in the acute stage of a heart attack, or before or after the surgery. There was no significant difference between the effects of type (continuous, interval, strength, and aerobic ...) and intensity (low, moderate and high) of trainings on depression and anxiety or other psychological variables. However, some research show that long-term continuous exercise with secretion of endorphins and euphoria has more favorable psychological outcomes.

Ethical Considerations

Compliance with ethical guidelines

In this research, the form of ethical considerations was filled by the patients and was followed by the exercise physiologist. And also the participants signed the informed consent form and had the right to leave the study at any time.

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Authors contributions

Conceptualization, investigation and project administration: All authors; Methodology: Ali Asghar Fallahi; Writing-review and editing: Ali Asghar Fallahi.

Conflicts of interest

The authors declared no conflict of interests.

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