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The effect of 8 weeks of high intensity interval training and of L-arginine supplementation on ejection fraction and functional capacity in patients with chronic heart failure

Abstract:

Chronic heart failure is a common and complex clinical syndrome that is caused by restless impairment or contraction of the heart. Since L-arginine is a precursor to endothelium nitric oxide production, aerobic exercise and supplementation of L-arginine can be an important therapeutic value for patients with chronic heart failure. The aim of this study was to investigate the effect of 8 weeks of aerobic exercise with and without supplementation of L-arginine on ejection fraction and functional capacity in patients with chronic heart failure. In a semi-experimental, 60 patients with chronic heart failure who referred to Shahid Chamran Hospital in Isfahan were purposefully selected and then randomly assigned to either the HIIT+ supplementation of L-arginine group (n=15, age of 53.7 ± 12.82), HIIT group (n=15, age of 53.82 ± 52), supplementation of L-arginine only group (n=15, age of 58.2 ± 16.21) and control group (n=15, age of 55.7 ± 13.27). HIIT group completed 6 × 3-min bouts of running at the intensity of 80-90% peak oxygen uptake (VO_{2peak}) separated by 2-min active recovery at 30-40% VO_{2peak} , 3 sessions/week on the treadmill, for 8 weeks. The body composition, blood pressure, ejection fraction and functional capacity were measured pre and post interventions. After 8-week interventions, the body weight and BMI significantly without difference between the four groups ($p > 0.05$). After 8-week interventions, body weight, BMI BMD (HIIT, $\beta 8.5\%$; MICT, $\beta 5.5\%$) significantly increased ($p < 0.05$) without difference between the two groups ($p > 0.05$). The functional capacity and ejection fraction significantly increased in both training groups with significantly higher changes in HIIT+ L-arginine ($p < 0.05$). but not in L-arginine and control groups ($p > 0.05$). It suggested that 8-week HIIT and L-arginine interventions is a very effective way to improve the ejection fraction and functional capacity of patients with chronic heart failure. Therefore, this therapeutic approach can be used as a complementary therapy to reduce symptoms and improve ejection fraction, functional capacity, and quality of life in treatment centers.

Biography

Mehdi Kargarfard has completed his PhD at the age of 29 years from Tarbiar University and postdoctoral studies from Stanford University School of Medicine. He is the dean of the Faculty of Sport Sciences and the director of Physical Education of University of Isfahan. He has published more than 50 papers in reputed journals and has been serving as an editorial board member of reputed