

Impact After Physical Training on Heart Failure

ABSTRACT

Background: Physical exercise has demonstrated important cardiovascular benefits in patients with heart failure (HF) and reduced left ventricular ejection fraction (LVEF). High-intensity aerobic interval training (HIIT) has shown better responses when compared to moderate-intensity continuous training (MICT). However, there are discrepancies regarding the determination of the intensities applied to the exercises, so that the responses found may be underestimated.

Objective: To evaluate the effect of HIIT versus MICT, with intensities guided by ventilatory thresholds, on functional capacity and cardiovascular function.

Methods: A total of 42 participants with HF and LVEF $\leq 40\%$ will be randomized into two training groups (HIIT and MICT). The exercise intervention will last 12 weeks, with two weekly sessions. Interval strength training will be added to each session for both groups. The main objective will be to compare functional capacity measured by O₂ consumption (VO₂ peak) between the training groups. Functional capacity assessments by cardiopulmonary exercise testing (CPET), cardiac function with myocardial strain, endothelial function, cardiac autonomic control, pulmonary function, 24-hour blood pressure behavior, arrhythmia burden, functional tests, quality of life, muscle strength, body composition and nutritional survey will be performed initially, after the 6th and 12th weeks of training.

Discussion: The study will evaluate the effect of training modalities on the cardiovascular system and functional performance of patients with HF and reduced LVEF. Early changes may be detected in the analysis of cardiac function by myocardial strain through echocardiography. In addition, a secondary analysis may identify characteristics of patients who respond better to each training modality.

Key words: Heart failure, exercise, cardiopulmonary exercise test, functional capacity, myocardial strain, heart rate variability, endothelial function, high-intensity interval training.