High-intensity interval training in ST-elevation myocardial infarction and non-ST-elevation myocardial infarction: risk to benefit ratio?

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Introduction: High-intensity interval training (HIIT) is increasingly popular exercise training intervention and meta-analyses have suggested HIIT to be more effective at improving cardiorespiratory fitness (CRF) and reducing adiposity compared to moderate-intensity continuous training (MICT) in patients after myocardial infarction.[1] However, the impact of HIIT training on cardiac biomarkers is still controversial. Therefore, the aim was to longitudinally follow up on the main blood markers during 12 weeks of HIIT training in ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI) patients.

Patients and Methods: 16 STEMI and NSTEMI (age 58 ± 10 years; height 177 ± 9 cm; weight 86.8 ± 15.4 kg; VO_2max 19 ± 5.3 ml min-1kg-1) underwent 12 weeks of supervised cycling HIIT (4x4 min at 85-95% of HRmax) 3 times per week. Lipid profile as well as cardiac biomarkers (C-reactive protein, hs-Troponin, NT-proBNP) were assessed prior, at week 4 and 8 and post 12-week of proposed training programme.

Results: Blood triglycerides decreased significantly by 22% across the group (1.77 ± 0.97 vs 1.38 ± 0.75 mmol/L, P=.003) after 12 weeks of training. HDL increased by 3.6% whole LDL cholesterol decreased by -2.36% across the group although not in a significant way. CRP decreased by 43.4% (1.99 ± 1.51 mg/dL vs 1.11 ± 1.04 md/dL) and NT-proBNP did not change significantly although a drop of 3.15% was measured.

Conclusion: HIIT did not have a negative effect on the NT-proBNP levels while it improved the lipid profile and C-reactive protein levels. Prescribing safe and progressive exercise programs after CR is critical to improve these parameters that represent prognostic indicators for CVD patients. HIIT has shown to be a type of safe exercise intervention in this group of patients that positively improves blood biomarkers already after 4 weeks of HIIT.

LITERATURE

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