

High-intensity interval training protocol as a structural part of cardiac rehabilitation – advantages and limitations

 Ivona Brajković^{1,2,*},

 Irena Kužet Mioković^{1,2},

 Marica Komosar-Cvetković^{1,2}

¹Special Hospital for Medical Rehabilitation of the Heart and Lung Diseases and Rheumatism “Thalassoterapia Opatija”, Opatija, Croatia

²University of Rijeka, Faculty of Health Studies, Rijeka, Croatia

KEYWORDS: cardiac rehabilitation, cardiorespiratory fitness, high intensity interval training.

CITATION: *Cardiol Croat.* 2022;17(9-10):330. | <https://doi.org/10.15836/ccar2022.330>

***ADDRESS FOR CORRESPONDENCE:** Ivona Brajković, Thalassoterapia Opatija, Ul. Maršala Tita 188, HR-51410 Opatija, Croatia. / Phone: +385-99-2519-600 / E-mail: brajkovic.ivona1@gmail.com

ORCID: Ivona Brajković, <https://orcid.org/0000-0002-1420-5918> • Irena Kužet Mioković, <https://orcid.org/0000-0003-4990-6201> Marica Komosar-Cvetković, <https://orcid.org/0000-0002-9539-9733>

Background: Scientific data confirm the effectiveness of cardiac rehabilitation (CR) elements in the form of individually tailored physical activity (PA) protocols. CR based on PA is a safe and well-established intervention for improving cardiorespiratory fitness (CRF) and quality of life of patients. For decades, the preference of the guidelines was medium intensity continuous training (MICT), however, in the past ten years, high-intensity interval training (HIIT) has been introduced into CR and showed excellent clinical improvements in patients with coronary heart disease (CHD) and chronic heart failure (CHF). This systematic review analyzed data on the significance and safety of HIIT profiles within CR. In addition, the importance of the most appropriate protocol, performance and intensity at the individual level when performing PA within CR was pointed out.

Methods and Results: A systematic literature search was conducted using online bibliographic databases. The review included studies comparing MICT vs. HIIT and the patients with a diagnosis of CHD or CHF within the CR. All interventions were carried out under supervised conditions at specialized institutions for CR. HIIT is a term for a time-efficient training modality that involves alternating periods of high-intensity aerobic exercise (85-95% HRmax; RPE 15-18) with a low-intensity active recovery interval (70% HRmax; RPE 11-13). The optimal time dose of HIIT to maximize health outcomes is the HIIT model 4x4min. A psychological approach and a safe environment provide the patient with confidence and motivation to achieve the outcome. Systematic reviews based on such an approach indicate the superiority of HIIT over MICT in terms of VO_{2peak} ¹.

Conclusion: The HIIT protocol provides a greater physiological stimulus and adaptation compared to MICT, therefore creating a greater benefit for improving CRF and other metabolic processes important for primary and secondary prevention of cardiovascular disease. Due to the lack of guidelines, various models of interval training are on the market, therefore it is necessary to incorporate current objective and subjective concepts of intensity to determine and follow a personalized approach based on patient preferences and abilities, especially in the context of long-term adherence^{2,3}.

RECEIVED:
November 4, 2022

ACCEPTED:
November 10, 2022



LITERATURE

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