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Basel

Research Project

High-intensity interval training as treatment strategy for heart failure patients with preserved ejection fraction: A prospective, single-blind, randomized controlled trial (The HIT-HF Trial)

Third-party funded project

Project title High-intensity interval training as treatment strategy for heart failure patients with preserved ejection fraction: A prospective, single-blind, randomized controlled trial (The HIT-HF Trial)

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Organisation / Research unit

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Department

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Background: Heart failure with preserved ejection fraction (HFpEF) occurs in about 50% of all HF patients. Remodeling and fibrosis stimulated by inflammation appear to be main factors for the progression of HFpEF. The lack of treatment options in HFpEF urgently calls for new therapeutic approaches. While beneficial effects of exercise training have been demonstrated in heart failure with reduced ejection fraction, they have not yet been sufficiently evaluated in HFpEF. The aim of this study is to investigate the effects of high-intensity interval training on the exercise tolerance of HFpEF patients. The primary outcome exercise tolerance will be measured as peak oxygen uptake (VO_{2peak}).

Methods: The proposed study will be a prospective, single-blind, randomized controlled trial in a primary care setting, including 86 patients with stable HFpEF. Patients will undergo two study visits including measurements of disease-specific biomarkers, cardiac and arterial vessel structure and function, exercise tolerance, habitual physical activity, and quality of life. After the first visit, patients will be randomized into the intervention or control group. The intervention group (n=43) will attend a supervised 12-week high-intensity interval training on a bicycle ergometer. The control group (n=43) will participate in a 12-week moderate-intensity continuous training. After 12 weeks, the study measurements will be repeated in all patients to monitor the effects of the intervention. At 6 months, 1, 2 and 3 years after the intervention, telephone interviews will be performed to assess medical outcomes and quality of life.

Discussion: This study is expected to add important knowledge about the potential utility of a novel treatment strategy in HFpEF patients, which may help to improve quality of life, functional status, and prognosis.

Keywords Heart failure with preserved ejection fraction, High-intensity interval training, Exercise tolerance, Therapy response prediction

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