

# INPLASY PROTOCOL

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**Conflicts of interest:**  
None declared.

## The Effect of High-Intensity Interval Training on Exercise Capacity in Patients with Coronary Artery Disease: a Systematic Review and Meta-Analysis

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**Review question / Objective:** The aim of this meta-analysis is to evaluate the efficacy of high-intensity interval training versus moderate-intensity continuous training on exercise capacity in patients with coronary artery disease.

**Condition being studied:** Exercise-based cardiac rehabilitation is a safe and well established intervention to improve aerobic exercise capacity, muscle strength, metabolic parameters, quality of life and survival in patients with coronary artery disease. Despite the well-known benefits of exercise-based cardiac rehabilitation, the most efficient modality and intensity are still under discussion. Traditional exercise prescription includes moderate continuous aerobic exercise training; however, since the recommendation of the American Heart Association in 2007, a strong clinical interest has emerged in high-intensity interval training. Thus, high-intensity interval training, is currently considered as an alternative for moderate continuous exercise within a cardiac rehabilitation program.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 April 2022 and was last updated on 07 April 2022 (registration number INPLASY202240036).

### INTRODUCTION

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still under discussion. Traditional exercise prescription includes moderate continuous aerobic exercise training; however, since the recommendation of the American Heart Association in 2007, a strong clinical interest has emerged in high-intensity interval training. Thus, high-intensity interval training, is currently considered as an alternative for moderate continuous exercise within a cardiac rehabilitation program.

## METHODS

**Participant or population:** RCTs compared the effectiveness of HIIT with MICT in participants with CAD.

**Intervention:** High-intensity interval training.

**Comparator:** moderate-intensity continuous training.

**Study designs to be included:** RCTs.

**Eligibility criteria:** The inclusion criteria: (1) RCTs compared the effectiveness of HIIT with MICT in participants with CAD; (2) at least one of the following outcomes measured: VO<sub>2</sub>peak, peak heart rate (HR<sub>peak</sub>), resting heart rate (HR<sub>rest</sub>), resting systolic blood pressure (SBP), resting diastolic blood pressure (DBP); and (3) The language was restricted with English. The exclusion criteria: (1) single-arm research, animal experiment research; (2) conference papers, letters, or abstract where full-text was not available; (3) The data was not completed.

**Information sources:** PubMed, Embase, the Cochrane Library, Embase, CCINAHL.

**Main outcome(s):** Peak oxygen uptake.

**Quality assessment / Risk of bias analysis:** In accordance with recommendations in the Cochrane Handbook, the trials' methodological quality was independently evaluated by two reviewers using the Cochrane risk of bias assessment tool. Any discrepancies were resolved by agreement after rechecking the source papers and

further discussion with a third reviewer. The following domains were considered: (1) random sequence generation; (2) allocation concealment; (3) blinding of patients and personnel; (4) blinding of outcome assessors for primary outcomes; (5) incomplete outcome data; (6) selective reporting; and (7) other bias.

**Strategy of data synthesis:** The electronic databases PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, and CINAHL were searched from their inceptions until October 23, 2021. Searches were restricted to English.

**Subgroup analysis:** None.

**Sensitivity analysis:** Statistical analysis was performed with Review Manager (RevMan, Version 5.4.1 The Cochrane Collaboration, Copenhagen, Denmark). Estimates of combined effects were obtained by comparing the least square mean change from baseline to end of the study and were expressed as the mean difference (MD) between groups and 95% confidence interval (CI). Pooled-analyses were conducted using a fixed-effects and random effects model. Heterogeneity among studies was examined with Cochran's Q and I<sup>2</sup> statistic. When I<sup>2</sup> is greater than 50%, it indicated low heterogeneity, and a fixed-effects model would be chosen; otherwise, a random-effects model was adopted. A P-value of <0.05 was regarded as statistically significant.

**Country(ies) involved:** China.

**Keywords:** Coronary artery disease, high-intensity interval training; moderate-intensity continuous training; cardiac rehabilitation.

**Contributions of each author:**

Author 1 - Siyi Li.

Author 2 - Xiankun Chen.

Author 3 - Wei Jiang.