Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

Comparison of the effect of two different high-intensity interval training on clinical status improvement after coronary artery bypass grafting in cardiac patients

Protocol summary

Study aim
Comparison of the effect of two different high-intensity interval training on clinical status improvement after coronary artery bypass grafting in cardiac patients

Design
A clinical trial with the control group, parallel groups, double-blind, block randomization, 99 patient as a sample size

Settings and conduct
The purpose of this study is to evaluate the efficacy of two types of high-intensity interval aerobic exercise on improving the clinical status of cardiac patients after coronary artery bypass surgery using a control group. The location is Farshchian Cardiovascular Hospital. The study is a double-blind in which participants, researchers, clinical caregivers, outcome assessors, and data analyzers were blinded. Clinical measurements will also be performed before and after the training period.

Participants/Inclusion and exclusion criteria
Inclusion criteria: 1. The patient undergoes a coronary artery bypass grafting surgery 2. The age of the patient must be between 40-80 years old Exclusion criteria: 1. The patient should not undergo reconstructive heart valve injury 2. The patient should not have disabling movement disorders

Intervention groups
1. Control group that performs the routine exercise program of the hospital rehabilitation center 2. High-intensity interval training group with short-time active intervals 3. High-intensity interval training group with mid-time active intervals

Main outcome variables
Maximal aerobic power, Systolic and diastolic function of cardiac left ventricle, Heart rate variability, Quality of life, Lower extremity muscle strength

General information

Reason for update
Acronym
IRCT registration information
IRCT registration number: **IRCT20200113046119N1**
Registration date: **2020-04-11, 1399/01/23**
Registration timing: **prospective**

Last update: **2020-04-11, 1399/01/23**
Update count: **0**

Registration date
2020-04-11, 1399/01/23

Registrant information
Name
Reza Ghahremani
Name of organization / entity
Country
Iran (Islamic Republic of)
Phone
+98 81 3422 4042
Email address
ghahremani@webmail.guilan.ac.ir

Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2020-04-20, 1399/02/01
Expected recruitment end date
2020-12-21, 1399/10/01
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparison of the effect of two different high-intensity interval training on clinical status improvement after coronary artery bypass grafting in cardiac patients

Public title
Investigation of the effect of exercise training on clinical status in infarction cardiac patients

Purpose
Supportive

Inclusion/Exclusion criteria

Inclusion criteria:
The age of the subjects must be between 40-80 years old-age The subjects must undergo the coronary artery bypass grafting surgery

Exclusion criteria:
There are disabling motor disorders in the patient The patient undergoes reconstructive valve surgery

Age
From **40 years** old to **80 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size
Target sample size: **99**

Randomization (investigator's opinion)
Randomized

Randomization description
Block randomization is used in the current study. The randomization unit is also considered individual. The random number table is also used as a randomization tool.

Blinding (investigator's opinion)
Double blinded

Blinding description
This study is double-blinded that the subjects, clinical caregivers, researchers, outcome evaluators, and data analyzers are unaware of the allocation of study groups. Of course, The overall introduction of the study groups has been completely provided to the participants.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics committee of Hamadan University of Medical Sciences

Street address
Shahid Fahmideh Ave

City
Hamadan

Province
Hamadan

Postal code
65178

Approval date
2019-10-07, 1398/07/15

Ethics committee reference number
IR.UMSHA.REC.1398.310

Health conditions studied

1

Description of health condition studied
Coronary artery disease

ICD-10 code
I25

ICD-10 code description
Chronic ischemic heart disease

Primary outcomes

1

Description
Maximal aerobic power

Timepoint
Before and after the treatment

Method of measurement
Bruce treadmill test

2

Description
Heart rate variability

Timepoint
Before and after the treatment

Method of measurement
Electrocardiogram assessment of the patient

3

Description
Quality of life

Timepoint
Before and after the treatment

Method of measurement
Heart disease patient's questionnaire

4

Description
Lower extremity muscle strength

Timepoint
Before and after the treatment
Method of measurement
One repetition maximum test of the leg press

5

Description
Systolic and diastolic function of cardiac left ventricle
Timepoint
Before and after the treatment
Method of measurement
Echocardiography

Secondary outcomes

1

Description
Resting heart rate of the patient
Timepoint
Before and after the treatment
Method of measurement
Polar heart rate monitoring

2

Description
Recovery heart rate of the patient
Timepoint
Before and after the treatment
Method of measurement
Polar heart rate monitoring

3

Description
Blood pressure
Timepoint
Before and after the treatment
Method of measurement
Mercury manometer

4

Description
Body composition of the patient
Timepoint
Before and after the treatment
Method of measurement
Body composition analyzer

Intervention groups

1

Description
First intervention group: High-intensity interval training Group with Short Activity Interventions: This group will perform high-intensity interval training exercises with 15-second intervals on the treadmill for 12 weeks and 24 training sessions. Indeed, there will be two training sessions in a week. The group's training program involves 15-second activity intervals with the intensity of 100% maximal aerobic power, with 15-second passive recovery among them. Each training session continues for 35 minutes.
Category
Rehabilitation

2

Description
Control group: This group will participate in the routine rehabilitation program of the Hamadan Farshchian Hospital for 12 weeks and 24 training sessions. Indeed, there will be two training sessions in a week. Each training session continues for 35 minutes. The group's training program involves aerobic continuous moderate-intensity training on the treadmill.
Category
Rehabilitation

3

Description
Second intervention group: High-intensity interval training Group with intermediate Activity Interventions: This group will perform high-intensity interval training exercises with 60-second intervals on the treadmill for 12 weeks and 24 training sessions. Indeed, there will be two training sessions in a week. The group's training program involves 60-second activity intervals with the intensity of 100% maximal aerobic power, with 60-second passive recovery among them. Each training session continues for 35 minutes.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Farshchian hospital
Full name of responsible person
Lobat Majidi
Street address
Shahid Fahmideh Ave
City
Hamadan
Province
Hamadan
Postal code
6517839131
Phone
+98 81 3838 1740
Email
hcvc@umsha.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Hamedan University of Medical Sciences
Full name of responsible person
Saeed Bashirian
Street address
Shahid Fahmideh Ave
City
Hamadan
Province
Hamadan
Postal code
6517838736
Phone
+98 81 3838 0717
Email
s_bashrian@yahoo.com
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Hamedan University of Medical Sciences
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Hamedan University of Medical Sciences
Full name of responsible person
Lobat Majidi
Position
Assistant Professor
Latest degree
Specialist
Other areas of specialty/work
Physical Medicine
Street address
Shahid Fahmideh Ave
City
Hamadan
Province
Hamadan
Postal code
6517839131
Phone
+98 81 3838 1740
Email
lobat.majidi@gmail.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
Hamedan University of Medical Sciences
Full name of responsible person
Lobat Majidi
Position
Assistant Professor
Latest degree
Specialist
Other areas of specialty/work
Physical Medicine
Street address
Shahid Fahmideh Ave
City
Hamadan
Province
Hamadan
Postal code
6517839131
Phone
+98 81 3838 1740
Email
lobat.majidi@gmail.com

Person responsible for updating data

Contact
Name of organization / entity
Hamedan University of Medical Sciences
Full name of responsible person
Lobat Majidi
Position
Assistant Professor
Latest degree
Specialist
Other areas of specialty/work
Physical Medicine
Street address
Shahid Fahmideh Ave
City
Hamadan
Province
Hamadan
Postal code
6517839131
Phone
+98 81 3838 1740
Email
lobat.majidi@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan

Not applicable

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Not applicable

Analytic Code

Not applicable

Data Dictionary

Not applicable