

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Hemodynamic response to low load to concentric failure resistance exercise and high load resistance exercise in coronary artery disease patients

#### Protocol summary

##### Study aim

The purpose of this research is to investigate the effect of resistance exercise with low load to concentric failure and resistance exercise with high load on hemodynamic response in coronary artery patients.

##### Design

The design of the current research is a randomized, crossover clinical trial

##### Settings and conduct

Patients referred to Noor Heart Heart Center in Rasht, perform initial measurements during one session and two types of resistance exercises with two different intensities and repetitions during two sessions.

##### Participants/Inclusion and exclusion criteria

Age range 50-70 years Patients with a history of angioplasty Occlusion of one to three coronary vessels Patients with a history of rehabilitation exercises Relative cardiorespiratory fitness (METs more than 5 and oxygen consumption equivalent to 18 ml/kg/minute) no significant change in the ejection fraction No cardiac arrhythmia No musculoskeletal injury

##### Intervention groups

Low load resistance exercise group (40% of one repetition maximum to concentric failure) High load resistance exercise group (70% of one repetition maximum, 10 repetitions)

##### Main outcome variables

Hemodynamic variables including rate pressure product, systolic and diastolic blood pressure, heart rate and Perceived exertion in response to these two types of resistance exercises to determine the safety of exercises to failure (low load, high repetition) compared to the traditional form of exercises (high load and low repetition) ) are measured.

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20180205038626N14**

Registration date: **2024-03-02, 1402/12/12**

Registration timing: **prospective**

Last update: **2024-03-02, 1402/12/12**

Update count: **0**

##### Registration date

2024-03-02, 1402/12/12

##### Registrant information

##### Name

Zahra Ahmadnia

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 13 3361 8177

##### Email address

zahmadnia@gums.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2024-03-09, 1402/12/19

##### Expected recruitment end date

2024-04-19, 1403/01/31

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

## Scientific title

Hemodynamic response to low load to concentric failure resistance exercise and high load resistance exercise in coronary artery disease patients

## Public title

Hemodynamic response to low load to failure resistance exercise and high load in coronary artery disease patients

## Purpose

Health service research

## Inclusion/Exclusion criteria

### Inclusion criteria:

Patients with coronary artery disease Patients with a history of angioplasty and occlusion between one and three coronary arteries Relative cardiorespiratory fitness (METs more than 5 and oxygen consumption equivalent to 18 ml/kg/minute) No significant change in the ejection fraction variable according to the opinion of a specialist doctor Not having cardiac arrhythmia with the opinion of a specialist doctor No musculoskeletal injury or arthritis Not having diabetes

### Exclusion criteria:

Patients who do not have a history of resistance training (untrained) Patients who have not reached relative compatibility in cardio-respiratory factors Diabetic patients Patients with arrhythmia and patients who have not reached stable conditions in terms of hemodynamics

## Age

From **50 years** old to **70 years** old

## Gender

Both

## Phase

2

## Groups that have been masked

*No information*

## Sample size

Target sample size: **18**

## Randomization (investigator's opinion)

N/A

## Randomization description

## Blinding (investigator's opinion)

Not blinded

## Blinding description

## Placebo

Not used

## Assignment

Crossover

## Other design features

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Research ethnic committees of university of guilan

##### Street address

5th Kilometer of Persian Gulf Highway, Rasht, Guilan Province, Iran

#### City

Rasht

#### Province

Guilan

#### Postal code

۴۱۹۹۶۱۳۷۷۶

#### Approval date

2023-11-08, 1402/08/17

#### Ethics committee reference number

IR.GUILAN.REC.1402.054

## Health conditions studied

### 1

#### Description of health condition studied

Coronary artery disease

#### ICD-10 code

I25.1

#### ICD-10 code description

Atherosclerotic heart disease of native coronary artery

## Primary outcomes

### 1

#### Description

Rate pressure product

#### Timepoint

At the beginning of the study or at rest, immediately after doing the exercise, 3 minutes after doing the exercise

#### Method of measurement

The Rate pressure product is determined by systolic blood pressure and heart rate. An analog sphygmomanometer is used to measure systolic blood pressure and a portable ECG device is used to measure heart rate.

## Secondary outcomes

### 1

#### Description

Systolic blood pressure

#### Timepoint

At rest, immediately after exercise and 3 minutes after exercise

#### Method of measurement

Using an analog pressure gauge

### 2

#### Description

Diastolic blood pressure

#### Timepoint

At rest, immediately after exercise and 3 minutes after exercise

#### Method of measurement

Using an analog pressure gauge

### 3

#### **Description**

Heart rate

#### **Timepoint**

At rest, immediately after exercise and 3 minutes after exercise

#### **Method of measurement**

Using a portable ECG device

### 4

#### **Description**

Perceived Exertion

#### **Timepoint**

immediately after exercise

#### **Method of measurement**

Borg Rating of Perceived Exertion Scale (1-10)

## **Intervention groups**

### 1

#### **Description**

Intervention group: Low-load to concentric failure resistance exercise

#### **Category**

Rehabilitation

### 2

#### **Description**

Intervention group: high-load resistance exercise

#### **Category**

Rehabilitation

## **Recruitment centers**

### 1

#### **Recruitment center**

##### **Name of recruitment center**

The Noor heart center

##### **Full name of responsible person**

Dr. payam saidie

##### **Street address**

Moalem St, Noor specialist heart clinic

##### **City**

Rasht

##### **Province**

Guilan

##### **Postal code**

۴۱۵۳۸۹۳۸۴۸

##### **Phone**

+98 13 9100 4044

##### **Email**

info@noor-hc.com

##### **Web page address**

<https://noor-hc.ir>

## **Sponsors / Funding sources**

### 1

#### **Sponsor**

##### **Name of organization / entity**

The university of guilan

##### **Full name of responsible person**

Dr. Payam saidie

##### **Street address**

5th Kilometer of Persian Gulf Highway, Rasht, Guilan Province, Iran

##### **City**

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##### **Postal code**

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##### **Phone**

+98 13 3369 0274

##### **Email**

int@guilan.ac.ir

#### **Grant name**

#### **Grant code / Reference number**

#### **Is the source of funding the same sponsor organization/entity?**

Yes

#### **Title of funding source**

The university of guilan

#### **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**

university of guilan

##### **Full name of responsible person**

Adel ghorbani

##### **Position**

Master's student in Applied exercise Physiology

##### **Latest degree**

Master

##### **Other areas of specialty/work**

Others

##### **Street address**

5th Kilometer of Persian Gulf Highway, Rasht, Guilan Province, Iran

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##### **Province**

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adel.ghorbani.pe@gmail.com

**Person responsible for scientific inquiries**

**Contact**

**Name of organization / entity**

The university of guilan

**Full name of responsible person**

Payam Saidie

**Position**

Assistant Professor of the Department of Sports Physiology, Faculty of Sports Sciences, Gilan Univer

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Exercise physiology

**Street address**

رشت، بزرگراه خلیج فارس، کیلومتر ۵ جاده تهران، مجتمع دانشگاه گیلان

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**Person responsible for updating data**

**Contact**

**Name of organization / entity**

Rasht University of Medical Sciences

**Full name of responsible person**

Zahra Ahmadnia

**Position**

Rasht

**Latest degree**

Master

**Other areas of specialty/work**

پرستاری

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Dr. Heshmat Hospital, Bayani St; Mosala Square, Rasht

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**Province**

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**Email**

zahmadnia1365@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**

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

**Informed Consent Form**

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

**Clinical Study Report**

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

**Analytic Code**

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

**Data Dictionary**

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