

Clinical Trial Protocol

Iranian Registry of Clinical Trials

08 Jul 2026

The effects of resistance training on serum levels of hs-CTnI, NT-proBNP, GDF-15, and cardiac damage markers in healthy and diabetic elderly men

Protocol summary

Study aim

The purpose of this study to investigate the effect of resistance training on serum levels High Sensitivity-Cardiac Troponin I, N-terminal proBrain Natriuretic Peptid, growth-differentiation factor 15 and The markers of heart damage are in Healthy and diabetic elderly men.

Design

This is a semi-experimental study with pretest design with post-test. The statistical population of this study is male elderly men aged 65-78 years old in Karaj. Twenty-four subjects were selected as the sample and randomly divided into two groups of resistance training (12 subjects) and control (12 people)

Settings and conduct

At the beginning and the end of the exercises, blood samples are taken. Exercises in the gym are the place for elderly people in Alborz.

Participants/Inclusion and exclusion criteria

Inclusion criteria: range from 65 to 78 years old.
Exclusion criteria: illness, alcohol and tobacco use, and regular exercise in the past year

Intervention groups

Resistance training

Main outcome variables

hs-CTnI, NT-proBNP, GDF-15, creatine kinase MB, total creatine kinase, and lactate dehydrogenase are measured in both pre and post training sessions.

General information

Reason for update

In the name of God Given that the Vice Chancellor for Research and Technology of Guilan University of Medical Sciences sent a comprehensive letter to that center to obtain a clinical trial code, I conducted research and sampling on healthy and diabetic elderly people. Unfortunately, I have encountered a problem in publishing the second article related to the section on diabetic elderly people, and the editor of the journal has

requested that the words "healthy and diabetic" be added. In addition, given that it was the first time I was registering the research subject information to obtain a clinical trial code, I had completed some parts incompletely, which is currently being corrected. Please instruct the esteemed clinical trial code registrar to change the subject to the following form so that my problem can be resolved (the words "healthy and diabetic" should be added to the end of the subject): "Effects of resistance training on serum levels of hs-CTnI, NT-proBNP, GDF-15 and cardiac injury markers in healthy and diabetic elderly men"

Acronym

IRCT registration information

IRCT registration number: **IRCT20180819040831N1**
Registration date: **2018-09-03, 1397/06/12**
Registration timing: **registered_while_recruiting**

Last update: **2025-10-25, 1404/08/03**

Update count: **1**

Registration date

2018-09-03, 1397/06/12

Registrant information

Name

Bahman Mirzaei

Name of organization / entity

Guilan University

Country

Iran (Islamic Republic of)

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+98 26 3736 0308

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e.rangraz56@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-08-31, 1397/06/09

Expected recruitment end date

2018-11-02, 1397/08/11

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effects of resistance training on serum levels of hs-CTnI, NT-proBNP, GDF-15, and cardiac damage markers in healthy and diabetic elderly men

Public title

The effects of resistance training on serum levels of hs-CTnI, NT-proBNP, GDF-15, and cardiac damage markers

Purpose

Prevention

Inclusion/Exclusion criteria**Inclusion criteria:**

Men aged between 65 and 78 years old

Exclusion criteria:

Have cardiovascular disease Use tobacco and alcohol

Have been regularly involved in sports activities in the last 1 year

Age

From **65 years** old to **78 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

Not randomized

Randomization description**Blinding (investigator's opinion)**

Not blinded

Blinding description**Placebo**

Not used

Assignment

Single

Other design features

Resistance exercises

Secondary Ids

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committee of Guilan University of Medical Sciences

Street address

Km 5 Rasht, University of Guilan

City

Guilan

Province

Guilan

Postal code

3187153704

Approval date

2025-10-03, 1404/07/11

Ethics committee reference number

IR.GUMS.REC

Health conditions studied**1****Description of health condition studied**

Effects of resistance training on serum levels of hs-CTnI, NT-proBNP, GDF-15 and cardiac injury markers in healthy and diabetic elderly men

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

hs-CTnI

Timepoint

Before and after exercise

Method of measurement

Human cardiac troponin I(hs-CTnI) (Diasorin Kit)high sensitive

2**Description**

NT-proBNP

Timepoint

Before and after exercise

Method of measurement

Human N-terminal pro-brain natriuretic peptide,NT-proBNP, ELISA kit

3**Description**

Isophorm growth differentiation factor 15

Timepoint

Before and after exercise

Method of measurement

Human growth differentiation factor 15, ELISA kit

4**Description**

Creatine kinase type MB

Timepoint

Before and after exercise

Method of measurement

creatine kinase-myocardial band, kit Pars test

5

Description

Total creatine kinase level

Timepoint

Before and after exercise

Method of measurement

creatine kinase, kit Pars test

6

Description

Lactate dehydrogenase

Timepoint

Before and after exercise

Method of measurement

Using the Pars kit, test lactate dehydrogenase

Secondary outcomes

1

Description

Reducing the risk of cardiovascular disease

Timepoint

The beginning and end of the exercise

Method of measurement

Blood collection using laboratory kits

Intervention groups

1

Description

Intervention group: Perform exercises for 8 weeks and 3 sessions per week. The exercise protocol for these people includes 5 minutes of warming (jumping or cycling), the main body of the training and 5 minutes of cool down (stretching). The main motions used are 3 sets with 10 repetitions of 70% 1RM including eight movements of the foot press, forehead, back, leg, chest, boat, arm and arm front. The exercise protocol is a gradual increase in severity and duration for the first two weeks in order to minimize muscle pain and reduce damage. Between each set is one minute and there is a two minute rest between each of the moves. Resistance increases when the subject is able to complete 10 repetitions correctly in the third set for 2 consecutive sessions, and the 1RM at the end of the fourth week is measured and the intensity of the exercise is adjusted in the same way. 48 hours after the last meeting of the protocols in the present study, all measurements of the body composition and biochemical evaluations (in the pre-test) are repeated again.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Kahrizak Elderly Care Center

Full name of responsible person

Hakimi Hosein

Street address

Mohammad Shahr, at the end of Golestan St.,
Beginning of Isfahan Street

City

Mohammad shahr

Province

Alborz

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Email

Kahraj@kahrizak.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Guilan University of Medical Sciences

Full name of responsible person

Nemati Shadman

Street address

Rasht, Namjoo Street, Shahid Siadati St., Facing the
Shahrivar Hospital - Old Building of School of Public
Health

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

Guilan University of Medical Sciences

Proportion provided by this source

100

Public or private sector

Private

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

Guilan University

Full name of responsible person

Bahman Mirzaei

Position

Professor

Latest degree

Ph.D.

Other areas of specialty/work

Sport physiology

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<https://www.guilan.ac.ir>

Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

Subjects are not satisfied

Study Protocol

No - There is not a plan to make this available

Statistical Analysis Plan

Not applicable

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

Not applicable

Analytic Code

Not applicable

Data Dictionary

Not applicable