Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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

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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
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Mohammad Shahr, at the end of Golestan St., Beginning of Isfahan Street
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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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
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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