Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effect of Elastic Band Resistance Training on irisin, liver enzymes, Hepatic Steatosis and Metabolic Outcomes in Postmenopausal Women with MASLD

Protocol summary

Study aim

The aim of this study is to investigate the effect of elastic band resistance training on irisin, liver enzymes, hepatic steatosis and metabolic outcomes in obese postmenopausal women with MASLD

Design

Two-arm randomized controlled trial (Elastic band resistance training and control) with pre- and post-intervention assessments.

Settings and conduct

This study was conducted as a clinical trial involving 54 women aged 55-65 years. Participants were randomly and evenly assigned to two groups: Elastic band resistance training group and the control group. The Elastic band resistance training group underwent 8 weeks of training, with three 60-minute sessions per week. Hepatic Steatosis, ALT, AST, GGT, Insulin, Glucose, Irisin were assessed before and after the intervention. No blinding was applied.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: hepatic steatosis, body mass index between 30 and 35 kg/m², stable body weight (±3%) during the preceding three months, and no engagement in structured exercise training within the previous six months. Exclusion criteria: alcohol consumption, diabetes mellitus, hormone therapy, use of medications known to affect hepatic fat content or insulin sensitivity within the prior six months, and any musculoskeletal, cardiovascular, or neurological condition contraindicating participation in resistance exercise.

Intervention groups

Elastic band resistance training group and the control group. Elastic band resistance training group completed a supervised elastic band resistance training program three times per week for eight consecutive weeks, yielding a total of 24 sessions, while the control group did not participate in any physical activity.

Main outcome variables

Hepatic Steatosis, ALT, AST, GGT, Insulin, Glucose, Irisin

General information

Reason for update

Dear IRCT Team, First, we sincerely appreciate your valuable cooperation and for implementing the requested corrections in the clinical trial record. Upon reviewing the updated record, we noticed that the Body Mass Index (BMI) and age criterion in the Abstract section has not yet been updated. This discrepancy was due to an administrative data entry error during the initial registration and does not reflect any change in the approved protocol, eligibility criteria, or study population. We sincerely apologize for this oversight and kindly request, if possible, that the Abstract section also be updated to ensure full consistency between the registry record, the approved protocol, and the manuscript. Thank you very much for your kind support and cooperation.

Acronym

IRCT registration information

IRCT registration number: **IRCT20241205063953N4**
Registration date: **2026-01-19, 1404/10/29**
Registration timing: **prospective**

Last update: **2026-07-19, 1405/04/28**
Update count: **2**

Registration date

2026-01-19, 1404/10/29

Registrant information

Name

akram jafari

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 912 547 9267

Email address

jafari.akm@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-01-25, 1404/11/05

Expected recruitment end date

2026-03-25, 1405/01/05

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of Elastic Band Resistance Training on irisin, liver enzymes, Hepatic Steatosis and Metabolic Outcomes in Postmenopausal Women with MASLD

Public title

Elastic Band Resistance Training and liver disease in Postmenopausal Women

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Body mass index between 30 and 35 kg/m² Stable body weight (±3%) during the preceding three months No engagement in structured exercise training within the previous six months.

Exclusion criteria:

Age

From **55 years** old to **65 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **54**

Randomization (investigator's opinion)

Randomized

Randomization description

In this study, simple randomization was used to assign participants to study groups. The randomization unit was individual, meaning that each person was independently assigned to one of the two groups: elastic band resistance training group (n = 27) or the control group (n = 27). The randomization tool was EXECL software which generated the random sequence before the study began to prevent allocation bias. Allocation concealment was ensured using sealed and numbered opaque envelopes containing the group assignment for each participant. These envelopes were opened only after a participant's eligibility was confirmed by an independent researcher not involved in the randomization process. Stratified randomization was applied based on age to ensure balance across groups for these key variables.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Islamic Azad University Shahrekord Branch

Street address

Rahmatieh, Islamic Azad University Shahrekord Branch

City

Shahrekord

Province

Chahar-Mahal-va-Bakhtiari

Postal code

8818630002

Approval date

2020-02-08, 1398/11/19

Ethics committee reference number

IR.IAU.SHK.REC.1399.031

Health conditions studied

1

Description of health condition studied

Liver diseases

ICD-10 code

K75.81

ICD-10 code description

Nonalcoholic steatohepatitis (NASH)

Primary outcomes

1

Description

Hepatic Steatosis

Timepoint

48 hours before and after 8 weeks of research

Method of measurement

Method for quantifying liver fat content (CAP)

2

Description

ALT

Timepoint
48 hours before and after 8 weeks of research
Method of measurement
ALT levels were measured using a commercial kit (Pars Azmoon, Tehran, Iran) with enzymatic methods.

3

Description
AST
Timepoint
48 hours before and after 8 weeks of research
Method of measurement
AST levels were measured using a commercial kit (Pars Azmoon, Tehran, Iran) with enzymatic methods.

4

Description
Irisin
Timepoint
48 hours before and after 8 weeks of research
Method of measurement
Measured using the enzyme-linked immunosorbent assay (ELISA) method with an enzyme immunoassay kit (Phoenix Pharmaceuticals®, Burlingame, USA)

5

Description
Insulin
Timepoint
48 hours before and after 8 weeks of research
Method of measurement
Insulin levels were measured using the enzyme-linked immunosorbent assay (ELISA) method and equipment (ZellBio, Ulm, Germany)

6

Description
Glucose
Timepoint
48 hours before and after 8 weeks of research
Method of measurement
Glucose levels were measured using a commercial kit (Pars Azmoon, Tehran, Iran) with photometric and enzymatic methods.

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Elastic band resistance training group. This group practiced elastic band resistance training under the supervision of instructors for 8weeks, 3 sessions per week, 60 minutes per session.
Category
Treatment - Other

2

Description
Control group: No sports activities were involved during the research.
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Islamic Azad University Shahrekord Branch
Full name of responsible person
Mehrdad Yadegari Dehkordi
Street address
Rahmatieh, Islamic Azad University Shahrekord Branch
City
Shahrekord
Province
Chahar-Mahal-va-Bakhtiari
Postal code
8818630003
Phone
+98 912 547 9267
Email
Jafari.akm@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Islamic Azad University
Full name of responsible person
Mehrdad Yadegari Dehkordi
Street address
Rahmatieh, Islamic Azad University Shahrekord Branch
City
Shahrekord
Province
Chahar-Mahal-va-Bakhtiari
Postal code
8818630003
Phone
+98 912 547 9267
Email
Jafari.akm@gmail.com
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Islamic Azad University

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
Islamic Azad University
Full name of responsible person
Akram Jafari
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Sport physiology
Street address
Rahmatieh, Islamic Azad University Shahrekord Branch
City
Shahrekord
Province
Chahar-Mahal-va-Bakhtiari
Postal code
8818630003
Phone
+98 912 547 9267
Email
Jafari.akm@gmail.com

Person responsible for scientific inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Akram Jafari
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Sport Physoilogy
Street address
Rahmatieh, Islamic Azad University Shahrekord Branch
City
Shahrekord
Province
Chahar-Mahal-va-Bakhtiari
Postal code
8817630003
Phone
+98 912 547 9267
Email
Jafari.akm@gmail.com

Person responsible for updating data

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Akram Jafari
Position
Assistant professor
Latest degree
Ph.D.
Other areas of specialty/work
Sport physiology
Street address
Rahmatieh, Islamic Azad University Shahrekord Branch
City
Sahrekord
Province
Chahar-Mahal-va-Bakhtiari
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Email
Jafari.akm@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available
Study Protocol
Yes - There is a plan to make this available
Statistical Analysis Plan
Yes - There is a plan to make this available
Informed Consent Form
Yes - There is a plan to make this available
Clinical Study Report
Yes - There is a plan to make this available
Analytic Code
Yes - There is a plan to make this available
Data Dictionary
Yes - There is a plan to make this available
Title and more details about the data/document
All data without participant names
When the data will become available and for how long
6 months after publication of the article
To whom data/document is available
University students and professors
Under which criteria data/document could be used
For future research
From where data/document is obtainable
To the researchers of this study
What processes are involved for a request to access data/document
By email to researchers

Comments