

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 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 55-70 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 40 and 50 kg/m<sup>2</sup>, stable body weight ( $\pm 3\%$ ) 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

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20241205063953N4**

Registration date: **2026-01-19, 1404/10/29**

Registration timing: **prospective**

Last update: **2026-01-19, 1404/10/29**

Update count: **0**

##### 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 40 and 50 kg/m<sup>2</sup> Stable body weight ( $\pm 3\%$ ) during the preceding three months No engagement in structured exercise training within the previous six months.  
**Exclusion criteria:**

**Age**  
From **55 years** old to **75 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**

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### Sponsors / Funding sources

#### 1

**Sponsor****Name of organization / entity**

Islamic Azad University

**Full name of responsible person**

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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**

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**  
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**Other areas of specialty/work**  
Sport physiology  
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## Person responsible for scientific inquiries

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## Person responsible for updating data

### Contact

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## 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