Clinical Trial Protocol
Iranian Registry of Clinical Trials

11 Sep 2026

The effect of 6-week high intensity interval training using an exercise snack training on cardiometabolic and renal indicators in overweight/obese adults

Protocol summary

Study aim

Investigating the effect of 6 weeks of high-intensity interval training in the form of exercise snacks on cardiometabolic and renal markers in overweight/obese adults

Design

A randomized, single-blinded, parallel-group, controlled clinical trial on 60 patients. For randomization, opaque sealed envelopes will be used.

Settings and conduct

Study setting: Payame Noor University, Alborz Province, Karaj Branch; study population: overweight or obese adults; type of blinding: laboratory technicians will not be aware of the group allocation when assessing blood samples.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: Participants were eligible for inclusion if they were sedentary and physically inactive, overweight or obese adults of both sexes with a body mass index of 25 kg/m² or greater, aged 35 to 55 years, in general good health or free from any serious illness or unstable condition requiring medical supervision over diet or physical activity, and without any physical limitations or restrictions. Exclusion Criteria: pregnancy, being currently adhering to a structured weight-loss program or using weight-loss medications, failed to obtain physician approval for study participation.

Intervention groups

Intervention Group 1: HIIT2; performing 2 bouts of high-intensity interval training per day with intervals of 1–4 hours apart, 3 days per week. Intervention Group 2: HIIT6; performing 6 bouts of high-intensity interval training per day with intervals of 1–4 hours apart, 3 days per week. Control Group: C; no training.

Main outcome variables

Cardiometabolic index; visceral adiposity index; lipid accumulation product; uric acid; urea

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20241008063290N3**
Registration date: **2026-08-01, 1405/05/10**
Registration timing: **prospective**

Last update: **2026-08-01, 1405/05/10**
Update count: **0**

Registration date

2026-08-01, 1405/05/10

Registrant information

Name

hamid rajabi

Name of organization / entity

Kharazmi university

Country

Iran (Islamic Republic of)

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Email address

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Recruitment status

recruiting

Funding source

Expected recruitment start date

2026-08-06, 1405/05/15

Expected recruitment end date

2026-10-07, 1405/07/15

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
The effect of 6-week high intensity interval training using an exercise snack training on cardiometabolic and renal indicators in overweight/obese adults

Public title
The effect of an exercise training period on cardiometabolic and renal markers in overweight/obese adults

Purpose
Supportive

Inclusion/Exclusion criteria

Inclusion criteria:
Sedentary and physically inactive adults Overweight or obese individuals Body mass index (BMI) ≥ 25 kg/m² Both men and women Aged 35–55 years In generally good health Free from any serious illness or unstable medical condition requiring physician supervision over diet or physical activity No physical limitations or restrictions affecting exercise participation

Exclusion criteria:
Having acute cardiovascular disease Following specific dietary regimes With weight instability (+_5 kg) in the past 3 months Having any serious medical condition that precludes long-term participation in physical activity Pregnancy Currently adhering to a structured weight-loss program Using weight-loss medications Failure to obtain physician approval for study participation

Age
From **35 years** old to **55 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Outcome assessor

Sample size
Target sample size: **60**

Randomization (investigator's opinion)
Randomized

Randomization description
Simple randomization will be used for participant allocation. To ensure concealment, a series of opaque, sealed envelopes will be prepared. For this purpose, envelopes labeled with the name of either the exercise intervention group or the control group will be created, corresponding to the total number of subjects. After thoroughly mixing (shuffling) the envelopes, each participant will select one, and their group assignment will be recorded accordingly

Blinding (investigator's opinion)
Single blinded

Blinding description
Clinical laboratory technicians, unaware of the group allocation, will assess the blood parameters.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Research Ethics Committees of Kharazmi University

Street address
Kharazmi University, Shahid Keshvari Stadium, Shahid Hesari Street, Madar Square

City
Tehran

Province
Tehran

Postal code
14911-15719

Approval date
2026-05-26, 1405/03/05

Ethics committee reference number
IR.KHU.REC.1405.029

Health conditions studied

1

Description of health condition studied
Adults who are overweight or obese

ICD-10 code
E66

ICD-10 code description
Overweight and obesity

Primary outcomes

1

Description
Cardiometabolic index

Timepoint
24–48 hours before and after the intervention

Method of measurement
By means of the formula

2

Description
Visceral adiposity index

Timepoint
24–48 hours before and after the intervention

Method of measurement
By means of the formula

3

Description
Lipid accumulation product

Timepoint
24–48 hours before and after the intervention
Method of measurement
By means of the formula

4

Description
Triglyceride
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

5

Description
High-density lipoprotein
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

6

Description
Low-density lipoprotein
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

7

Description
Total cholesterol
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

8

Description
The ratio of high-density lipoprotein to low-density lipoprotein
Timepoint
24–48 hours before and after the intervention
Method of measurement
By means of the formula

9

Description
Thyroid-Stimulating Hormone
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

10

Description
Thyroxine
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

11

Description
Bilirubin
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

12

Description
Urea
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

13

Description
Uric acid
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

14

Description
Creatinine
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

15

Description
estimated Glomerular Filtration Rate
Timepoint
24–48 hours before and after the intervention
Method of measurement
By ELISA or enzymatic laboratory method

Secondary outcomes

1

Description
Systolic blood pressure
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using a German Beurer device

2

Description
Diastolic blood pressure
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using a German Beurer device

3

Description
Resting heart rate
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using a German Beurer device

4

Description
Mean arterial pressure
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using the formula

5

Description
Body Mass Index
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using the formula

6

Description
Waist-to-hip circumference ratio
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using the formula

7

Description
Waist-to-height ratio
Timepoint
24–48 hours before and after the intervention
Method of measurement
Using the formula

8

Description
Body weight
Timepoint
24–48 hours before and after the intervention
Method of measurement
Scale

9

Description
height
Timepoint
24–48 hours before the intervention
Method of measurement
Wall-mounted height measure

10

Description
Wall squat test
Timepoint
24–48 hours before the intervention
Method of measurement
By recording the duration

11

Description
30-Second Chair Stand Test
Timepoint
24–48 hours before the intervention
Method of measurement
By counting the repetitions

12

Description
Quality of Life
Timepoint
24–48 hours before the intervention
Method of measurement
Questionnaire

Intervention groups

1

Description
Control group: Control group participants are to remain inactive throughout the study and are advised to follow their usual daily routines.
Category
Other

2

Description
Intervention group 1: Two-Bout High-Intensity Interval Training: The training protocol includes 2 bouts of exercise, each containing 4 sets of 2-minute body-weight HIIT exercises at 85% of maximal heart rate (HRmax). Each set is interspersed with 1 minute and 30 seconds of active recovery (at 65% HRmax) between successive sets.
Category
Rehabilitation

3

Description

Intervention group 2: Six-Bout High-Intensity Interval Training: The training protocol includes 6 exercise bouts, each containing 2 sets of 80-second body-weight HIIT exercises at 85% of maximal heart rate (HRmax). Each set is interspersed with 1 minute of active recovery (at 65% HRmax) between successive sets.

Category
Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center
Payame Noor University, Alborz Province, Karaj Branch

Full name of responsible person
Dr. Farokh kia

Street address
Shahid Kamali Dehghan Boulevard, Shahid Moazen Boulevard

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Iran National Science Foundation

Full name of responsible person
Ali Mohammad Soltani

Street address
No. 33, Fifth Street, above Jalal Al Ahmad intersection, North Kargar Street.

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rms@insf.org

Web page address
https://insf.org/fa

Grant name

Grant code / Reference number

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

Title of funding source
Iran National Science Foundation

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
Other

Person responsible for general inquiries

Contact

Name of organization / entity
Kharazmi University

Full name of responsible person
Hamid Rajabi

Position
professor

Latest degree
Ph.D.

Other areas of specialty/work
exercise physiology

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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

There is no further information

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

Not applicable

Title and more details about the data/document

NO

When the data will become available and for how long

Data is not published

To whom data/document is available

Data is not published

Under which criteria data/document could be used

Data is not published

From where data/document is obtainable

Data is not published

What processes are involved for a request to access data/document

Data is not published

Comments