Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Investigation of the impact of two aerobic exercise intensities on fat taste sensitivity, appetite, food preference and energy intake in women with different body composition

Protocol summary

Study aim

To investigate the effect of exercise at two different intensities on oral sensitivity to oleic acid (C18:1), fat perception, appetite, and energy intake in women with normal weight and overweight.

Design

The study design is a cross-over clinical trial with three conditions (control, intervention 1, and intervention 2) conducted on 20 eligible women. All participants received all three conditions in a randomized order, with at least seven days between sessions. Randomization of session order was performed using a lottery method. The total sample size was 20 participants. Single-blind blinding (regarding the samples) was applied in the taste test sections of this trial.

Settings and conduct

Setting: Exercise Physiology Laboratory, Faculty of Sport Sciences, University of Guilan, Rasht, Iran. Study population: Women aged 18–35 years with a body mass index (BMI) of 18–30 kg/m², who had not engaged in regular physical activity during the previous three months and met the study eligibility criteria. Blinding: Single-blind for sensory assessments. Blinding procedure: During the sensory assessments, participants will be blinded to the type of samples provided.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Women 18–35yrs; BMI 18–30; WHR < 0.85. Exclusion criteria: Regular physical activity in last 3 months; acute/chronic diseases; use of glucose-, BP-, lipid-lowering, or cardiac meds; supplements/medications (dietary or sports-related) in last 3 months; tobacco/alcohol use; history of bariatric surgery or weight instability (≥2 kg change) in last 3 months; history of rhinoplasty.

Intervention groups

Control: no exercise; Intervention 1: 50–55% HRmax, 45 min; Intervention 2: 70–75% HRR, 30 min;

Main outcome variables

Oral sensitivity to oleic acid (C18:1), Fat Taste Ranking, Appetite Perception, Energy and Macronutrient Intake, Food Preference

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20251008067546N2**
Registration date: **2026-08-29, 1405/06/07**
Registration timing: **prospective**

Last update: **2026-08-29, 1405/06/07**
Update count: **0**

Registration date

2026-08-29, 1405/06/07

Registrant information

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-09-08, 1405/06/17

Expected recruitment end date

2026-10-06, 1405/07/14

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Investigation of the impact of two aerobic exercise intensities on fat taste sensitivity, appetite, food preference and energy intake in women with different body composition

Public title
Effect of two aerobic exercise intensities on fat taste perception and food intake in women
Purpose
Supportive
Inclusion/Exclusion criteria
Inclusion criteria:
Women aged 18 to 35years Body mass index between 18 and 30 kg per square meter Waist to hip ratio less than 0.85
Exclusion criteria:
Regular physical activity in the past three months Presence of acute or chronic diseases Use of glucose-lowering, blood pressure-lowering, lipid-lowering, or cardiac medications Use of dietary or sports-related supplements or medications in the past three months Tobacco and alcohol use History of bariatric surgery and weight stability in the past three months History of rhinoplasty surgery
Age
From **18 years** old to **35 years** old
Gender
Female

Phase
N/A
Groups that have been masked

- Participant

Sample size
Target sample size: **20**
Randomization (investigator's opinion)
Randomized
Randomization description
This study employs a randomized crossover clinical trial design with three interventional arms and a baseline assessment phase, in which the unit of randomization is the individual participant. Following verification of eligibility criteria and obtaining signed informed consent, each participant is randomly assigned to one of six possible sequences for receiving the three interventions (namely ABC, ACB, BAC, BCA, CAB, and CBA). To ensure balanced distribution of participants across these six sequences, a balanced block randomization method is utilized. The generation of random sequences is the responsibility of an independent researcher who has no involvement in participant recruitment, intervention administration, or outcome assessment. This process is carried out using IBM SPSS Statistics version 27 software, based on computer-generated random numbers. The final allocation list remains confidential within the research team, and to conceal the allocation process, the sequence assigned to each participant is placed in opaque, light-proof, sealed, and sequentially numbered envelopes. Once the baseline assessments are completed for each individual and they are formally enrolled in the study, the envelope containing their registration number is opened by the principal investigator, revealing the order in which the interventions are to be administered for that participant. It is worth noting that prior to the opening of the envelopes, all researchers involved in recruitment, baseline evaluations, and data analysis remain blinded to the sequence assigned to each participant.
Blinding (investigator's opinion)
Single blinded
Blinding description
Participants are aware of the exercise intensity they receive and cannot be blinded to the exercise intervention. However, in the C18:1 taste test, participants are blinded to the type of samples (control or containing oleic acid) and cannot identify which sample contains C18:1.
Placebo
Not used
Assignment
Crossover
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Guilan University
Street address
University Complex of Gilan, 5th Kilometer of Tehran Road, Khalij-e Fars Highway
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Province
Guilan
Postal code
416351841
Approval date
2025-09-22, 1404/06/31
Ethics committee reference number
IR.GUILAN.REC.1404.109

Health conditions studied

1

Description of health condition studied
Over weight
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Oral sensitivity to oleic acid (C18:1)
Timepoint
Immediately after each session
Method of measurement
Three-alternative forced-choice triangle taste test using food samples containing oleic acid (C18:1) and control samples, with nose clips to eliminate olfactory cues.

2

Description
Fat Taste Ranking
Timepoint
Immediately after each session
Method of measurement
Presentation of 20 ml of custard samples with four different fat concentrations (0%, 2%, 6%, and 10% canola oil) in a randomized order, asking participants to rank the samples from lowest to highest perceived fat content

3

Description
Appetite Perception
Timepoint
Immediately after each session
Method of measurement
Visual Analog Scale (VAS) questionnaire comprising four 100-mm questions assessing hunger, satiety, fullness, and desire to eat

4

Description
Energy and Macronutrient Intake
Timepoint
Dietary intake recorded on the day of the protocol and the day before (24 hours pre- and post-intervention)
Method of measurement
Self-reported food record form

5

Description
Food Preference
Timepoint
Immediately after each session
Method of measurement
Presentation of a list of 18 food items with clear color images, including high-fat, medium-fat, and low-fat foods

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Participants in this group perform one session of low-intensity aerobic exercise on a treadmill. Exercise intensity is set at 50–55% of heart rate reserve (HRR) based on the Karvonen formula: HRtarget = HRrest + (%HRR × (HRmax − HRrest)). The exercise protocol consists of 45 minutes of treadmill walking/running at zero grade. Heart rate is continuously monitored throughout the exercise session using a Polar heart rate monitor (Model H10, made in Finland). If heart rate deviates from the target zone, treadmill speed is adjusted accordingly. Sessions are conducted at least 7 days apart. Participants are instructed to refrain from any other physical activity and maintain an overnight fast for at least 24 hours prior to each session.
Category
Lifestyle

2

Description
Intervention group: Participants in this group perform one session of high-intensity aerobic exercise on a treadmill. Exercise intensity is set at 70–75% of heart rate reserve (HRR) based on the Karvonen formula: HRtarget = HRrest + (%HRR × (HRmax − HRrest)). The exercise protocol consists of 30 minutes of treadmill walking/running (plus 5 minutes of warm-up and 5 minutes of cool-down) at zero grade. Heart rate is continuously monitored throughout the exercise session using a Polar heart rate monitor (Model H10, made in Finland). If heart rate deviates from the target zone, treadmill speed is adjusted accordingly. Sessions are conducted at least 7 days apart. Participants are instructed to refrain from any other physical activity and maintain an overnight fast for at least 24 hours prior to each session.
Category
Lifestyle

3

Description
Control group: Participants in this group do not perform any physical exercise. They remain seated on a chair in the laboratory for 45 minutes. To prevent boredom, they are allowed to engage in quiet activities such as reading, working with a laptop, or using a mobile phone. All measurements related to fat taste sensitivity, appetite perception, food preference, and energy intake are performed within the same time frame and at identical time intervals as the two intervention groups. Participants are asked to refrain from physical activity and maintain an overnight fast for at least 24 hours prior to the control session.
Category
Lifestyle

Recruitment centers

1

Recruitment center

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Full name of responsible person
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Sponsors / Funding sources

1

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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
University of Gilan
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
Academic

Person responsible for general inquiries

Contact

Name of organization / entity
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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available
Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available
Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available
Analytic Code
Undecided - It is not yet known if there will be a plan to make this available
Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available