Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The Effect of a Resistance Training Program on Lipid Profile and the Expression of miRNA-126 and miRNA-221 in Women with Overweight/Obesity

Protocol summary

Study aim

The main aim of the present study is to compare the effect of a selected resistance and aerobic training course on the expression of miRNA-126 and miRNA-221 and the lipid profile of overweight/obese women.

Design

This clinical trial will be carried out using parallel groups and simple randomization. blinding will not be implemented in this research.

Settings and conduct

This study will be conducted in the university gym and participants will be invited to participate in the study through announcements on social media channels. After selection and obtaining consent, they will be randomly assigned to the intervention and control groups and will participate in aerobic and resistance training groups with a trainer on specific days for 8 weeks, 3 sessions of 90 minutes each week. Blinding will not be performed.

Participants/Inclusion and exclusion criteria

Inclusion criteria: not participating in regular physical activities for the past year, obesity (having a body mass index of 26-34) and no underlying disease. Exclusion criteria:Having cardiovascular disease, having musculoskeletal disorders

Intervention groups

Intervention group 1 consists of individuals engaged in aerobic exercises in the gym, including running with an intensity of 70-80% of the maximum heart rate, for 60 minutes and 30 minutes of warm-up and cool-down exercises. Intervention group 2, participants in resistance exercises in the gym with gym equipment, to develop muscle strength, will perform the exercises with an intensity of 70-80% of a maximum repetition, in 3 sets and 10-12 repetitions. The exercises of both groups are scheduled for 8 weeks and 3 sessions per week.

Main outcome variables

Cholesterol; Triglycerides; Low-density lipoprotein cholesterol; High-density lipoprotein cholesterol; MicroRNA-126; MicroRNA-221; Body fat percentage

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20251108067920N1**
Registration date: **2026-02-06, 1404/11/17**
Registration timing: **prospective**

Last update: **2026-02-06, 1404/11/17**
Update count: **0**

Registration date

2026-02-06, 1404/11/17

Registrant information

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2026-02-09, 1404/11/20

Expected recruitment end date

2026-04-09, 1405/01/20

Actual recruitment start date

empty

Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The Effect of a Resistance Training Program on Lipid Profile and the Expression of miRNA-126 and miRNA-221 in Women with Overweight/Obesity

Public title
Studying the effect of two exercise training methods on controlling obesity symptoms in women
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Lack of participation in regular physical activity during the past year Obesity (without other underlying diseases) Being in the age range of 25-40 years Having a body mass index of 26-35
Exclusion criteria:
Having cardiovascular diseases Having musculoskeletal diseases
Age
From **25 years** old to **40 years** old
Gender
Female

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **30**
Randomization (investigator's opinion)
Randomized
Randomization description
After obtaining the participants' consent and providing complete information about the intervention implementation process, 30 samples will be selected from among the eligible people. There will be 30 volunteers in this study. In the second step, the numbers 1 to 30 are inserted on the paper and placed in the lottery container. The 15 people who chose even numbers from the lottery are in the resistance training group and the people who chose odd numbers are in the aerobic training group. Blinding is not performed in this study.
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
University of Isfahan Research Ethics Committee
Street address
University of Isfahan, University St., Isfahan, Iran
City
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Province
Isfehan
Postal code
81746-73441
Approval date
2025-09-13, 1404/06/22
Ethics committee reference number
IR.UI.REC.1404.148

Health conditions studied

1

Description of health condition studied
Obesity
ICD-10 code
E66.09
ICD-10 code description
Other obesity due to excess calories

Primary outcomes

1

Description
Cholesterol
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
Measurements are performed using special kits and the ELISA method.

2

Description
miRNA-221
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
This procedure is conducted utilizing specialized kits and a real-time PCR apparatus.

3

Description
miRNA-126
Timepoint
Before intervention and after 8 weeks of exercise interventions

Method of measurement
This procedure is conducted utilizing specialized kits and a real-time PCR apparatus.

4

Description
Cardiorespiratory Endurance
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
The cardiorespiratory endurance of the participants is assessed through the Rockport Walking/Running Test.

5

Description
Body fat Percentage
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
The body fat percentage of participants will be assessed through the use of hand calipers, skinfold measurements taken from multiple regions, and the application of the Peterson equation.

6

Description
Triglycerides
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
Measurements are performed using special kits and the ELISA method.

7

Description
Low Density Lipoprotein-Cholesterol
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
Measurements are performed using special kits and the ELISA method.

8

Description
High Density Lipoprotein-Cholesterol
Timepoint
Before intervention and after 8 weeks of exercise interventions
Method of measurement
Measurements are performed using special kits and the ELISA method.

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group 1: Participants in this group will engage in specific aerobic exercises at the gym for a duration of 8 weeks, attending 3 sessions each week. The exercises will be conducted at an intensity level of 70-80% of the maximum heart rate for a total of 90 minutes. The aerobic activities will consist of running in the gym for 60 minutes. During the initial four weeks, the exercises will be performed at an intensity of 60-70% of the maximum heart rate, structured into 4 sets of 10 minutes each, with 5 minutes allocated for active rest in between. From the fifth to the eighth week, the intensity will increase to 80-70% of the maximum heart rate, with 6 sets of 10 minutes each and 3 minutes of active rest. The exercises will be tailored according to the participants' age and gender. The intensity will be adjusted every 4 weeks based on the participants' progress. Each session will commence with a 15-minute warm-up and conclude with a 5-10 minute cool-down that includes stretching and flexibility exercises.
Category
Lifestyle

2

Description
Intervention Group 2: Participants in this group will engage in resistance training at an intensity of 70-80% of their one repetition maximum, performing 3 sets of 10-12 repetitions using exercise machines for 90 minutes, three times a week over a period of 8 weeks. During the initial sessions, their one repetition maximum will be assessed across various movements, and the first four weeks will commence with an intensity of 70-75% of the one repetition maximum. In the subsequent four weeks, following a new one repetition maximum test, the training will progress to 75-80% of the one repetition maximum based on individual progress. The resistance training regimen will encompass: leg curl and extension exercises, squats, chest presses, and overhead pull-down exercises using the machine. Each session will start with a 15-minute warm-up and conclude with a cool-down period of 5-10 minutes that includes stretching and flexibility exercises.
Category
Lifestyle

Recruitment centers

1

Recruitment center
Name of recruitment center
University of Isfahan

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Sponsors / Funding sources

1

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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 Isfahan
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

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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
No - There is not a plan to make this available
Statistical Analysis Plan
No - There is not a plan to make this available
Informed Consent Form
No - There is not a plan to make this available
Clinical Study Report
No - There is not a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
No - There is not a plan to make this available