Clinical Trial Protocol
Iranian Registry of Clinical Trials

06 Jun 2026

Effects of sprint interval versus combined aerobic and resistance training on adipokines, myokines and metabolic outcomes in overweight women with type 2 diabetes

Protocol summary

Study aim

The main purpose of this study is to investigate the effects of sprint interval versus combined aerobic and resistance training on adipokines, myokines and metabolic outcomes in overweight women with type 2 diabetes.

Design

this study is an interventional and not blinded research.

Settings and conduct

Fifty two overweight women with type 2 diabetes (aged 45-60 years, body mass index >30 kg/m2, HbA1C ≥ 6.5%) selection and randomly (Based on random blocks) will be divided into three groups: SIT (n = 17), combined training (aerobic + resistance) (n = 17) and control (n = 17). The training sessions will be 3 sessions per week and each session will be 50 minutes for 10 weeks. The location of the exercises will be the Center for correctional movements, sport rehabilitation and massage of Pars. Aerobic training program Include a cycle ergo-meter or Treadmill, resistance training program Include several upper and lower body workout and SIT training program is performed on cycle ergo-meter.

Participants/Inclusion and exclusion criteria

Inclusion criteria: female 45 - 60 years old with type 2 diabetes; BMI>30; HbA1C ≥ 6.5%; fasting blood glucose ≥ 126 mg/dL; sedentary Exclusion criteria: blood pressure ≥ 160/100 mmHg; fasting triglyceride ≥ 500 mg/dL; a history of cardiovascular diseases, thyroid disorder, cancer, hormonal disorder, kidney and liver diseases; smoking, use of opioids, alcohol; doing regular exercise more than one year

Intervention groups

Intervention group 1: The SIT training group dose an exercise program on an cycle ergometers for 10 weeks. Each session consisted of a 5-minute warm-up, 4 × 30 seconds maximum intensity intervals at breaking wattage of the individual, then followed by 2 minutes of recovery and in the last cool down 4 minutes.
Intervention group 2: The combined training (aerobic + resistance) do a training program for 10 weeks. Aerobic training progressed from 20 min/session at 50% maximum heart rate (HR) in week 1-2 to 30 min/session at 70% Max HR in week 3-10 on a treadmill or bike ergometer. Resistance training program includes several upper and lower body exercises using special devices.
Control group: The control group do not any regular physical activity in daily life.

Main outcome variables

Primary outcome: IL-15, SPARC, Irisin, FGF-21 and ANGPTL4 will be evaluated 24 hours before and 48 hours after training program.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20141118019995N10**
Registration date: **2017-12-04, 1396/09/13**
Registration timing: **retrospective**

Last update: **2017-12-04, 1396/09/13**
Update count: **0**

Registration date

2017-12-04, 1396/09/13

Registrant information

Name

Zahra Mardanpour Shahrekordi

Name of organization / entity

Shahrekord University

Country

Iran (Islamic Republic of)

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+98 38 3232 4401

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Recruitment status
Recruitment complete
Funding source
Vice chancellor for research, Shahrekord University

Expected recruitment start date
2015-04-21, 1394/02/01
Expected recruitment end date
2015-05-23, 1394/03/02
Actual recruitment start date
2015-04-21, 1394/02/01
Actual recruitment end date
2015-05-31, 1394/03/10
Trial completion date
empty

Scientific title
Effects of sprint interval versus combined aerobic and resistance training on adipokines, myokines and metabolic outcomes in overweight women with type 2 diabetes

Public title
Effects of sprint interval versus combined aerobic and resistance training in overweight women with type 2 diabetes
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Female 45 - 60 years old with type 2 diabetes BMI>30 kg/m2 HbA1C ≥ 6.5% Fasting blood glucose ≥ 126 mg/dL Sedentary
Exclusion criteria:
Blood pressure ≥ 160/100 mmHg Fasting triglyceride ≥ 500 mg/dL A history of cardiovascular diseases, thyroid disorder, cancer, hormonal disorder, kidney and liver diseases Smoking, use of opioids, alcohol Doing regular exercise more than one year
Age
From **45 years** old to **60 years** old
Gender
Female

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **60**
Actual sample size reached: **52**
Randomization (investigator's opinion)
Randomized
Randomization description
Randomization is performed using statistical software and block method, and the individual randomization unit.
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
Ethics Committee of Shahrekord university
Street address
Rahbar Blvd, Shahrekord
City
Shahrekord
Province
Chahar-Mahal-va-Bakhtiari
Postal code
۸۸۱۵۶۴۸۴۵۶
Approval date
2014-12-23, 1393/10/02
Ethics committee reference number
140.3326

Health conditions studied

1

Description of health condition studied
Type 2 diabetes
ICD-10 code
E11
ICD-10 code description
Non-insulin-dependent diabetes mellitus

Primary outcomes

1

Description
IL-15
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit for IL-15

2

Description
SPARC
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit for SPARC

3

Description
Irisin
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit for Irisin

4

Description
FGF-21
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit for FGF-21

5

Description
ANGPTL4
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit for ANGPTL4

Secondary outcomes

1

Description
Weight
Timepoint
Before and after 10 weeks of intervention
Method of measurement
digital scale

2

Description
Body fat percent
Timepoint
Before and after 10 weeks of intervention
Method of measurement
Caliper

3

Description
Body Mass Index (BMI)
Timepoint
Before and after 10 weeks of intervention
Method of measurement
Weight divided by height squared

4

Description
Fasting blood glucose
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit

5

Description
Ansulin
Timepoint
Before and after 10 weeks of intervention
Method of measurement
ELISA kit

6

Description
Insulin resistance
Timepoint
Before and after 10 weeks of intervention
Method of measurement
The insulin resistance index by the (HOMA-IR) formula.

Intervention groups

1

Description
Intervention group 1: The SIT training group dose an exercise program on an cycle ergometers for 10 weeks. Each session consisted of a 5-minute warm-up, 4 × 30 seconds maximum intensity intervals at breaking wattage of the individual, then followed by 2 minutes of recovery and in the last cool down 4 minutes.
Category
Other

2

Description
Intervention group 2: The combined training (aerobic + resistance) do a training program for 10 weeks. Aerobic training progressed from 20 min/session at 50% maximum heart rate (HR) in week 1-2 to 30 min/session at 70% Max HR in week 3-10 on a treadmill or bike ergometer. Resistance training program includes several upper and lower body exercises using special devices.
Category
Other

3

Description
Control group: The control group do not any regular physical activity in daily life.
Category
Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Center for correctional movements, sport

rehabilitation and massage of Pars
Full name of responsible person
Dr Ebrahim Banitalebi
Street address
Alley 48, Molavi street, Shahrekord
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8817748919
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Banitalebi@lit.sku.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Vice chancellor for research, Shahrekord University
Full name of responsible person
Dr Mohammad Faramarzi
Street address
Vice chancellor for research, Shahrekord University, Rahbar Blvd, Shahrekord
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Email
md.faramarzi@gmail.com
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Vice chancellor for research, Shahrekord University
Proportion provided by this source
70
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
Shahrekord University
Full name of responsible person
Dr Ebrahim Banitalebi
Position
Assistant Professor
Latest degree
Ph.D.
Other areas of specialty/work
Others
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Person responsible for scientific inquiries

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Person responsible for updating data

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Shahrekord University
Full name of responsible person
Dr Ebrahim Banitalebi
Position
Assistant Professor
Latest degree

Ph.D.

Other areas of specialty/work

Others

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Rahbar Blvd, Shahrekord

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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

Not applicable

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Not applicable

Analytic Code

Not applicable

Data Dictionary

Not applicable