

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 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 \geq 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 \geq 6.5%; fasting blood glucose \geq 126 mg/dL; sedentary Exclusion criteria: blood pressure \geq 160/100 mmHg; fasting triglyceride \geq 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 \times 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)

Phone

+98 38 3232 4401

Email address
banitalebi@lit.sku.ac.ir

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

City

Shahrekord

Province

Chahar-Mahal-va-Bakhtiari

Postal code

8817748919

Phone

+98 38 3225 3546

Email

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

City

Shahrekord

Province

Chahar-Mahal-va-Bakhtiari

Postal code

۸۸۱۵۶۴۸۴۵۶

Phone

+98 38 3232 4401

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

Street address

Rahbar Blvd, Shahrekord

City

Shahrekord

Province

Chahar-Mahal-va-Bakhtiari

Postal code

۸۸۱۵۶۴۸۴۵۶

Phone

+98 38 3232 4401

Fax

Email

Banitalebi@lit.sku.ac.ir

Web page address

Person responsible for scientific inquiries

Contact

Name of organization / entity

Shahrekord University

Full name of responsible person

Dr Mohammad Faramarzi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Others

Street address

Rahbar Blvd, Shahrekord

City

shahrekord

Province

Chahar-Mahal-va-Bakhtiari

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۸۸۱۵۶۴۸۴۵۶

Phone

+98 38 3232 4401

Fax

Email

md.faramarzi@gmail.com

Web page address

Person responsible for updating data

Contact

Name of organization / entity

Shahrekord University

Full name of responsible person

Dr Ebrahim Banitalebi

Position

Assistant Professor

Latest degree

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Other areas of specialty/work

Others

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Postal code

۳۳۱۵۶۴۸۴۵۶

Phone

+98 38 3232 4401

Fax

Email

Banitalebi@lit.sku.ac.ir

Web page address

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