

Clinical Trial Protocol

Iranian Registry of Clinical Trials

28 Aug 2026

Effect of milk consumption after resistance training on glycemic control and irisin response in type 2 diabetic men

Protocol summary

Study aim

The aim was to investigate the effect of milk consumption after resistance training (RT) on glycemic control and irisin response in type 2 diabetic (T2D) men.

Design

Randomized Control Trial

Settings and conduct

The training was conducted in a gym in Qazvin.

Participants/Inclusion and exclusion criteria

36 type 2 diabetic men selection criteria: 6 months history of type 2 diabetes Exclusion criteria: lack of any diabetic complications (neuropathy, nephropathy, retinopathy), not being under insulin treatment, no regular participation in sport activities over the last six months, no change in anti-glycemic medication over the last two months, no weight loss over 5% at last two months, no extreme obesity (BMI<40), no consumption of hormonal drugs or hormone-therapy such as thyroid, etc., no consumption of alcohol beverages, cigarette, and other drugs.

Intervention groups

Resistance Training Group Resistance and milk training group

Main outcome variables

Blood sugar Insulin Glycosylated hemoglobin irisin
Muscle strength Diameter of muscle

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190808044477N1**
Registration date: **2019-08-23, 1398/06/01**
Registration timing: **retrospective**

Last update: **2019-08-23, 1398/06/01**

Update count: **0**

Registration date

2019-08-23, 1398/06/01

Registrant information

Name

Mohsen Ebrahimi

Name of organization / entity

Semnan University

Country

Iran (Islamic Republic of)

Phone

+98 23 3338 2184

Email address

mebrahimi@semnan.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-11-22, 1397/09/01

Expected recruitment end date

2018-12-22, 1397/10/01

Actual recruitment start date

2018-11-22, 1397/09/01

Actual recruitment end date

2018-12-22, 1397/10/01

Trial completion date

2020-02-20, 1398/12/01

Scientific title

Effect of milk consumption after resistance training on glycemic control and irisin response in type 2 diabetic men

Public title

Exercise and Milk Consumption in Diabetes

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

diabetics men age between 45-60 year

Exclusion criteria:
 diabetic complications (neuropathy, nephropathy, retinopathy) under insulin treatment participation in regular sport activities over the last six months change in oral anti-glycemic medication over the last two months weight changes over 5% at last two months extreme obesity (BMI<40) consumption of hormonal drugs or hormone-therapy such as thyroid, etc. consumption of alcohol beverages, cigarette, and other drugs

Age
 From **45 years** old to **60 years** old

Gender
 Male

Phase
 N/A

Groups that have been masked
No information

Sample size
 Target sample size: **36**
 Actual sample size reached: **36**

Randomization (investigator's opinion)
 Randomized

Randomization description
 Simple, individualized randomization using random number table Each person was given a code ranging from 1 to 36 and the person who was unaware of the codes was randomly assigned 12 codes. The first 12 codes were assigned to the intervention group 1, the next 12 codes to the intervention group 2 and the next 12 codes to the control group.

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 Qazvin University of Medical Sciences

Street address

Department of Sports Sciences, Semnan University, Semnan, Iran

City

Qazvin

Province

Qazvin

Postal code

35131-19111

Approval date

2018-12-03, 1397/09/12

Ethics committee reference number

IR.QUMS.REC.1397.221

Health conditions studied

1

Description of health condition studied

type 2 diabetes

ICD-10 code

E11.6

ICD-10 code description

Type 2 diabetes mellitus with other specified complications

Primary outcomes

1

Description

fasting blood sugar

Timepoint

Before and after the study

Method of measurement

blood sampling

Secondary outcomes

1

Description

Muscle strength and circumference

Timepoint

before and after study

Method of measurement

A maximum repetition and measurement with tape measure

Intervention groups

1

Description

Intervention group 1: resistance training. The group performed 8 weeks of resistance training with a maximum of 12 repetitions for 3 days per week. Each movement was performed in 3 sets, each lasting 45 minutes. The movement consisted of 7 gestures. Breast Press, Foot Press, Shoulder Press, Ab Crunch, Seated Cable Rows, Leg Extension, Lat Pulldown

Category

Lifestyle

2

Description

Intervention group 2: resistance training and milk intake. This group performed Intervention group 1 training and consumed 500 ml of low-fat milk immediately after each training session.

Category

N/A

3

Description

control group: without training and milk. The group continued its normal life without any exercise and changes to its regular diet.

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

Ghazvin diabetes association

Full name of responsible person

Mohsen Ebrahimi

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Semnan University

Full name of responsible person

Seyfolah Saedodin

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Research Deputy, Central Organization, Semnan
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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

Semnan University

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

Semnan university

Full name of responsible person

Mohsen Ebrahimi

Position

assistant professor

Latest degree

Ph.D.

Other areas of specialty/work

Sport Medicine

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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

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