

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

Comparison the efect of two type resistance training on branched-chain, aromatic amino acids and ceramide metabolism in overweight and obese men

Protocol summary

Study aim

Comparison of the effect of two type resistance training on branched-chain, aromatic amino acids and ceramide metabolism in overweight and obese men

Design

Randomized clinical trial, with parallel groups, without blinding. Sample size will be 11 individual in each one of control; intervention (circular resistance) and traditional training groups. Samples will be randomly selected with a random number table.

Settings and conduct

In the present study, the effect of two methods of resistance training on overweight and obese men in Semnan is compared. This research is done in Isar Semnan Bodybuilding Club and after 15 minutes of warming up, people start specialized exercises and work with weights according to the designed protocol. 48 hours before and after 12 weeks of resistance training to examine the research variables in Semnan Comprehensive Laboratory of Medical Sciences blood samples are taken from people to determine the possible effect of resistance training on individuals

Participants/Inclusion and exclusion criteria

Entry items: Young men aged 17-21 in Semnan, non-athletes with BMI $\geq$ 25 who have not had regular sports activities for at least the last 6 months. Cases of non-entry: have a history of any illness or use of medication and supplements.

Intervention groups

Intervention group 1: Circular resistance exercises.
Intervention group 2: Traditional resistance exercises.
Group 3: The control group: does not do any exercises during the research period.

Main outcome variables

Branched-chain amino acid - Aromatic amino acid -
Ceramide - Insulin resistance

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180928041160N2**

Registration date: **2021-02-17, 1399/11/29**

Registration timing: **registered_while_recruiting**

Last update: **2021-02-17, 1399/11/29**

Update count: **0**

Registration date

2021-02-17, 1399/11/29

Registrant information

Name

Rozita Fathi

Name of organization / entity

University of Mazandaran

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-02-10, 1399/11/22

Expected recruitment end date

2021-02-28, 1399/12/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison the effect of two type resistance training on branched-chain, aromatic amino acids and ceramide metabolism in overweight and obese men

Public title

Comparison the effect of two type resistance training on branched-chain, aromatic amino acids and ceramide metabolism in overweight and obese men

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Young men Non-athlete BMI $\geq$ 25 Lack of regular sports activity for at least the last 6 months

Exclusion criteria:

History of diabetes, cardiovascular disease and musculoskeletal disorders Taking anti-inflammatory drugs and supplements

Age

From **17 years** old to **21 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **33**

Randomization (investigator's opinion)

Randomized

Randomization description

By purposeful sampling method, volunteers will be selected. First, each person will be assigned an identification number. Therefore, the range of identification numbers is between 00 and 33. Using a table of random numbers, the samples will be divided into groups, control, circular resistance training and traditional resistance training. The order of entering the groups is as follows: the first identification number between 00 and 33 that we encounter is in the first intervention group: circular resistance training, the second number is in the intervention group 2: common resistance training and The third number is entered in the control group and so on. Until there are 11 subjects in each 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 Mazandaran University

Street address

Babolsar - Pasdaran Street - Central Organization

City

Babolsar

Province

Mazandaran

Postal code

4741613534

Approval date

2021-01-03, 1399/10/14

Ethics committee reference number

IR.UMZ.REC.1399.017

Health conditions studied

1

Description of health condition studied

Obesity

ICD-10 code

E66

ICD-10 code description

Overweight and obesity

Primary outcomes

1

Description

Branched and aromatic amino acids

Timepoint

48 hours before and 12 weeks after the intervention.

Method of measurement

Blood sampling, High Performance Liquid Chromatography -HPLC

2

Description

Ceramide

Timepoint

48 hours before and 12 weeks after the intervention.

Method of measurement

Blood sampling, High Performance Liquid Chromatography -HPLC

3

Description

Insulin resistance

Timepoint

48 hours before and 12 weeks after the intervention.

Method of measurement

fasting plasma glucose (mmol/l) times fasting serum insulin (mU/l) divided by 22.5

Secondary outcomes

1

Description

Lipid profile

Timepoint

48 hours before and 12 weeks after the intervention.

Method of measurement

Blood sample, Enzymatic colorimetric method

Intervention groups

1

Description

Intervention group: Circular resistance training: In order to achieve the principle of variety of training and reduce the uniformity of training, as well as strengthening the muscles in different angles of the muscle, the exercises will be done in a stationary (circular) manner. And at each training station one muscle will be different from the same station at other courses if possible. In circular resistance training programs, all large muscle and multi-joint groups will be trained in each session. Maximum strength is calculated according to a maximum repetition using the Brzezinski formula. In the present study, circular resistance exercises for twelve weeks, three non-consecutive sessions per week with an intensity of 50 to 80% of maximum repetition will be performed with a wave pattern.

Category

Treatment - Other

2

Description

Intervention group: Traditional resistance training: In traditional training, training movements, repetitions and training sets, load or intensity of training, rest between sets will be the same as circular exercises, and the only difference is in the order in which the exercises are performed. First, one muscle will be fully trained and then the next muscle will be performed. In the present study, in order to prevent the distorting effect of training variables on the research results, the basic training variables in terms of intensity, repetition and sets will be similar between the two training methods. Resistance exercises with a percentage of their maximum strength will be performed under the supervision of a researcher for twelve weeks, three non-consecutive sessions per week and with a wave pattern.

Category

Treatment - Other

3

Description

Control group: They will not do any exercises during the research period.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Center for Corrective Movements

Full name of responsible person

Rozita Fathi

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Semnan, Arg Square, Shahid Rajaei Street

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3514493687

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Mazandaran University

Full name of responsible person

Elahe Talebi Garkani

Street address

Mazandaran - Babolsar - Pasdaran Street - Central Organization

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talebi_umz@yahoo.com

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

No

Title of funding source

Mazandaran 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

roz_fathi@yahoo.com

Contact

Name of organization / entity

Mazandaran University

Full name of responsible person

Rozita Fathi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Exercise physiology

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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