Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 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≥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

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

Public title
Comparison the efect 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≥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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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Mazandaran University
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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

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