Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

The Effect of Combined Exercise Training with Resistance Dominant and Coenzyme Q10 Supplementation on Brain-Derived Neurotrophic Factor (BDNF) and Nerve Growth Factor (NGF) in patient with multiple sclerosis

Protocol summary

Study aim
The purpose of this study was to investigate the effect of eight weeks of combined resistance training with supplementation of coenzyme Q10 on serum levels of Brain-Derived Neurotrophic Factor (BDNF) and Nerve Growth Factor (NGF) in patients with multiple sclerosis.

Design
Clinical trial with control group, with parallel groups, no blinded, randomized

Settings and conduct
MS Case Study The place to do that community is Mashhad Twenty eight patients were selected by available sampling method and randomly divided into three experimental groups (complementary exercise training Q10, placebo, placebo, Q10 supplementation) and a control (placebo) group.

Participants/Inclusion and exclusion criteria
2 years old with MS Not doing regular exercise Non-smoking

Intervention groups
Combined exercise + Q10 Supplement group Combined exercise + placebo group Q10 Supplemental group

Main outcome variables
Brain-Derived Neurotrophic Factor (BDNF) and Nerve Growth Factor (NGF)

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20170911036117N2**
Registration date: **2019-08-11, 1398/05/20**
Registration timing: **registered_while_recruiting**

Last update: **2019-08-11, 1398/05/20**
Update count: **0**

Registration date
2019-08-11, 1398/05/20

Registrant information
Name
Name of organization / entity
Country
Iran (Islamic Republic of)
Phone
+98 51 4401 2765
Email address
elia_3812@yahoo.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-08-11, 1398/05/20

Expected recruitment end date
2019-08-16, 1398/05/25

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
The Effect of Combined Exercise Training with Resistance Dominant and Coenzyme Q10 Supplementation on Brain-Derived Neurotrophic Factor (BDNF) and Nerve Growth Factor (NGF) in patient with multiple sclerosis

Public title
The effect of training on MS

Purpose
Supportive

Inclusion/Exclusion criteria
Inclusion criteria:

2 years old with MS Not doing regular exercise Non-smoking

Exclusion criteria:

Use of the cortoone Expanded Disability Status Scale (EDSS) more than 5 Expanded Disability Status Scale (EDSS) less than 3

Age

From **25 years** old to **45 years** old

Gender

Both

Phase

2-3

Groups that have been masked

No information

Sample size

Target sample size: **28**

Randomization (investigator's opinion)

Randomized

Randomization description

Simple individual random Description: Writing the names of subjects and randomly taking names and placing them in a specified order in four research groups

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Sabzevar University of Medical Sciences

Street address

Asad Abadi Street - Central Office of Medical Sciences

City

sabzevar

Province

Razavi Khorasan

Postal code

9613873119

Approval date

2016-05-30, 1395/03/10

Ethics committee reference number

IR.MEDSAB.REC.1395.29

Health conditions studied

1

Description of health condition studied

multiple sclerosis

ICD-10 code

G35

ICD-10 code description

Multiple sclerosis

Primary outcomes

1

Description

Brain-derived growth factor and Nervous Growth Factor

Timepoint

24 hours before the start and 48 hours after the end of the intervention

Method of measurement

ELISA method and using special kit

Secondary outcomes

1

Description

Brain-derived growth factor and Nervous Growth Factor

Timepoint

24 hours before the start and 48 hours after the end of the intervention

Method of measurement

ELISA method and using special kit

Intervention groups

1

Description

Intervention group:Combined exercise training + supplementation of coenzyme Q10. Intervention of this group will be combined exercise training consist of two sessions of 50% resistance training with a maximum of one repetition and one session of aerobic exercise with 50% maximal oxygen consumption at the start of the study with daily intake of 200 mg Coenzyme Q10 manufactured by Canadian Notary Century for eight weeks.

Category

Lifestyle

2

Description

Intervention group: Combined exercise training + placebo. Intervention of this group will be combined exercise training consist of two sessions of 50% resistance training with a maximum of one repetition and one session of aerobic exercise with 50% maximal oxygen consumption at the start of the study with daily intake of placebo (starch powder) for eight weeks.

Category

Lifestyle

3

Description
Intervention group: supplementation of coenzyme Q10. Intervention of this group will be intake daily of 200 mg Coenzyme Q10 manufactured by Canadian Notary Century for eight weeks.
Category
Treatment - Drugs

4

Description
Control group: placebo. Intervention of this group will be daily intake of placebo (starch powder) for eight weeks.
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
MS Khorasan Razavi Society
Full name of responsible person
Karim Nikkhah
Street address
50th Street, Ghaem 12, Ahmadabad Street, Mashhad
City
Mashhad
Province
Razavi Khorasan
Postal code
9617976487
Phone
+98 51 4441 0104
Fax
Email
hakim@hsu.ac.ir
Web page address
https://msmashhad.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Hakim Sabzevari
Full name of responsible person
Amir Hosein Haghighi
Street address
Hakim Sabzevari University, Towhid City, Sabzevar
City
Sabzevar
Province
Razavi Khorasan
Postal code
9617976487
Phone
+98 51 4441 0104
Email
hakim@hsu.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The University of Hakim Sabzevari
Proportion provided by this source
5
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
The University of Zabol
Full name of responsible person
Javad Nakhzari Khodakheir
Position
Assistant Professor
Latest degree
Ph.D.
Other areas of specialty/work
Exercise Physiology
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No. 25, Shahid Bagheri
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Person responsible for updating data

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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