Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Effects of Concurrent Training Order on Physical Fitness, Functional Capacity, serum concentrations of Myostatin and Follistatin in Postmenopausal Females.

Protocol summary

Study aim
Investigating the effects of Concurrent Training Order on Physical Fitness, Functional Capacity, serum concentrations of Myostatin and Follistatin in Postmenopausal Females

Design
Randomized clinical trial of 33 women 50-60 years in two parallel group

Settings and conduct
Exercises will be performed in the gym for two months. Participants will be randomly divided into two groups and do the same exercise in different aerobic and resistance orders. The first group will first perform aerobic training and then resistance exercise. However, the second group will first perform resistance training and then perform aerobic training. The intensity of aerobic training would increase from 65 to 80 percent of maximum heart rate, and the intensity of resistance training will be determined by 10 to 12 repetitions, equivalent to 60 to 70 percent of a maximum repetition.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Menopause at age 50 to 60 years, Exclusion criteria: Illness and physical injury

Intervention groups
First intervention: Concurrent Exercises with Resistance-Aerobic Order Second intervention: Concurrent Exercise with Aerobic-Resistance Order

Main outcome variables
Serum Levels of Myostatin and Folistatin, muscle strength and endurance of Upper and lower body

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20200126046267N1**
Registration date: **2020-03-16, 1398/12/26**
Registration timing: **retrospective**

Last update: **2020-03-16, 1398/12/26**
Update count: **0**

Registration date
2020-03-16, 1398/12/26

Registrant information

Name
Leila Esazadeh

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 51 3225 3317

Email address
lesazadeh93@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-06-04, 1398/03/14

Expected recruitment end date
2019-06-19, 1398/03/29

Actual recruitment start date
2019-06-04, 1398/03/14

Actual recruitment end date
2019-06-19, 1398/03/29

Trial completion date
2019-08-20, 1398/05/29

Scientific title
Effects of Concurrent Training Order on Physical Fitness, Functional Capacity, serum concentrations of Myostatin and Follistatin in Postmenopausal Females.

Public title

Effects of Concurrent Training

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

Physical Health At least one year must be passed after Postmenopausal period Obtain a physical health certificate from a physician Complete an informed consent form on how to perform the exercises Lack of exercising in the past six months

Exclusion criteria:

Postmenopausal period Less than a year Have pain and physical injury Have heart disease, diabetes, etc. Take drugs, cigarettes, alcohol

Age

From **50 years** old to **60 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **33**

Actual sample size reached: **33**

Randomization (investigator's opinion)

Randomized

Randomization description

Use random number table

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Intervention type was exercise training program.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Neyshabour Azad University

Street address

Research Boulevard, Neyshabour Islamic Azad University Complex

City

Neyshabour

Province

Razavi Khorasan

Postal code

۹۳۱۹۹۷۵۸۵۳

Approval date

2019-01-23, 1397/11/03

Ethics committee reference number

IR.IAU.NEYSHABUR.REC.1397.021

Health conditions studied

1

Description of health condition studied

sarcopenia

ICD-10 code

M62.5

ICD-10 code description

Muscle loss and atrophy, not elsewhere classified Disuse atrophy NEC, Sarcopenia

Primary outcomes

1

Description

Serum Myostatin concentration

Timepoint

Before and after two months of exercise training intervention

Method of measurement

blood sampling from anterior venous arm for use in ELISA Test

2

Description

Serum Follistatin concentration

Timepoint

Before and after two months of exercise training intervention

Method of measurement

blood sampling from anterior venous arm for use in ELISA Test

3

Description

Upper body strength and endurance

Timepoint

Before and after two months of exercise training intervention

Method of measurement

Count the number of correct performances with device the chest press

4

Description

Lower body body strength and endurance

Timepoint

Before and after two months of exercise training intervention

Method of measurement

Counting the number of correct performances lying with the back of the thigh device

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group 1: Concurrent Training Order (Resistance-Aerobic). In this order, first subjects perform resistance training at eight bodybuilding stations, then after ten minutes of rest, they do aerobic exercises for 30 to 45 minutes.
Category
Prevention

2

Description
Intervention group 2: Concurrent Training Order is (Aerobic-Resistance). In this order, first subjects perform aerobic exercises for 30 to 45 minutes, then after ten minutes of rest, They do resistance training at eight bodybuilding stations.
Category
Prevention

3

Description
Control group:This group does not perform any exercise.
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
Islamic Azad University of Neyshabour Branch
Full name of responsible person
Khajeie Rambod
Street address
Pajohesh Blvd
City
Neishabur
Province
Razavi Khorasan
Postal code
۹۳۱۹۹۷۵۸۵۳
Phone
+98 51 4262 1901
Email
R.khajeie@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Islamic Azad University
Full name of responsible person
Khajeie Rambod
Street address
Pajohesh Blvd
City
Mashhad
Province
Razavi Khorasan
Postal code
۹۳۱۹۹۷۵۸۵۳
Phone
+98 51 4262 1901
Email
R.khajeie@gmail.com
Web page address
Grant name
not use
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
university
Proportion provided by this source
100
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
Islamic Azad University
Full name of responsible person
Esazadeh Leila
Position
Faculty member
Latest degree
Master
Other areas of specialty/work
Physiology
Street address
No. 37,Tarbiat Alley,Behjat 29,Railway Blvd
City
Mashhad
Province
Razavi Khorasan
Postal code
9144844535
Phone
+98 51 3225 3317
Email
lesazadeh93@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Islamic Azad University

Full name of responsible person
Esazadeh Leila

Position
Faculty member

Latest degree
Master

Other areas of specialty/work
Physiology

Street address
No. 37,Tarbiat Alley,Behjat 29,Railway Blvd

City
Mashhad

Province
Razavi Khorasan

Postal code
9144844535

Phone
+98 51 3225 3317

Email
lesazadeh93@gmail.com

Person responsible for updating data

Contact

Name of organization / entity
Islamic Azad University

Full name of responsible person
Esazadeh Leila

Position
Faculty member

Latest degree
Master

Other areas of specialty/work
Physiology

Street address
No. 37,Tarbiat Alley,Behjat 29,Railway Blvd

City
Mashhad

Province
Razavi Khorasan

Postal code
9144844535

Phone
+98 51 3225 3317

Email
lesazadeh93@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available

Study Protocol
Yes - There is a plan to make this available

Statistical Analysis Plan
Yes - There is a plan to make this available

Informed Consent Form
Yes - There is a plan to make this available

Clinical Study Report
Yes - There is a plan to make this available

Analytic Code
Yes - There is a plan to make this available

Data Dictionary
Yes - There is a plan to make this available

Title and more details about the data/document
The collected blood markers information can be shared

When the data will become available and for how long
After publishing the article in a prestigious journal since 1999

To whom data/document is available
Editor of Research Journal

Under which criteria data/document could be used
In order to ensure the accuracy of information

From where data/document is obtainable
Editor of Research Journal

What processes are involved for a request to access data/document
Presenting scientific reasons to the editor of the journal Scientific Research

Comments
Information will be delivered without the names of the subjects