

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 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 Follistatin, 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

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

AgeFrom **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

93199V08A03

Approval date

2019-01-23, 1397/11/03

Ethics committee reference number**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

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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

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City

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Province

Razavi Khorasan

Postal code

93199V5A53

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

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Person responsible for scientific inquiries

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Person responsible for updating data

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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