# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

02 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

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## 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**
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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