

Clinical Trial Protocol

Iranian Registry of Clinical Trials

06 Jul 2026

The effects of TRX Suspension Training on sarcopenic neuromuscular markers and functional abilities in elderly with sarcopenia

Protocol summary

Study aim

The aim of this study was to investigate the effect of eight weeks of TRX Suspension Training (TST) on serum levels of neuromuscular growth factors and functional indices in elderly men with sarcopenia.

Design

In this research, a semi-experimental design was used (two groups in the form of a pretest and a post-test). As a result of the coronavirus pandemic, some participants refused to participate in the training protocol. Therefore, those who were willing to participate in the exercise program were assigned to the training group.

Settings and conduct

Before starting the protocol participants were trained how to do the exercises. The training programs included 8 weeks, three sessions per week, about 60 min per session including warm up and cool down. Due to the coronavirus pandemic exercises were done outdoors. Serum concentrations of muscle growth markers, anthropometric and body composition indices, and functional tests were evaluated at baseline and after 8 weeks.

Participants/Inclusion and exclusion criteria

Inclusion criteria included: 1- age more than 65 years; 2- handgrip strength lower than 32Kg, and SMM/height² lower than 9.2 kg/m²; 3- being sedentary for at least 1 year (didn't have more than 1h exercise per week)
Exclusion criteria included: 1- cardiovascular or pulmonary diseases, diabetes, joint and muscle problems, and Mental and cognitive disorders; 2- involvement in any extra exercise training programs; 3- not interested in continuing or changing in personal life schedule.

Intervention groups

Participants in the Control group were asked to continue their routine lifestyle. The training group executed the TRX Suspension Training for 8 weeks.

Main outcome variables

Myostatin levels; Follistatin levels; GDF-15 levels; CAF

levels; Handgrip strength; Gait speed; Time up and go (TUG); Chair stand speed; Standing balance.

General information

Reason for update

Acronym

TRX (Total Body Resistance Exercise)

IRCT registration information

IRCT registration number: **IRCT20230727058944N1**

Registration date: **2023-09-20, 1402/06/29**

Registration timing: **retrospective**

Last update: **2023-09-20, 1402/06/29**

Update count: **0**

Registration date

2023-09-20, 1402/06/29

Registrant information

Name

Sohrab Rezaei

Name of organization / entity

Allameh Tabataba'i University

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-07-22, 1399/05/01

Expected recruitment end date

2020-08-15, 1399/05/25

Actual recruitment start date

2020-07-22, 1399/05/01

Actual recruitment end date

2020-08-15, 1399/05/25

Trial completion date

2020-10-26, 1399/08/05

Scientific title

The effects of TRX Suspension Training on sarcopenic neuromuscular markers and functional abilities in elderlies with sarcopenia

Public title

Effect of exercise training on sarcopenia in elderlies

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

Age more than 65 years Handgrip strength lower than 32Kg SMM/height² lower than 9.2 kg/m² Being sedentary for at least 1 year (didn't have more than 1h exercise per week)

Exclusion criteria:

Cardiovascular or pulmonary diseases, diabetes, Joint and muscle problems, and Mental and cognitive disorders Involvement in any extra exercise training programs Not interested to continue or change in personal life schedule

Age

From **65 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **30**

Actual sample size reached: **23**

Randomization (investigator's opinion)

Not randomized

Randomization description**Blinding (investigator's opinion)**

Not blinded

Blinding description**Placebo**

Not used

Assignment

Other

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committees of Allameh Tabataba'i University

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Floor 13, Block A, Ministry of Health & Medical

Education Headquarters, Between Zarafashan & South Falamak, Qods Town, Tehran, Iran.

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Approval date

2020-01-15, 1398/10/25

Ethics committee reference number

IR.ATU.REC.1399.023

Health conditions studied**1****Description of health condition studied**

With aging, there is an inevitable progressive loss of muscle mass and strength called sarcopenia that is associated with the risk of impairment in physical ability which could lead to consequences such as falls, fall-related injuries, hospitalizations, and even mortality.

ICD-10 code

M62.5

ICD-10 code description

Muscle wasting and atrophy, not elsewhere classified

Primary outcomes**1****Description**

Myostatin levels

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Collection of venous blood samples with a syringe and laboratory assessments

2**Description**

Follistatin levels

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Collection of venous blood samples with a syringe and laboratory assessments

3**Description**

GDF-15 levels

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Collection of venous blood samples with a syringe and laboratory assessments

4

Description

CAF levels

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Collection of venous blood samples with a syringe and laboratory assessments

Secondary outcomes

1

Description

Handgrip strength

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Jamar hand dynamometer (USA) with five handle positions and the second position was used for all participants.

2

Description

Gait speed

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

Walking speed of participants was assessed using a stopwatch.

3

Description

Time Up and Go (TUG)

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

TUG test was assessed using a stopwatch.

4

Description

Chair stand speed

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

chair stand test was assessed using a stopwatch.

5

Description

Standing balance

Timepoint

24 hours before intervention and 48 hours after intervention

Method of measurement

The standing balance test was assessed using a stopwatch.

Intervention groups

1

Description

Intervention group: TRX training group: Participants were trained for 8 weeks, three sessions per week, and about 60 min per session.

Category

Treatment - Devices

2

Description

Control group: Participants in the Control group were asked to continue their routine lifestyle.

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

Saraye Zargande

Full name of responsible person

Mohamad Nilforooshzadeh

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Daliri St., Daliri St., Zargandeh.

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Allameh Tabataba'i University

Full name of responsible person

Research Vice President of Allameh Tabatabai University

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Web page address<https://atu.ac.ir/>**Grant name****Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Allameh Tabataba'i University

Proportion provided by this source

50

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**

Allameh Tabataba'i University

Full name of responsible person

Rasoul Eslami

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Exercise Physiology

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Person responsible for scientific inquiries**Contact****Name of organization / entity**

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Position

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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

All data is shareable after de-identifying individuals.

When the data will become available and for how long

starting 6 months after publication

To whom data/document is available

The data will be available to researchers working in academic and scientific institutions and people who work in businesses.

Under which criteria data/document could be used

Any use and analysis of data must be done in coordination with the researcher of this project.

From where data/document is obtainable

Applicants can send their requests to receive data to sohrabrezaei8968@gmail.com.

What processes are involved for a request to access data/document

After sending the request, the person's profile and purpose for receiving the data will be asked, and the documents will be sent after confirmation.

Comments