

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

The effect of locomotor training and aerobic exercise on balance, fear of falling, and lower limb strength in elderly women locomotive syndrome

Protocol summary

Registration timing: **registered_while_recruiting**

Study aim

Determining the effect of locomotor and aerobic exercise on balance, fear of falling, and lower limb strength in elderly women with Locomotive syndrome

Design

The clinical trial will have two experimental groups and a control group. It will be a single-blind, randomized trial on 45 elderly women with Locomotive syndrome.

Settings and conduct

The (Locomotor Exercises) group will perform locomotor exercises for 8 weeks (three sessions per week), including: standing on one leg, squats, heel raises, and forward lunges. The (Locomotor and Aerobic Exercises) group: In addition to locomotor exercises, this group will perform aerobic exercises for 30 minutes. The control group will not receive any intervention. This trial will take place in a gym in Arak.

Participants/Inclusion and exclusion criteria

Elderly women with Locomotive syndrome, 60 years and older Having individual independence in performing personal and health matters No history of surgery in the lower extremities within the past 2 years No history of degenerative joint diseases

Intervention groups

Experimental group 1. Locomotor and aerobic exercises.
Experimental group 2. Locomotor exercises. Group 3. Control

Main outcome variables

Locomotor and aerobic exercise training have an effect on balance, fear of falling, and lower limb strength in elderly women with Locomotive syndrome.

Last update: **2025-04-10, 1404/01/21**

Update count: **0**

Registration date

2025-04-10, 1404/01/21

Registrant information

Name

Zahra Geramipour

Name of organization / entity

The univesity of arak

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-04-05, 1404/01/16

Expected recruitment end date

2025-06-06, 1404/03/16

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of locomotor training and aerobic exercise on balance, fear of falling, and lower limb strength in elderly women locomotive syndrome

Public title

The effect of locomotor training and aerobic exercise on

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20230619058528N2**

Registration date: **2025-04-10, 1404/01/21**

elderly people with locomotive syndrome

Purpose
Prevention

Inclusion/Exclusion criteria
Inclusion criteria:
Elderly women with Locomotor syndrome, 60 years and older Having individual independence in personal and health matters No history of lower limb surgery within the past 2 years. No history of degenerative joint diseases
Exclusion criteria:
Inability to perform daily activities and health care History of fractures and surgery in the lower extremities within the last 2 years Elderly people with MS or Parkinson's disease Absence of more than 3 training sessions

Age
From **60 years** old

Gender
Female

Phase
3

Groups that have been masked

- Participant

Sample size
Target sample size: **45**

Randomization (investigator's opinion)
Randomized

Randomization description
The research population will consist of 45 women aged 60 and above with Locomotor syndrome. The number of samples was obtained using G-power software for each of the three groups of 45 people (locomotor exercises combined with aerobic exercises (15 people), locomotor exercises (15 people), and control (15 people)). The groups will be selected by simple random selection.

Blinding (investigator's opinion)
Single blinded

Blinding description
Participants are unaware of the division into control and experimental groups.

Placebo
Not used

Assignment
Factorial

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Arak University
Street address
Arak University, Karbala Boulevard, Basij Square,

Sardasht, Arak
City
Arak
Province
Markazi
Postal code
3848177584
Approval date
2025-03-12, 1403/12/22
Ethics committee reference number
IR.ARAKU.REC.1403.092

Health conditions studied

1

Description of health condition studied
Locomotive syndrome
ICD-10 code
G12.29
ICD-10 code description
Other motor neuron disease

Primary outcomes

1

Description
Dynamic balance
Timepoint
At the beginning of the study and after 8 weeks of intervention
Method of measurement
Time to get up and go test

2

Description
Static balance
Timepoint
At the beginning of the study and after 8 weeks of intervention
Method of measurement
Four-Step Balance Test (FsBT)

3

Description
Fear of falling
Timepoint
At the beginning of the study and after 8 weeks of intervention
Method of measurement
Fear of Falling Questionnaire (FES-I)

4

Description
Lower limb strength
Timepoint
At the beginning of the study and after 8 weeks of intervention

Method of measurement

30-second sit-to-stand test (30sCST)

N/A

Secondary outcomes

empty

Intervention groups**1****Description**

Intervention Group 1: Locomotor Exercises Combined with Aerobic Exercises The locomotor exercises include four types of movements: 1. Single-leg stance: This exercise is performed for one minute. If the elderly participants feel unsteady, they can hold onto a chair for support. 2. Squats: Performed by bending the knees to a 90-degree angle while holding onto a chair for support. This exercise is done in three sets of six repetitions. 3. Heel raises: Executed in three sets of ten repetitions, with a four-count lift and a four-count lower. 4. Forward lunges: Taking a step forward as far as possible while maintaining an upright posture. This exercise is performed in three sets of five repetitions. Aerobic exercises for the elderly include activities with low to moderate intensity (40–70% of maximum heart rate) to improve cardiorespiratory endurance, strengthen muscles, and maintain joint flexibility. This section includes: 5 minutes of warm-up, 20 minutes of brisk walking, 5 minutes of recovery. These exercises will be conducted for 8 weeks, three sessions per week, with 15 participants.

Category

Prevention

2**Description**

Intervention Group 2: (Locomotor Exercises) These exercises include four types of movements: 1. Single-leg stance: This exercise is performed for one minute. If the elderly participants feel unsteady, they can hold onto a chair for support. 2. Squats: Performed by bending the knees to a 90-degree angle while holding onto a chair for support. This exercise is done in three sets of six repetitions. 3. Heel raises: This exercise is performed in three sets of ten repetitions with a four-count lift and a four-count lower. 4. Forward lunges: Taking a step forward as far as possible while maintaining an upright posture. This exercise is performed in three sets of five repetitions. These exercises will be conducted for 8 weeks, three sessions per week, and with 15 participants.

Category

Prevention

3**Description**

Control Group: This group will include 15 participants who will not receive any intervention for 8 weeks.

Category**Recruitment centers****1****Recruitment center****Name of recruitment center**

Hygia Corrective Exercise Center

Full name of responsible person

فرید ثاقبی

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Hygia Corrective Exercise Center, Golha Alley, Abbas Abad Street, Arak

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Sponsors / Funding sources**1****Sponsor****Name of organization / entity**

Arak University

Full name of responsible person

Mohammad Ali Badaghifard

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Karbala Boulevard, Basij Square, Sardasht, Arak University, Arak

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Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Arak University

Proportion provided by this source

100

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

Arak University

Full name of responsible person

Shahnaz Shahrjerdi

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Sport Medicine

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Person responsible for scientific inquiries

Contact

Name of organization / entity

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Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

There is no further information.

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document

All data will be available after the research is published.

When the data will become available and for how long

Since 1404

To whom data/document is available

Everyone from university researchers to professors can receive this research.

Under which criteria data/document could be used

A person who intends to study this research can send a message to the researcher via email. The person can

also use the information in the article.

From where data/document is obtainable

First, email shahrjerdi.shahnaz@gmail.com, then call the following number: 09161520974, and finally, you can visit the Arak University Library.

What processes are involved for a request to access

data/document

The applicant can receive the documents after sending an email to the researcher and receiving confirmation from the researcher.

Comments