

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

The effect of frontal plane-focused balance training on balance performance and falls in chronic stroke

Protocol summary

Study aim

To investigate the effect of frontal plane-focused balance training on balance performance and falls in chronic stroke

Design

A randomized, double blinded, parallel controlled group trial on 60 participants (30 post-stroke patients in each group) who randomized by block randomization.

Settings and conduct

Participants will be recruited from all stroke clients who went to physiotherapy clinics in Mashhad. They will assess in the biomechanics laboratory of Paramedical college, Mashhad university of medical science, and will receive treatment in a private physiotherapy clinic. Participants will be randomly assigned to one of the groups: 1) "frontal plane-focused" balance training group (test) and 2) "traditional" balance training (control). Task-specific exercises, done with dual-tasks (motor & cognitive), will accomplish in 3 one-hour sessions per week for 8 weeks. Balance assessment will be done by a force platform to investigate center of pressure (COP) measures in both directions, and two "core outcome set", and fall assessment will be record before, after intervention and after 6 months follow-up period.

Participants/Inclusion and exclusion criteria

1. The first ischemic or hemorrhagic cerebrovascular accident (CVA) 2. At least 6 months post stroke 4. Be able to stand and walk for 1 minute and stand semi-tandem independently 4. Not to suffer from any other diseases that affect balance except stroke 5. Not to suffer from sever cognitive disorder

Intervention groups

30 participant in the test group will do frontal plane focused balance exercises, while 30 participants in the control group will do traditional balance exercises.

Main outcome variables

center of pressure (COP) parameters; Berg balance scale score & Mini-Best score (clinical assessment); Activities-specific Balance Confidence (ABC) score; cognitive

performance score, motor performance score; fall history

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20220703055350N1**

Registration date: **2022-10-04, 1401/07/12**

Registration timing: **prospective**

Last update: **2022-10-04, 1401/07/12**

Update count: **0**

Registration date

2022-10-04, 1401/07/12

Registrant information

Name

Mitra Parsa

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 51 3876 5444

Email address

mitra.parsaa@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-10-17, 1401/07/25

Expected recruitment end date

2023-08-16, 1402/05/25

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of frontal plane-focused balance training on balance performance and falls in chronic stroke

Public title

The effect of lateral balance training on falls in stroke

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

First ischemic or hemorrhagic stroke attack At least 6 months post stroke Only half of body was involved Be able to stand and walk for 1 minute and stand semi-tandem independently Have stable condition and not to suffer from any other diseases that affect balance Get 24 score or more in Mini-Mental State Examination (MMSE) Get standard deviation less than ± 1 in Line Bisection test (not to suffer from hemineglect) have the score 2 or less in Modified Ashworth Scale in Gastrosoleos muscle

Exclusion criteria:

Had a surgery on upper or lower extremity during last year Have contracture or deformity in lower limb Suffer from visual or auditory disorder Begin to take vitamin D at the same training time

Age

From **20 years** old to **85 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **60**

Randomization (investigator's opinion)

Randomized

Randomization description

The 4-volume random block allocation method will be used. All possible 4 permutations will be listed in two groups (permutations 1 to 6 are as follows) A is the intervention group and B is the control group. 1-AABB 2-ABAB 3-BAAB 4-BABA 5-BBAA 6-ABBA Then, from a random number table with a random starting point, 6 numbers between 1 and 6 will be randomly selected (either using software or randomize.com). For example, if the 6 random numbers obtained are 3 5 4 3 4 6, It will mean that the first four people similar to block 3, the second four people similar to block 5 and ... will be allocated.

Blinding (investigator's opinion)

Double blinded

Blinding description

This study will be performed in a double-blind manner and the blinding includes the participants, the person who analyzes the data and the experimenters who perform the pre- and post-treatment and 6-month follow-

up evaluation are blind to the group allocation.

Furthermore, physiotherapists who perform training are blind to pre-test, post-test and follow-up results.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of university of social welfare and rehabilitation

Street address

kodakyar Ave., daneshjo Blvd.,Evin

City

Tehran

Province

Tehran

Postal code

1985713834

Approval date

2019-11-25, 1398/09/04

Ethics committee reference number

IR.USWR.REC.1398.136

Health conditions studied

1

Description of health condition studied

stroke

ICD-10 code

G46

ICD-10 code description

Vascular syndromes of brain in cerebrovascular diseases

Primary outcomes

1

Description

center of pressure parameters (postural control or balance)

Timepoint

before training (pretest), after training (post test) and after 6 months follow-up

Method of measurement

force platform (Kistler)

2

Description

fall history (rate of falling [Rate ratio] and risk of falling

[Odds ratio])

Timepoint

from CVA incidence to beginning of training

Method of measurement

self-reporting

3

Description

Berg balance scale score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

Berg balance scale

4

Description

Mini- Balance Evaluation Systems Test (Mini-BEST) score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

Mini-Best

5

Description

Activities-specific Balance Confidence (ABC) test score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

ABC test

6

Description

Falls risk for older people in the community (FROP-Com) screening tool score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

FROP-Com screening tool test

Secondary outcomes

1

Description

motor task performance score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

reversed average of acceleration absolute value (three directions) measured by an accelerometer attached to the tray

2

Description

cognitive task performance score

Timepoint

pre-test, post-test and after 6 months follow-up

Method of measurement

rate of correct words to total words in Stroop test

Intervention groups

1

Description

Intervention group: Frontal plane-focused balance training, including static and dynamic exercises focused on maintaining lateral balance. In the first 8 sessions single-task exercises will be accomplished. In the second 8 sessions motor dual task exercises will be done and in the third 8 sessions cognitive dual task exercises will be done.

Category

Rehabilitation

2

Description

Control group: Traditional balance training, including static and dynamic balance exercises focused on maintaining general and specially anterior- posterior balance. The same as intervention group, three 8-session therapeutic periods will be accomplished for the control group.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Private physiotherapy clinics in Mashhad

Full name of responsible person

Mitra Parsa

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No.198, 2nd Khaghani, Khaghani Blv., Rezashahr

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

University of social welfare and rehabilitation sciences

Full name of responsible person

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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

University of social welfare and rehabilitation sciences

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**

University of social welfare and rehabilitation sciences

Full name of responsible person

Dr. Iraj Abdollahi

Position

Head of Physiotherapy department

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

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

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Full name of responsible person

Mitra Parsa

Position

Ph.D. candidate

Latest degree

Master

Other areas of specialty/work

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Person responsible for updating data**Contact****Name of organization / entity**

University of social welfare and rehabilitation sciences

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Latest degree

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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

After hiding of personal information, demographic data will be shareable

When the data will become available and for how long

Data will be accessible 6 months after publishing.

To whom data/document is available

It will be available to all scholars and researchers working in an academia or a research center.

Under which criteria data/document could be used

For academic researches, confirming the ethics code is needed to access data .

From where data/document is obtainable

To receive data, send an e-mail to Dr. Iraj Abdollahi via irajabdollahi@hotmail.com or to Mitra Parsa via mitra.parsaa@gmail.com containing reasons for data access.

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

It is imperative to explain the reasons for data access and features of research plan comprehensively.

Comments