

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Transcranial Direct Current Stimulation combined with simultaneous motor exercises to reduce the time to recover the grip strength in stroke patients with motor deficient

Protocol summary

Study aim

We want to investigate the effect of tDCS and motor exercises on the patient, which will be measured using the grip strength test and fMRI.

Design

The effect of transcranial direct current electrical stimulation and motor exercises on stroke patients, with control group, double blind, non-random

Settings and conduct

In this study, two methods of tDCS and simultaneous motor exercises will be applied to stroke patients. The motor exercises method, will create a new neural network and the tDCS method provides stability of neural network. Combining these two methods at the same time can reduce the recovery time and thus reduce the medical costs for patients.

Participants/Inclusion and exclusion criteria

Stroke patients with motor dysfunction in the upper extremity. should not have any metallic objects in their body. also, they should not be over 70 years old and over 100 kilograms, and they should not have claustrophobia.

Intervention groups

transcranial Direct Current Stimulation and motor exercises

Main outcome variables

Grip strength of the patients' hand

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20191208045665N1**

Registration date: **2020-05-27, 1399/03/07**

Registration timing: **registered_while_recruiting**

Last update: **2020-05-30, 1399/03/10**

Update count: **1**

Registration date

2020-05-27, 1399/03/07

Registrant information

Name

Mohammad Rostami

Name of organization / entity

The University of Tarbiat Modares

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-11-22, 1398/09/01

Expected recruitment end date

2021-03-19, 1399/12/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Transcranial Direct Current Stimulation combined with simultaneous motor exercises to reduce the time to recover the grip strength in stroke patients with motor deficient

Public title

Transcranial Direct Current Stimulation combined with simultaneous motor exercises to reduce the time to

recover the grip strength in stroke patients with motor deficient

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Stroke patients suffering from upper extremity dysfunction. Range of age: 30- 60 years

Exclusion criteria:

Presence of metal objects such as implants, pacemakers, etc. in the patient's body. The Patient's Weight must be under 100 kilograms The Patient must be under 70 years old Uncontrolled blood pressure

Age

From **24 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Outcome assessor
- Data analyser

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

Not randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

The test is planned in such a way that the participant does not know which of the control group or test groups he/she belongs to. This means that the participant thinks that their treatment method is similar to the rest of the participants. Also, the evaluators only evaluate using fMRI results and are unaware of the treatment process.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Iran University of Medical Sciences

Street address

Jalal AleAhmad Nasr P.O.Box: 14115-111

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Approval date

2019-10-13, 1398/07/21

Ethics committee reference number

IR.IUMS.REC.1398.726

Health conditions studied

1

Description of health condition studied

Transcranial Direct Current Stimulation with motor exercises to reduce the time to recover the grip strength in stroke patients with motor deficient

ICD-10 code

G46.3

ICD-10 code description

Brain stem stroke syndrome

Primary outcomes

1

Description

improvement in gripping speed and strength

Timepoint

Before intervention - after 10 sessions of intervention

Method of measurement

Dynamometer Grip Devices

Secondary outcomes

empty

Intervention groups

1

Description

First intervention group: After one fMRI session and measuring the grip strength of the patients in this group, 10 treatment sessions of tDCS and motor exercises are performed on them, and then fMRI and the grip strength test are taken again.

Category

Treatment - Devices

2

Description

Second Intervention group: After one fMRI session and measuring the grip strength of the patients in this group, 10 motor exercises sessions were performed on them, and then fMRI and the grip strength test are taken again.

Category

Rehabilitation

3

Description

Control group: After one fMRI session and measuring the grip strength of the patients in this group, 10 Sham-tDCS therapy sessions and motor exercises were performed on them, and then fMRI and the grip strength test were taken again.

Category

Treatment - Devices

Recruitment centers

1

Recruitment center

Name of recruitment center

Firouzgar Hospital

Full name of responsible person

Dr. Masoud Mehrpour

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Firouzgar Hospital, beh afarin st., karimkhan ave.

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Simulation systems lab of Tarbiat Modares University

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?

No

Title of funding source

Project Manager of Simulator Systems Lab

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

Persons

Person responsible for general inquiries

Contact

Name of organization / entity

The University of Tarbiat Modares

Full name of responsible person

Mohammad Rostami

Position

Researcher

Latest degree

Master

Other areas of specialty/work

Neuroscience

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Position

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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)

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

Study Protocol

Undecided - It is not yet known if there will be 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