Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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 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 under100 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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Tehran

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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

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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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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