

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

30 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

###### Country

Iran (Islamic Republic of)

###### Phone

+98 21 8288 3904

###### Email address

m-rostami@modares.ac.ir

##### 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

##### City

Tehran

##### Province

Tehran

##### Postal code

14115-111

##### 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

**Street address**

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**

Mohammad Rostami

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

The University of Tarbiat Modares

**Full name of responsible person**

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**Position**

Project Manager of Simulator Systems Lab

**Latest degree**

Master

**Other areas of specialty/work**

Neuroscience

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## Person responsible for updating data

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### Contact

**Name of organization / entity**

Islamic Azad University, Science and Research Branch

**Full name of responsible person**

Zahra Nasimi

**Position**

PHD candidate in biomedical engineering

**Latest degree**

Master

**Other areas of specialty/work**

Medical Engineering

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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