

Clinical Trial Protocol

Iranian Registry of Clinical Trials

25 Jun 2026

Comparison the effect of transcranial direct current stimulation between unihemispheric concurrent dual site and primary motor cortex on motor learning in healthy individuals

Protocol summary

Summary

The aim of study is to determine the effect of unihemispheric concurrent dual site transcranial direct current stimulation (tDCS) on motor learning of serial reaction time task in young healthy individuals. This clinical trial phase 2 is single center and single blind. Individuals are randomly divided to three groups; Simultaneous stimulation on primary motor and dorsolateral prefrontal cortices, stimulation on primary motor cortex and sham stimulation. Subjects are blind regarding the tDCS intervention. Sample size is 16 cases in each group with power of 80% and 95% confidence interval. In this study, individuals practice 8 blocks of serial reaction time task during 3 consecutive days. Transcranial direct current stimulation is applied during the whole course of the motor training. Stimulation is applied on mentioned areas with 1mA current, 0.16 mA/cm² current density for 20 minutes during 3 consecutive days. In sham stimulation, same current is applied only for the first 30 s and in the remained time, the current is turned off without the awareness of person. Individuals do not have any disability in the upper extremity and memory problems. Every 3 days and in each 8 blocks, reaction time and number of errors are recorded. Changes of reaction time and number of errors in the last block than first block is indicative of motor learning.

General information

Acronym

tDCS

IRCT registration information

IRCT registration number: **IRCT2016071028808N2**

Registration date: **2016-11-02, 1395/08/12**

Registration timing: **retrospective**

Last update:

Update count: **0**

Registration date

2016-11-02, 1395/08/12

Registrant information

Name

Ailin Talimkhani

Name of organization / entity

Country

Iran (Islamic Republic of)

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Email address

ai.talimkhani@uswr.ac.ir

Recruitment status

Recruitment complete

Funding source

Vice chancellor for research University of Social Welfare and Rehabilitation Sciences, Investigator

Expected recruitment start date

2016-04-20, 1395/02/01

Expected recruitment end date

2016-09-20, 1395/06/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison the effect of transcranial direct current stimulation between unihemispheric concurrent dual site and primary motor cortex on motor learning in healthy individuals

Public title

The effect of transcranial direct current stimulation on motor learning

Purpose

Health service research

Inclusion/Exclusion criteria

Inclusion criteria: The healthy young participants who are 18 to 35 year old; The participants who are right handed; The participants who have no history of neurological or psychiatric diseases; The participants who have no serious memory deficits; The participants who have no skin problems on the head; The participants who have no disability in upper extremity. Exclusion criteria: Several factors that stop software; The participants who leave test for any reason; Severe fatigue.

Age

From **18 years** old to **35 years** old

Gender

Both

Phase

2

Groups that have been masked

No information

Sample size

Target sample size: **48**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Single blinded

Blinding description

Placebo

Used

Assignment

Parallel

Other design features

Method of grouping is Consecutive random assignment by block.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of University of Social Welfare and Rehabilitation Sciences

Street address

Kodakyar Avenue, Daneshjo Boulevard, Evin, Tehran

City

Tehran

Postal code

1985713834

Approval date

2015-09-21, 1394/06/30

Ethics committee reference number

IR.USWR.REC.1394.222

Health conditions studied

1

Description of health condition studied

Motor learning

ICD-10 code

Z50

ICD-10 code description

Care involving use of rehabilitation procedures

Primary outcomes

1

Description

Reaction time in each block

Timepoint

3 consecutive days

Method of measurement

In millisecond and using Superlab5 software

Secondary outcomes

1

Description

Number of errors in each block

Timepoint

3 consecutive days

Method of measurement

Based on the number and using Superlab5 software

Intervention groups

1

Description

Unihemispheric concurrent dual site transcranial direct current stimulation(tDCS UCDS) of primary motor and dorsolateral prefrontal cortices. 1 milliampere current intensity, 0.16 milliampere/ square centimeter current density, 20 minutes time of stimulation, Three consecutive days

Category

Rehabilitation

2

Description

Transcranial direct current stimulation of primary motor cortex (tDCSm1), 1 milliampere current intensity, 0.16 milliampere/square centimeter current density, 20 minutes time of stimulation, Three consecutive days.

Category

Rehabilitation

3

Description

Transcranial direct current stimulation, Sham stimulation, 1 milliampere current intensity only for the

first 30 s, Turned off current for remained 20 minutes time of stimulation, Three consecutive days.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

University of Social Welfare and Rehabilitation Sciences

Full name of responsible person

Ailin Talimkhani

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Kodakyar Avenue, Daneshjo Boulevard, Evin, Tehran

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice chancellor for research, University of Social Welfare and Rehabilitation Sciences

Full name of responsible person

Hamid Reza Khankeh

Street address

Kodakyar Avenue, Daneshjo Boulevard, Evin, Tehran

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Tehran

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Vice chancellor for research, University of Social Welfare and Rehabilitation Sciences

Proportion provided by this source

Public or private sector

empty

Domestic or foreign origin

empty

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

empty

2

Sponsor

Name of organization / entity

Investigator

Full name of responsible person

Ailin Talimkhani

Street address

Kodakyar Avenue, Daneshjo Boulevard, Evin, Tehran

City

Tehran

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Investigator

Proportion provided by this source

Public or private sector

empty

Domestic or foreign origin

empty

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

empty

Person responsible for general inquiries

Contact

Name of organization / entity

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Position

Ph.D student of physiotherapy

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
empty
Study Protocol
empty
Statistical Analysis Plan
empty
Informed Consent Form
empty
Clinical Study Report
empty
Analytic Code
empty
Data Dictionary
empty