

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

The effect of cerebellum transcranial direct current stimulation on implicit motor learning in healthy older adults

Protocol summary

Summary

The purpose of the present study was to investigate the efficiency of trans-cranial direct current stimulation (TDCS) application over the cerebellum region on implicit motor learning in healthy older adults. This study has clinical trial design. Participants will be randomly allocated in to two groups included; Group I who received 20 minutes TDCS over the cerebellum region and Group II who served as placebo group (mounted TDCS electrodes over the cerebellum region without any TDCS currents for 2 minutes). The healthy older participants with 60-80 years with right dominant hand will be included. Participants who have history of neurological diseases or musculoskeletal disorders, severe perceptual and memorial problems, brain diseases, visual and auditory problems, upper extremity pathology and range of motion limitation will be excluded. All participants will be asked to perform a serial reaction time task (SRTT) during TDSC treatment. The SRTT will be repeated for 35 minutes and then two days after applying TDCS. Decreasing reaction time of the SRTT in the first session will be considered as the online learning and in the second and third sessions as the offline learning. Accordingly, the obtained data will be analyzed.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2015112321294N2**
Registration date: **2016-03-07, 1394/12/17**
Registration timing: **registered_while_recruiting**

Last update:

Update count: **0**

Registration date

2016-03-07, 1394/12/17

Registrant information

Name

Fatemeh Ehsani

Name of organization / entity

Semnan University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Vice chancellor for research, Semnan University of Medical Sciences, Semnan, Iran.

Expected recruitment start date

2016-02-29, 1394/12/10

Expected recruitment end date

2016-06-30, 1395/04/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of cerebellum transcranial direct current stimulation on implicit motor learning in healthy older adults

Public title

The effect of cerebellum transcranial direct current stimulation on implicit motor learning in healthy older adults

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: Participants who have 60-80 years old

and their right hand is dominant hand, will be concluded. Exclusion criteria: Participants had no history of neurological diseases or musculoskeletal disorders; Adults with severe perceptual and memory problems evidenced by Mini Mental Status Examination (MMSE) scores of less than 21; having neurological disease, especially Parkinson and Alzheimer's; having visual or auditory problems; having upper extremity pathology and range of motion limitations will be excluded from the study.

Age

From **60 years** old to **80 years** old

Gender

Both

Phase

2

Groups that have been masked

No information

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description**Blinding (investigator's opinion)**

Single blinded

Blinding description**Placebo**

Used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Ethics committee of Semnan University of Medical Science

Street address

5 kilometer in Damghan Road, Semnan Iran

City

Semnan

Postal code**Approval date**

2016-02-09, 1394/11/20

Ethics committee reference number

IR.SEMUMS.REC.1394.171

Health conditions studied**1****Description of health condition studied**

-

ICD-10 code

-
ICD-10 code description
-

Primary outcomes**1****Description**

Reaction time

Timepoint

Before, 35 minute and two days after intervention

Method of measurement

Color Matching Test Software

Secondary outcomes**1****Description**

Error meaning

Timepoint

Before, 35 minute and two days after intervention

Method of measurement

Color Matching Test Software

Intervention groups**1****Description**

Intervention group: Before using TDCS, the participants will be asked to do SRT task containing 2 blocks. Then, anodal and cathodal electrodes will be positioned on cerebellum and ipsi-lateral deltoid muscle, respectively. Stimulation will be used with 2 Mili Ampere intensity for 20-minute. The participants concurrently will be asked to do SRT task containing 8 blocks. The participants will be asked to repeat doing SRT task containing 2 blocks, 35 minute and two days after TDCS intervention.

Category

Other

2**Description**

Control group: Before using sham-TDCS, the participants will be asked to do SRT task containing 2 blocks. Then, anodal and cathodal electrodes will be positioned on cerebellum and ipsi-lateral deltoid muscle, respectively. Stimulation will be used with 2 Mili Ampere intensity for 2-minute. The participants concurrently will be asked to do SRT task containing 8 blocks. The participants will be asked to repeat doing SRT task containing 2 blocks, 35 minute and two days after sham-TDCS intervention.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Neuromuscular Rehabilitation Research Center

Full name of responsible person

Fatemeh Ehsani

Street address

Mashahir Square, Blvd. Ghods, Semnan

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice Chancellor for research of Semnan University of Medical Sciences

Full name of responsible person

Dr. Ali Rashidipoor

Street address

Vice Chancellor for research of Semnan University of Medical Sciences, Blvd. Basig, Semnan

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Semnan

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 of Semnan University of Medical Sciences

Proportion provided by this source

100

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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Full name of responsible person

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Position

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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