

Clinical Trial Protocol

Iranian Registry of Clinical Trials

17 Sep 2026

Effect of transcranial Direct Current stimulation on improvement of inhibitory control in attention deficit and hyperactivity disorder

Protocol summary

Summary

The purpose of this study is to improve the inhibitory control functions through transcranial Direct Current Stimulation (tDCS) in adolescents with ADHD symptoms. In this study, 20 high school students will be selected from screening of 250 students using the Wender Utah Rating Scale and Conner's Adult ADHD Rating Scale. That is intended to measure ADHD in childhood and adulthood. The SCL-25 (Symptoms Checklist) questionnaire will be at work to measure general psychological health of the participants. All the subjects will be tested during the application of Stroop and Go/no-Go tasks used to measure inhibitory control using 1.5 mA of tDCS for 15 minutes on the left DLPFC (Dorsolateral Prefrontal Cortex). Left dorsolateral prefrontal cortex (F4) is selected as a cortical target and right orbitofrontal is selected as a reference. In this study we will use three stimulation conditions; (i) actual anodal current tDCS will be applied on the left DLPFC (F3) according to the 10-20 EEG electrode systems and the cathode electrode will be placed on the right side of the forehead above the eyebrow (Fp1). (ii) Actual cathodal current tDCS will be placed on the right side of the forehead above the eyebrow (Fp1) according to the 10-20 EEG electrode systems, and cathode electrode will be applied on the left DLPFC. (iii) The sham condition serves as a method of control that is performed and consisted of a 15 s ramp up and then 15 s down with the electrodes remaining on the head for the entire duration of the tasks. All participants will be subjected to the three tDCS conditions. Therefore, the polarity of tDCS is randomized and counterbalanced across participants, and the washout period is 72 h between each of the three sessions.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2014062318192N1**

Registration date: **2014-07-22, 1393/04/31**

Registration timing: **registered_while_recruiting**

Last update:

Update count: **0**

Registration date

2014-07-22, 1393/04/31

Registrant information

Name

Zahra Soltaninejad

Name of organization / entity

Shahid Beheshti University

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Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Shahid Beheshti University

Expected recruitment start date

2014-06-22, 1393/04/01

Expected recruitment end date

2014-09-23, 1393/07/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of transcranial Direct Current stimulation on improvement of inhibitory control in attention deficit and hyperactivity disorder

Public title

Effect of transcranial Direct Current stimulation on inhibitory control

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: existence of ADHD symptoms diagnosed through Conner's Adult ADHD Rating Scale and Wender Utah Rating; existence of general psychological health via SCL-25; being right-handed; aged between 15 and 18. Exclusion criteria: Present or past history of neurological or psychiatric disorders; head injury or loss of consciousness; subject is unable of tolerating the tDCS stimulation.

Age

From **78 years** old to **75 years** old

Gender

Male

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **20**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

Placebo

Used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Shahid Beheshti University

Street address

Daneshjoo Blv, Shahid Shahriari Sq, Yemen Ave, Chamran Highway.

City

Tehran

Postal code

1983963113

Approval date

2013-01-28, 1391/11/09

Ethics committee reference number

760/827/3

Health conditions studied

1

Description of health condition studied

attention Deficit and Hyperactivity Symptoms

ICD-10 code

F90.0

ICD-10 code description

Disturbance of activity and attention

Primary outcomes

1

Description

inhibitory control

Timepoint

Coincided with the intervention

Method of measurement

Computer tasks for assessing inhibitory control: Go/no Go and Stroop

Secondary outcomes

1

Description

tDCS side effects: headache, vertigo, tingling, itching

Timepoint

Immediately after real stimulation and Sham

Method of measurement

tDCS side effects questionnaire

Intervention groups

1

Description

Left anodal stimulation: In this intervention anode will be placed on the left DLPFC that enhance the cortical activities and cathode will be placed on the right orbitofrontal.

Category

Treatment - Other

2

Description

Left cathodal stimulation: In this intervention cathode will be placed on the left DLPFC that enhance the cortical activities and anode will be placed on the right orbitofrontal.

Category

Treatment - Other

3

Description

Sham stimulation: in this situation electrodes will be placed on the participant's head for 15 minutes without any stimulation. This session will be considered as a method of control.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Seyedoshohada Highschool

Full name of responsible person

Mr. Mohammadreza Baghkhani

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56th Alley, Sarbaz St.

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Kerman

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice-presidency of Psychology faculty of Shahid Beheshti University

Full name of responsible person

Dr. Mohammad Ghahramani

Street address

Daneshjoo Blvd., Shahid Shahriari Sq., Yemen St, Chamran Highway.

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

Vice-presidency of Psychology faculty of Shahid Beheshti University

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

Shahid Beheshti University

Full name of responsible person

Zahra Soltaninejad

Position

Master of Science student

Other areas of specialty/work

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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