Clinical Trial Protocol
Iranian Registry of Clinical Trials

28 Jun 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

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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/د

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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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.
City
Teharn
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

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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