Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

The effect of a selected physical fitness with and without transcranial direct current stimulation (tDCS) on reaction time and shooting performance in officer students

Protocol summary

Study aim

With the aim of comparing the effect of a period of selected physical training exercises with and without transcranial direct electrical stimulation of the brain (tDCS) on reaction time and shooting performance in officer students.

Design

36 students are randomly divided into 3 groups of physical fitness without tDCS, physical fitness with tDCS and placebo group. Sampling is done randomly. The total sample size will be 36 people. The clinical trial will have a control group with parallel groups.

Settings and conduct

The research will be done in Afsari University. The number of stimulation and training sessions will be 10 sessions in total.

Participants/Inclusion and exclusion criteria

Among the criteria for entering the research, students were familiar with shooting techniques, no smoking, no history of cardiovascular disease, blood, liver, respiratory diseases, and no use of energizing supplements and androgenic drugs. The criterion for not entering the study was that the subject was not able to perform the physical fitness test or perform other psychological exercises at the same time as the psychological interventions of the current study.

Intervention groups

36 students are randomly divided into 3 groups of physical fitness without tDCS, physical fitness with tDCS and placebo group. The physical fitness group without tDCS does physical fitness exercises in 10 sessions and each session lasts 60 minutes. In the physical fitness group with tDCS, participants will receive and perform 10 sessions of tDCS along with physical fitness exercises. The placebo group will also receive 10 sessions of sham tDCS stimulation.

Main outcome variables

Reaction time, shooting accuracy

General information

Reason for update

Acronym

tDCS

IRCT registration information

IRCT registration number: **IRCT20240213060991N1**
Registration date: **2024-04-12, 1403/01/24**
Registration timing: **retrospective**

Last update: **2024-04-12, 1403/01/24**
Update count: **0**

Registration date

2024-04-12, 1403/01/24

Registrant information

Name

Mehdi Rahimzadeh

Name of organization / entity

The University of Tehran

Country

Iran (Islamic Republic of)

Phone

+98 21 8835 1730

Email address

m.rahimzadeh93@ut.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2024-02-18, 1402/11/29

Expected recruitment end date

2024-03-19, 1402/12/29

Actual recruitment start date

empty

Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The effect of a selected physical fitness with and without transcranial direct current stimulation (tDCS) on reaction time and shooting performance in officer students

Public title
Effect of brain electrical stimulation on shooting performance
Purpose
Education/Guidance
Inclusion/Exclusion criteria
Inclusion criteria:
Third and fourth year students (familiar with shooting techniques) No smoking No history of cardiovascular disease, blood, liver, or respiratory diseases Not using energizing supplements and androgenic drugs
Exclusion criteria:
Unwillingness to participate in research Has a history of illness Age above 24 years
Age
From **20 years** old to **24 years** old
Gender
Male

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **36**
Randomization (investigator's opinion)
Randomized
Randomization description
In this study, the purposeful sampling method is used. The random number table method will be used to assign people to two experimental and control groups. In this method, a list of people (third and fourth year entering the university) who want to be selected as a sample is prepared. Determining a random list To perform a simple random sampling, the Random Number Generator tool in Google is used. The randomization unit is also individual. The control/experimental group ratio will be 1:1.
Blinding (investigator's opinion)
Not 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 Sport Sciences Research Institute
Street address
No. 3, 5th Alley, Miremad Street, Motahhari Street, Tehran, Iran
City
Tehran
Province
Tehran
Postal code
1587958711
Approval date
2024-01-19, 1402/10/29
Ethics committee reference number
IR.SSRC.REC.1402.292

Health conditions studied

1

Description of health condition studied
A specific disease is not investigated in this study
ICD-10 code
ICD-10 code description

Primary outcomes

1

Description
Simple and selective reaction time based on time measurement in milliseconds
Timepoint
The measurement at the beginning of the study will be the pre-test value and 30 days after the start of the study will be the post-test value.
Method of measurement
The way to measure the variable of simple and selective reaction time will be the Deary-Liewald test, which is in milliseconds.

2

Description
Shooting performance variable based on the score received on the shooting score
Timepoint
The measurement at the beginning of the study will be the pre-test value and 30 days after the start of the study will be the post-test value.
Method of measurement
The shooting performance will be measured according to the accuracy of the shooting and the score obtained from the shooting on the recorder.

Secondary outcomes

empty

Intervention groups

1

Description
The first intervention group: physical fitness exercises without transcranial direct electrical stimulation of the brain (tDCS)
Category
Behavior

2

Description
The second intervention group: physical fitness exercises with transcranial direct electrical stimulation of the brain (tDCS)
Category
Behavior

3

Description
Control group: sham tDCS stimulation in the form of placebo or sham group
Category
Placebo

Recruitment centers

1

Recruitment center
Name of recruitment center
(دانشگاه افسری امام علی (ع
Full name of responsible person
مهدی رحیم زاده
Street address
Tehran Province, Tehran, District 11, Imam Khomeini Street, not reaching Hor Square, Imam Ali University
City
Tehran
Province
Tehran
Postal code
1317893471
Phone
+98 21 6695 5041
Email
m.rahimzadeh93@ut.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Shahid Satari
Full name of responsible person
Mohammad Esmaeili
Street address
Tehran Province, Tehran, 45 meters of Zarand, Ghazal Kho, Tafaresh West
City
Tehran
Province
Tehran
Postal code
1411718545
Phone
+98 21 6403 2060
Email
s_esmaeili20@yahoo.com
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
The University of Shahid Satari
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
The University of Shahid Satari
Full name of responsible person
Mehdi Rahimzadeh
Position
elite soldier
Latest degree
Ph.D.
Other areas of specialty/work
Psychology
Street address
Shahid Satari University of Aeronautical Sciences and Technology, at the end of Shamshiri Street, South Mehrabad, Tehran
City
Tehran
Province
Tehran
Postal code
1384663113
Phone
+98 21 6403 2052
Email
m.rahimzadeh93@ut.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity
The University of Tehran
Full name of responsible person
Mehdi Rahimzadeh
Position
elite soldier
Latest degree
Ph.D.
Other areas of specialty/work
Psychology
Street address
Tehran - Northern Kargar St. - above Jalal Al Ahmad Intersection - between 15th and 16th Streets - in front of Tehran University Koye
City
Tehran
Province
Tehran
Postal code
1439813117
Phone
0098 21 883517300
Email
m.rahimzadeh93@ut.ac.ir

Person responsible for updating data

Contact
Name of organization / entity
The University of Tehran
Full name of responsible person
Mehdi Rahimzadeh
Position
PhD in Sports Psychology
Latest degree
Ph.D.
Other areas of specialty/work
Psychology
Street address
Faculty of Physical Education and Sport Sciences, between 15th and 16th St., North Kargar st.,Tehran, Islamic Republic
City
Tehran
Province
Tehran
Postal code
1439813117
Phone
+98 21 8835 1730
Fax
Email
m.rahimzadeh93@ut.ac.ir

Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available
Justification/reason for indecision/not sharing IPD
The data is related to a group of military soldiers of the army and according to the security protocols, it is not possible to publish them
Study Protocol
Yes - There is 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
Yes - There is a plan to make this available
Clinical Study Report
Yes - There is a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
Not applicable
Title and more details about the data/document
The study protocol, the clinical study report and the informed consent form will be available to the public in the form of an article published in the journal after the completion of the research.
When the data will become available and for how long
The time to access the documents of this study will be immediately after publication in a valid scientific journal.
To whom data/document is available
The final report of the study and its results will be published in a publication that can be used by both academics and people working in military environments.
Under which criteria data/document could be used
The documents and results obtained from the study will be accessible to the public and experts, but the data of individuals that are not directly reported in the article will not be accessible due to the security of the research participants.
From where data/document is obtainable
It will be available through the website of the journal in which the study is published as a research paper, and also by sending an email to the authors of the study.
What processes are involved for a request to access data/document
One of these processes is visiting the website of the journal where the study is published Also, another process is to send the request for the content needed by the audience to the email of the research authors.
Comments