

Clinical Trial Protocol

Iranian Registry of Clinical Trials

20 Jul 2026

Investigation of Nine-session trans-cranial Direct Current Stimulus on Sport Performance and Balance in Professional Taekwondo Athletes

Protocol summary

Study aim

Investigating the effect of transcranial direct current stimulation on the performance and balance of taekwondo athletes in the context of up dollyo chagi and dwit chagi movements.

Design

A double-blind randomized controlled clinical trial on Taekwondo athletes in Tehran

Settings and conduct

The place of the tests is the Motion Analysis Laboratory of the Medical Sciences Faculty of Tarbiat Modares University. Participants and data analyzers are blinded.

Participants/Inclusion and exclusion criteria

1. Age between 18 and 30 years 2. Body mass index between 20 and 25 kg/m² 3. Professional sports experience with Taekwondo black belt for more than one year 4. Not having a history of neurosurgery 5. Not having a wound in the head and skull 6. Not having a heart condition, using a pacemaker or a battery inside the heart 7. Not having a history of epilepsy 8. Not having a metal object implanted around the skull

Intervention groups

1. Volunteers in the intervention group will receive 20 minutes of transcranial direct current stimulation with a current of 2 mA per session. In this stimulation, the anode (according to the 10-20 System of Electrode Placement in EEG devices) will be placed on C3 and C4 and the cathode will be placed on the supraorbital process. The position of volunteers will be sitting, and the time of stimulation is scheduled one to two hours before the regular exercises of the athletes and three times a week. 2. Volunteers of the control group (sham) in each session will receive unreal (only by connecting the electrodes to the places mentioned above) with the device turned off for 20 minutes without knowing about the other group and the main intervention.

Main outcome variables

Kinematics of the attacker's foot during the execution of two taekwondo techniques Time of shuttle running and

figure of eight hop tests

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20230129057266N1**

Registration date: **2023-03-11, 1401/12/20**

Registration timing: **prospective**

Last update: **2023-03-11, 1401/12/20**

Update count: **0**

Registration date

2023-03-11, 1401/12/20

Registrant information

Name

Mohammed Najafi-Ashtiani

Name of organization / entity

Tarbiat Modares University

Country

Iran (Islamic Republic of)

Phone

+98 21 8288 5054

Email address

mnashtiani@modares.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-05-05, 1402/02/15

Expected recruitment end date

2023-11-06, 1402/08/15

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Investigation of Nine-session trans-cranial Direct Current Stimulus on Sport Performance and Balance in Professional Taekwondo Athletes

Public title

Cranial Electrical Stimulation in Sports

Purpose

Supportive

Inclusion/Exclusion criteria**Inclusion criteria:**

BMI between 20 and 25 kg/m² history of being more than one-year professional Taekwondo athlete

Exclusion criteria:

neurological or brain surgery head or skull wound heart disorder, using pacemaker or heart battery history of epilepsy having metal implant near the skull

Age

From **18 years** old to **30 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Data analyster

Sample size

Target sample size: **24**

Randomization (investigator's opinion)

Randomized

Randomization description

Concealment of randomized assignment to the intervention and control groups is done using non-transparent sealed envelopes, each of the random sequences created is recorded on a card and the cards are placed in the envelopes in order. At the time of starting the registration of the participants, according to the order of entry, they will pick one of the envelopes.

Blinding (investigator's opinion)

Double blinded

Blinding description

When entering the study, participants will receive a sealed envelope, the contents of which they will not know before and after randomization. Participants do not know whether the tDCS device is on or off. The device light is on even with no current connection to the head. Furthermore, the data analysis will be performed using a computer which is blind to the groups.

Placebo

Used

Assignment

Parallel

Other design features**Secondary Ids**

empty

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

Tarbiat Modares University Ethics Committee

Street address

Jalal AleAhmad, Nasr Bridge

City

Tehran

Province

Tehran

Postal code

14115-111

Approval date

2022-12-24, 1401/10/03

Ethics committee reference number

IR.MODARES.REC.1401.208

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

Taekwondo professional athletes

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

Acceleration of the Athlete's leg

Timepoint

before and after 9 sessions of intervention (tDCS)

Method of measurement

Attachment of accelerometer on leg

2**Description**

time of shuttle run test

Timepoint

before and after 9 sessions of intervention (tDCS)

Method of measurement

Chronometer

3**Description**

time of figure of eight hopping

Timepoint

before and after 9 sessions of intervention (tDCS)

Method of measurement

Chronometer

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Volunteers will receive tDCS with a current of 2 mA for 20 minutes in each session. In this stimulation, the anode (according to the global standard of 10-20 indicators of EEG devices) will be placed on C3 and C4 and the cathode on the supraorbital process. The position of the volunteers will be sitting, and the stimulus time is scheduled one to two hours before the usual exercises of the athletes and three times a week. Segal Steam device will be used to apply tDCS.

Category

Other

2

Description

Control group: Volunteers will appear in each session in a placebo or sham condition (only by connecting the electrodes to the places mentioned in the intervention group) with the device turned off for 20 minutes without knowing about the other group.

Category

Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Tarbiat Modares University

Full name of responsible person

Mohammed N. Ashtiani

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Tarbiat Modares University

Full name of responsible person

Amir Abdollahzadeh

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zadeh@modares.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Tarbiat Modares University

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

Tarbiat Modares University

Full name of responsible person

Mohammed Najafi-Ashtiani

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Medical Engineering

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Person responsible for scientific inquiries

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is 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

Yes - There is a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

All processed and analyzed data will be released. These data include the questionnaire scores and linear and nonlinear outcomes of the stability, before and after the interventions.

When the data will become available and for how long

from 6 months after the official publication of results

To whom data/document is available

All academic and clinical researchers

Under which criteria data/document could be used

Only for use in neuro-musculoskeletal simulations and sport performance improvements

From where data/document is obtainable

By contacting the corresponding author of the published papers by email, phone or postal address

What processes are involved for a request to access data/document

Process: 1. Determining the data of interest by the applicant 2. contacting the corresponding author to submit the queries by the applicant 3. Reviewing the queries by the research team 4. Responding to the queries till 10 working days by the research team

Comments

Person responsible for updating data

Contact

Name of organization / entity

Tarbiat Modares University

Full name of responsible person

Mohammed Najafi-Ashtiani

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Latest degree

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Other areas of specialty/work

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