Clinical Trial Protocol
Iranian Registry of Clinical Trials

18 Sep 2026

The role of the premotor cortex and cerebellum in physiological and performance parameters of gymnastic athletes: A randomized, sham control study

Protocol summary

Study aim
The role of the premotor and cerebellar in physiological and performance of gymnasts athletic
Design
Randomised, superiority, parallel group trial with ،Triple blinded outcome assessment with 17 sample
Settings and conduct
This study will be performed with a cross-sectional design and Triple blind (researchers and participants and data evaluator) at the Sports Physiology Laboratory of Mohaghegh Ardabili University.
Participants/Inclusion and exclusion criteria
gymnasts / Inclusion criteria: Being in the age range of 18 to 25 years, 10 years of experience in gymnastics, No cardiovascular disease, No injuries/ Exclusion criteria: Being a smoker, Have a competitive race schedule in the next few months, Having a travel plan to other provinces during the measurement period
Intervention groups
Real stimulation of the cerebellum areas of the brain
Real stimulation of the motor areas of the brain
Main outcome variables
Frequency recorded in a muscle electromyography device with Using a muscle electromyography device, Measuring the performance of gymnasts athletes using tests of Broad Jump, Straddle lift to handstand, Double Legs circle, Back Hang Scale, Dips on Parallel Bars, Active Shoulder Felexibility and Sit and Reach tests

General information

Reason for update
Acronym
tDCS
IRCT registration information
IRCT registration number: **IRCT20180724040579N2**
Registration date: **2021-03-16, 1399/12/26**
Registration timing: **prospective**

Last update: **2021-03-16, 1399/12/26**
Update count: **0**
Registration date
2021-03-16, 1399/12/26

Registrant information
Name
Asgar Iranpour
Name of organization / entity
University of Mohaghegh Ardebili
Country
Iran (Islamic Republic of)
Phone
+98 45 3371 7240
Email address
iranpoursport@yahoo.com

Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2021-03-25, 1400/01/05
Expected recruitment end date
2021-04-19, 1400/01/30
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
The role of the premotor cortex and cerebellum in physiological and performance parameters of gymnastic athletes: A randomized, sham control study

Public title

The role of the premotor cortex and cerebellum in physiological and performance parameters of gymnastic athletes

Purpose

Diagnostic

Inclusion/Exclusion criteria

Inclusion criteria:

Being in the age range of 18 to 25 years 10 years of experience in gymnastics No cardiovascular disease No injuries

Exclusion criteria:

Being a smoker Have a competitive schedule in the next few months Having a travel plan to other provinces during the measurement period

Age

From **18 years** old to **25 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Participant
- Investigator
- Outcome assessor

Sample size

Target sample size: **17**

More than 1 sample in each individual

Number of samples in each individual: **3**

Each participant will participate in three modes of sham electrical stimulation, cerebellar electrical stimulation and pre-motor electrical stimulation at one-week intervals in the form of intra-subject comparisons.

Randomization (investigator's opinion)

Randomized

Randomization description

In order to randomize, simple randomization method with random number Table method was used . This table contains a bunch of numbers that are randomly drawn in the form of a table without a specific pattern and order. The numbers directions(Left, right, up, down) were first determined by the researcher to read the numbers and then the numbers were considered for different research groups. In the next step, the researcher randomly placed on one of the numbers and moved in the preset direction and recorded the numbers for that direction in the target group.

Blinding (investigator's opinion)

Double blinded

Blinding description

In order to eliminate the bias caused by the knowledge of the subject and the evaluator, the results of the muscle electromyography device and the research result of the study on the effect of electrical stimulation of the pre-motor areas and the cerebellum are performed in Double blind. Considering that the recorded frequencies of the muscle electromyography device are interpreted after the measurement and it is not possible to observe the variable during the test, the subject and the evaluator are not aware of the effect of the interfering factor on the muscle electromyography. Normally, Subject only performs his muscle contraction according to the plan and the information is stored in his body by installing the device, and it is in the analysis stage that the researcher himself will have access to the recorded information.

Placebo

Used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Ardabil University of Medical Sciences

Street address

North Side of Ardabil University of Medical Sciences Administrative Complex, Daneshgah Square, Daneshgah St, Ardabil Town

City

Ardabil

Province

Ardabil

Postal code

۵۶۱۸۹-۸۵۹۹۱

Approval date

2021-03-08, 1399/12/18

Ethics committee reference number

IR.ARUMS.REC.1399.623

Health conditions studied

1

Description of health condition studied

nervous system

ICD-10 code

G90.8

ICD-10 code description

Other disorders of autonomic nervous system

Primary outcomes

1

Description

Frequency recorded in a muscle electromyography device

Timepoint

During stimulate the cerebellum and move forward

Method of measurement

Using a muscle electromyography device

2

Description
Measuring the performance of gymnasts
Timepoint
After electrical stimulation of cerebellar and pre-motor areas
Method of measurement
Measuring the performance of gymnasts athletes using tests of Broad Jump, Straddle lift to handstand, Double Legs circle, Back Hang Scale, Dips on Parallel Bars, Active Shoulder Felexibility and Sit and Reach tests

Secondary outcomes

empty

Intervention groups

1

Description
Control group: Sham stimulation of the cerebellum and motor areas of the brain. In Sham stimulation of the premotor and cerebellum, there will be anodic stimulation in the left and right prefrontal cortex and left and right cerebellar cortex and cathodic stimulation in FP1 and FP2. For electrical stimulation, pads with dimensions of 5 × 7 will be used. Also, the stimulation intensity will be set 2 mA for 20 minutes, But it will turn off automatically after 10 seconds.
Category
Placebo

2

Description
Intervention group: Real stimulation of the cerebellum areas of the brain.In real cerebellar stimulation, the anodic stimulation in the cortical region is left and right cerebellum and the cathodic stimulation will be in FP1 and FP2. For electrical stimulation, pads with dimensions of 5 × 7 will be used. Also, the stimulation intensity will be 2 mA for 20 minutes.
Category
Diagnosis

3

Description
Intervention group: Real stimulation of the pre motor areas of the brain. In real stimulation of the pre motor areas , anodic stimulation will be located in the left and right pre motor cortex and cathodic stimulation will be located in FP1 and FP2. For electrical stimulation, pads with dimensions of 5 × 7 will be used. Also, the stimulation intensity will be 2 mA for 20 minutes.
Category
Diagnosis

Recruitment centers

1

Recruitment center
Name of recruitment center
The University of Mohaghegh Ardabili
Full name of responsible person
Sajjad Anoushiravani
Street address
University Street, The University of Mohaghegh Ardabili, Ardabil
City
Ardabil
Province
Ardabil
Postal code
5619911367
Phone
+98 45 3351 3920
Email
s.anoushirvani@uma.ac.ir
Web page address
https://uma.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
The University of Mohaghegh Ardabili
Full name of responsible person
Yousef Abbaspour Gilandeh
Street address
University Street, The University of Mohaghegh Ardabili, Ardabil
City
Ardabil
Province
Ardabil
Postal code
5619911367
Phone
+98 45 3150 5319
Email
u_abbaspour@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 Mohaghegh Ardabili
Proportion provided by this source
50
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

2

Sponsor

Name of organization / entity
Ardabil General Directorate of Sports and Youth

Full name of responsible person
Reza Bakhshi

Street address
Ardabil General Directorate of Sports and Youth - Sports Blvd- Ardabil

City
Ardabil

Province
Ardabil

Postal code
5613663691

Phone
+98 45 3323 4038

Email
ardebil@msy.gov.ir

Web page address
http://ardebil.msy.gov.ir

Grant name

Grant code / Reference number

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

Title of funding source
Ardabil General Directorate of Sports and Youth

Proportion provided by this source
50

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
Other

Person responsible for general inquiries

Contact

Name of organization / entity
The University of Mohaghegh Ardabili

Full name of responsible person
Sajjad Anoshirvani

Position
Assistant Professor

Latest degree
Ph.D.

Other areas of specialty/work
Physiology

Street address
University Street, The University of Mohaghegh Ardabili, Ardabil

City
Ardabil

Province
Ardabil

Postal code
5619911367

Phone
+98 45 3351 3920

Email
s.anoushirvani@uma.ac.ir

Web page address
https://uma.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity
The University of Mohaghegh Ardabili

Full name of responsible person
Sajjad Anoshirvani

Position
Assistant Professor

Latest degree
Ph.D.

Other areas of specialty/work
Physiology

Street address
University Street, The University of Mohaghegh Ardabili, Ardabil

City
Ardabil

Province
Ardabil

Postal code
5619911367

Phone
+98 45 3351 3920

Email
s.anoushirvani@uma.ac.ir

Web page address
https://uma.ac.ir

Person responsible for updating data

Contact

Name of organization / entity
The University of Mohaghegh Ardabili

Full name of responsible person
Asgar Iranpour

Position
Researcher

Latest degree
Ph.D.

Other areas of specialty/work
Physiology

Street address
University Street, The University of Mohaghegh Ardabili, Ardabil

City
Ardabil

Province
Ardabil

Postal code
5619911367

Phone
+98 45 3150 5026

Email

Iranpoursport@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be 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
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available