

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

31 Jul 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 Flexibility 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**

06189-80991

#### **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

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##### **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

**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**

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**Province**

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**Postal code**

5613663691

**Phone**

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**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

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**Web page address**

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**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

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**Email**

s.anoushirvani@uma.ac.ir

**Web page address**

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**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

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**Email**

## 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