

Clinical Trial Protocol

Iranian Registry of Clinical Trials

19 Jun 2026

Comparison of the Effectiveness of Neurofeedback and Mindfulness Training in Improving Executive Functions (Attention, Inhibition Response, Working Memory, Planning, and Cognitive Flexibility) among Athletic Students

Protocol summary

Study aim

Comparison of the Effectiveness of Neurofeedback and Mindfulness Training in Improving Executive Functions among Athletic Students

Design

In the present study, there were 20 subjects in each group where a total of 60 qualified people with the desired age range were selected and 20 participants were randomly assigned to each of the groups, including neurofeedback group, mindfulness group, and control group.

Settings and conduct

The research was conducted at the Faculty of Physical Education in Kharazmi University. Then, all participants in the experimental groups and control groups will take the pre-test and all three groups will be assessed by executive function tests. Subsequently, participants in the neurofeedback group will undergo the number of sixteen 45-minute sessions of neurofeedback training (Beta / Theta / Teta / SMR protocol) during 8 weeks; and participants in the Mindfulness Group only will receive eight 45-minute sessions of mindfulness exercises during eight weeks. However, the control group will not receive any training.

Participants/Inclusion and exclusion criteria

Inclusion criteria : Physical and Mental Health (Not Taking Psychiatric Drugs) : They should be Physical Education students at Bachelor's program (at least second-semester students and at most eighth-semester students). : Be a boy student exclusion criteria : Participants who have undergone surgery in the cranium area or have had a problem with their nervous system. (People with certain diseases in the head area)

Intervention groups

: the neurofeedback group receive neurofeedback training twice a week during 8 weeks. : the mindfulness

group receive mindfulness training once a week during 8 weeks. : The control group receives no training

Main outcome variables

Attention; response inhibition; working memory; planning; cognitive flexibility

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20171006036596N2**

Registration date: **2018-05-11, 1397/02/21**

Registration timing: **retrospective**

Last update: **2018-05-11, 1397/02/21**

Update count: **0**

Registration date

2018-05-11, 1397/02/21

Registrant information

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zahra kermani mamazandi

Name of organization / entity

university of semnan

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

STUDENT

Expected recruitment start date

2017-11-19, 1396/08/28

Expected recruitment end date

2017-12-19, 1396/09/28

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the Effectiveness of Neurofeedback and Mindfulness Training in Improving Executive Functions (Attention, Inhibition Response, Working Memory, Planning, and Cognitive Flexibility) among Athletic Students

Public title

Comparison of the Effectiveness of Neurofeedback and Mindfulness in Improving Executive Functions among Students

Purpose

Other

Inclusion/Exclusion criteria**Inclusion criteria:**

Physical and Mental Health (Not Taking Psychiatric Drugs) The age range of participants is between 18 and 25 years old They should be Physical Education students at Bachelor's program (at least second-semester students and at most eighth-semester students). None of the participants should be familiar with neurofeedback training and mindfulness training. Having at least the necessary verbal skills and willingness to attend training sessions Participants should be involved at least in one sport field No use of any psychotherapy and counseling services at the time of conducting the research or before it Be a boy student

Exclusion criteria:

Inappropriate physical status (having a medical record), taking psychiatric drugs Not being fully prepared and satisfied preparation to attend the training sessions Participants who have undergone surgery in the cranium area or have had a problem with their nervous system. (People with certain diseases in the head area)

AgeFrom **18 years** old to **25 years** old**Gender**

Male

Phase

N/A

Groups that have been masked*No information***Sample size**Target sample size: **60****Randomization (investigator's opinion)**

Randomized

Randomization description

Regarding the entry criteria, simple random method will be used for sampling. The researcher will go to physical education students, and the students will be registered. According to the entry criteria, the eligible individuals

will stay and we prepare a list of them. Then, 60 people will be selected randomly and will be assigned to three 20-member groups and, eventually, we allocate the assignments. The randomization unit is of an individual type. Using the random number table, we take out and select the numbers. Due to the limited statistical population, simple random sampling is used. The assignment of numbers to participants is possible only by the researcher, and the other individuals are not aware of these numbers.

Blinding (investigator's opinion)

Not blinded

Blinding description**Placebo**

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

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

Ethics Committee of Semnan University of Medical Sciences

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Semnan, Basij Boulevard, Central Administration of Semnan University of Medical Sciences

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Province

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Postal code

3514799442

Approval date

2017-11-17, 1396/08/26

Ethics committee reference number

IR.SEMUMS.REC.1396,115

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

Normal people

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

Planning

Timepoint

Before intervention - after intervention and one month

following the end of the last intervention sessions

Method of measurement

Tower of London software

2

Description

Attention and Response Inhibition

Timepoint

Before intervention - after intervention and one month following the end of the last intervention sessions

Method of measurement

Complex Stroop software

3

Description

Working memory

Timepoint

Before intervention - after intervention and one month following the end of the last intervention sessions

Method of measurement

N-back working memory software

4

Description

Cognitive Flexibility

Timepoint

Before intervention - after intervention and one month following the end of the last intervention sessions

Method of measurement

Wisconsin Software

Secondary outcomes

empty

Intervention groups

1

Description

Neurofeedback. Participants in the neurofeedback group will undergo sixteen 45-minute sessions of neurofeedback training (beta / theta and theta / SMR protocols) during 8 weeks. Procamp 2 neurofeedback device and BioGraph Infiniti Software will be used in this stage. This device has been made by Thought Technology Company of Canada.

Category

Rehabilitation

2

Description

Mindfulness. Participants in the Mindfulness group will receive eight 45-minute sessions of mindfulness training during eight weeks.

Category

Rehabilitation

3

Description

Control group. The control group will not receive any training.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Physical Education, Kharazmi University

Full name of responsible person

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Sponsors / Funding sources

1

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Full name of responsible person

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

The University of Semnan

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

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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