Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 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

Name
zahra kermani mamazandi

Name of organization / entity
university of semnan

Country
Iran (Islamic Republic of)

Phone
+98 23 3365 4100

Email address
z.kermani@semnan.ac.ir

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)
Age
From **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
Street address
Semnan, Basij Boulevard, Central Administration of Semnan University of Medical Sciences
City
Semnan
Province
Semnan
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

Zahra Kermani Mamazandi

Street address

kharazmi University, Hesarak, Karaj

City

Karaj

Province

Alborz

Postal code

3138744746

Phone

+98 26 3457 4724

Email

z.kermani@semnan.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Semnan

Full name of responsible person

Zahra Kermani Mamazandi

Street address

Central Organization of Semnan University, Campus 1, Across from Sokan Park, Semnan

City

Semnan

Province

Semnan

Postal code

3513119111

Phone

+98 23 3365 4100

Email

z.kermani@semnan.ac.ir

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

Person responsible for general inquiries

Contact

Name of organization / entity

The University of Semnan

Full name of responsible person

Zahra Kermani Mamazandi

Position

Phd of Student

Latest degree

Master

Other areas of specialty/work

Psychology

Street address

Faculty of Psychology, Semnan University, Mahdishahr, Semnan

City

Mahdishahr

Province

Semnan

Postal code

3564111156

Phone

+98 23 3362 3300

Fax

Email

z.kermani@semnan.ac.ir

Web page address

Person responsible for scientific inquiries

Contact

Name of organization / entity

The University of semnan

Full name of responsible person

Zahra Kermani Mamazandi

Position

Phd of Student

Latest degree

Master

Other areas of specialty/work

Psychology

Street address

Faculty of Psychology & Educational Sciences Mahdishahr , Semnan University , Darband, Mehdishahr, Semnan, Iran.

City

Mahdishahr

Province

Semnan

Postal code

3564111156

Phone

+98 23336233300

Fax

Email

z.kermani@semnan.ac.ir

Web page address

Person responsible for updating data

Contact

Name of organization / entity

The University of Semnan

Full name of responsible person

Zahra Kermani Mamazandi

Position

Phd of Student

Latest degree

Master

Other areas of specialty/work

Psychology

Street address

Faculty of Psychology, Semnan University, Mahdishahr, Semnan

City

Mahdishahr

Province

Semnan

Postal code

3564111156

Phone

+98 23 3362 3300

Fax

Email

z.kermani@semnan.ac.ir

Web page address

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