

Clinical Trial Protocol

Iranian Registry of Clinical Trials

04 Aug 2026

Evaluation of the effectiveness of binaural beat stimuli on integrated auditory-visual sustained attention performance and electroencephalographic parameters in normal individuals aged 18-40 years

Protocol summary

Study aim

Evaluation of the effectiveness of binaural beat stimuli on the integrated function of continuous auditory-visual attention and electroencephalographic components in normal individuals

Design

In this study, Integrated visual and auditory continuous function test and EEG will be used to evaluate the effect of the binaural beat stimuli on 22 normal right-handed individuals without neurological disorders.

Settings and conduct

In this study, the integrated auditory-visual sustained attention test and EEG will be performed with and without intervention in the rehabilitation faculty of the University of Medical Sciences, .

Participants/Inclusion and exclusion criteria

Normal hearing sensitivity; Right-handed; Rule out of neurological disorders; Rule out of ADHD according to DSM-V criteria (adults version)

Intervention groups

The binaural beat stimuli produced by the software will be used as the intervention. Integrated visual and auditory continuous function test and EEG will be used to evaluate the effect of the intervention.

Main outcome variables

Absolute power Relative power Functional communication

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20111113008082N4**

Registration date: **2022-02-06, 1400/11/17**

Registration timing: **registered_while_recruiting**

Last update: **2022-02-06, 1400/11/17**

Update count: **0**

Registration date

2022-02-06, 1400/11/17

Registrant information

Name

Ghassem Mohammadkhani

Name of organization / entity

Tehran university of medical sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-01-21, 1400/11/01

Expected recruitment end date

2022-07-22, 1401/04/31

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Evaluation of the effectiveness of binaural beat stimuli on integrated auditory-visual sustained attention performance and electroencephalographic parameters in normal individuals aged 18-40 years

Public title

Effect of binaural beat stimuli on integrated auditory-visual sustained attention performance and electroencephalographic parameters

Purpose

Basic science

Inclusion/Exclusion criteria

Inclusion criteria:

Normal hearing sensitivity Right-handed Rule out of neurological disorders Rule out of ADHD according to DSM-V criteria (adults version)

Exclusion criteria:

Age

From **18 years** old to **40 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **22**

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Single

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committees of Tehran University of Medical Sciences

Street address

No 226, corner of Ghods Street, Keshavarz Blvd, corner of Ghods Street, Tehran, IRAN

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Tehran

Province

Tehran

Postal code

1417653761

Approval date

2020-03-01, 1398/12/11

Ethics committee reference number

IR.TUMS.FNM.REC.1398.226

Health conditions studied

1

Description of health condition studied

Normal individuals

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Absolute power

Timepoint

With and without intervention

Method of measurement

Using EEG

2

Description

Relative power

Timepoint

With and without intervention

Method of measurement

Using MATLAB software

3

Description

Functional communication

Timepoint

With and without intervention

Method of measurement

Using LORETA software

Secondary outcomes

empty

Intervention groups

1

Description

The binaural beat stimuli as intervention will be produced using Audacity software. For this purpose we use two pure tones of 400 Hz and 416 Hz to create 16 Hz bands that are within the beta band range of the brain rhythm. Integrated auditory-visual sustained attention performance and EEG will be performed with and without the binaural beat stimuli.

Category

Behavior

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Rehabilitation, Tehran University of Medical

Sciences

Full name of responsible person

Ghassem Mohammadkhani

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Akbar Fotouhi

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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

Tehran University of Medical Sciences

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

Tehran University of Medical Sciences

Full name of responsible person

Ghassem Mohammadkhani

Position

Associate professor

Latest degree

Ph.D.

Other areas of specialty/work

Audiology

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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

Not applicable

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