

Clinical Trial Protocol

Iranian Registry of Clinical Trials

19 Jun 2026

Desensitization of motion sickness in military pilot students: clinical and fMRI outcomes

Protocol summary

Improvement in subjective sense of symptoms;
functional improvement in real flight

Study aim

Desensitization of motion sickness in military pilot students: clinical and fMRI outcomes

Design

Computerized randomized clinical trial with two parallel intervention groups (6 subjects in each group), double-blinded

Settings and conduct

Student pilots referred to Besat hospital because of motion sickness divide in two groups by computerized randomization. Group one attend at 20 sessions of coriolis stimulation on Barany chair with increasing velocity up to 120 degree per seconds in vertical axis, simultaneously with head motions in pitch and roll axes. Group two receive breathing and relaxation neurofeedback, balance exercises and consultation, additional to coriolis stimulation sessions. One week before and after rehabilitation, functional magnetic resonance imaging, videonystagmography, video head impulse test, posturography, coriolis test on Barany chair and questionnaire evaluation are performed. Both participants and assessors are blinded to the grouping.

Participants/Inclusion and exclusion criteria

Inclusion criteria: All pilot trainees with remained motion sickness symptoms (diagnosed by flight surgeon) on three consecutive flights. Exclusion criteria: Any gastrointestinal, neurological, psychiatric or psychological pathology; any contraindication for MRI, such as claustrophobia or any metal implant in body; lack of tendency for participating in study

Intervention groups

Intervention group one: merely Increasing coriolis stimulation. Intervention group two: increasing coriolis stimulation and sessions of breathing and relaxation neurofeedback, balance exercises and consultation.

Main outcome variables

Degree of activation of brain regions and their functional connectivity; Eye movement response parameters; Sensory adequacy and organization for postural control;

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190627044035N1**

Registration date: **2020-04-02, 1399/01/14**

Registration timing: **registered_while_recruiting**

Last update: **2020-04-02, 1399/01/14**

Update count: **0**

Registration date

2020-04-02, 1399/01/14

Registrant information

Name

Mehrnaz Hosseini

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 8851 6204

Email address

hosseini.meh@iums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-09-23, 1398/07/01

Expected recruitment end date

2020-05-19, 1399/02/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Desensitization of motion sickness in military pilot students: clinical and fMRI outcomes

Public title

Desensitization of motion sickness in military pilot students: clinical and fMRI outcomes

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

All pilot trainees with remained motion sickness symptoms (diagnosed by flight surgeon) on three consecutive flights

Exclusion criteria:

Existence of any pathology of gastrointestinal, neurotologic, psychiatry or psychology Possess any prohibition criteria for MRI, such as claustrophobia or any metal implant in body No willingness to participate in study

Age

From **21 years** old to **24 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Participant
- Outcome assessor

Sample size

Target sample size: **12**

Randomization (investigator's opinion)

Randomized

Randomization description

The researcher allocate one number to each subject, using a computerized randomization software. Odd number put subject in intervention group one and even number locate him in intervention group two. Both participants and assessors are blinded to this grouping.

Blinding (investigator's opinion)

Double blinded

Blinding description

The participants in each group, after being assigned, became aware of their group's intervention, so they were unaware of the other group's intervention so remained blind to type of the groups. Flight surgeon and flight teacher (final assessor of efficiency of intervention in flight field) were not aware of the groups allocation.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Iran University of Medical Sciences

Street address

Hemmat highway

City

Tehran

Province

Tehran

Postal code

۱۴۲۹۶۱۴۵۳۵

Approval date

2019-07-20, 1398/04/29

Ethics committee reference number

IR.IUMS.REC.1398.414

Health conditions studied

1

Description of health condition studied

motion sickness

ICD-10 code

T75.3

ICD-10 code description

Motion sickness

Primary outcomes

1

Description

Degree of activation of brain regions

Timepoint

one day before and after intervention period

Method of measurement

functional magnetic resonance imaging (fMRI)

Secondary outcomes

1

Description

eye movement response parameters

Timepoint

up to one week before and after intervention period

Method of measurement

videonystagmography (VNG) and video head impulse test (vHIT)

2

Description

sensory adequacy and organization for postural control

Timepoint

up to one week before and after intervention period

Method of measurement

posturography

3**Description**

Improvement in subjective sense of symptoms

Timepoint

up to one week before and after intervention period

Method of measurement

filling motion sickness assessment questionnaire (MSAQ) and misery scale (MISC) after coriolis stimulation on barany chair

4**Description**

functional improvement in real flight

Timepoint

up to two weeks after intervention

Method of measurement

report by flight surgeon

Intervention groups**1****Description**

Intervention group one: only incremental coriolis stimulation therapy (20 sessions of cross-coupled coriolis stimulation is performed as follows: the subjects sit on Barany chair while turning in two directions around vertical axis, simultaneously with head motions in up and down, and right and left directions. Time, velocity, and acceleration of rotation are gradually increased until the subjects can tolerate 20 minutes rotation with velocity of 120 degree per seconds, without nausea.

Category

Rehabilitation

2**Description**

Intervention group two: In addition to Intervention in group one, this group attend at 10 sessions of breathing and relaxation exercises using neurofeedback software, 3 to 5 sessions of consultation by aerospace-trained psychologist, and teaching of balance exercises to daily perform for two weeks.

Category

Rehabilitation

Recruitment centers**1****Recruitment center****Name of recruitment center**

Besat hospital

Full name of responsible person

Dr. Reza Eslami

Street address

Hejrat street, Takhti triode, Basij highway

City

Tehran

Province

Tehran

Postal code

1555817114

Phone

+98 21 3334 9091

Email

rezaeslami7@yahoo.com

Sponsors / Funding sources**1****Sponsor****Name of organization / entity**

Iran University of Medical Sciences

Full name of responsible person

Dr. Abdollah Moossavi

Street address

Hemmat highway

City

Tehran

Province

Tehran

Postal code

1449614535

Phone

+98 21 8662 2643

Email

admins@iums.ac.ir

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Iran 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**

Iran University of Medical Sciences

Full name of responsible person

Mehrnaz Hosseini

Position

Ph.D candidate

Latest degree

Master

Other areas of specialty/work

Audiology

Street address

No. 11, Mouzeh Alley, North Sohrevardi street,
Seyyed Khandan

City

Tehran

Province

Tehran

Postal code

1555817114

Phone

+98 21 8851 6204

Email

Mehrnaz.Hosseini@yahoo.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

Iran University of Medical Sciences

Full name of responsible person

Mehrnaz Hosseini

Position

Ph.D candidate

Latest degree

Master

Other areas of specialty/work

Audiology

Street address

No. 11, Mouzeh Alley, North Sohrevardi street,
Seyyed Khandan

City

Tehran

Province

Tehran

Postal code

1555817114

Phone

+98 21 8851 6204

Email

Mehrnaz.Hosseini@yahoo.com

Person responsible for updating data

Contact

Name of organization / entity

Iran University of Medical Sciences

Full name of responsible person

Mehrnaz Hosseini

Position

Ph.D candidate

Latest degree

Master

Other areas of specialty/work

Audiology

Street address

No. 11, Mouzeh Alley, North Sohrevardi street,
Seyyed Khandan

City

Tehran

Province

Tehran

Postal code

1555817114

Phone

+98 21 8851 6204

Email

Mehrnaz.Hosseini@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

All raw data will be shared after removing subject names, including brain images and their processed information, videonystagmography, video head impulse test, posturography, questionnaires, and coriolis test on Barany chair, and also study protocol, statistical tables and figures, and informed consent form.

When the data will become available and for how long

Available from June 2020

To whom data/document is available

All addressed and related researchers or organizations

Under which criteria data/document could be used

- Application from the referenced university, laboratory, or organization - Commitment to correctly reference this study

From where data/document is obtainable

Researcher: Mehnaz Hosseini E.mail:
mehrnaz.hosseini@yahoo.com No. 11, Mouzeh alley,
North Sohrevardi street, Seyyed khandan, Tehran, Iran.

What processes are involved for a request to access data/document

Application must send to researcher's E.mail and include formal requisition from the related organization. Then the data will be sent to the applicant After confirmation by supervisor at Iran University of Medical Sciences,

Comments