Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

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

Protocol summary

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

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)

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+98 21 8851 6204

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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 clastrophobia 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
۱۴۴۹۶۱۴۵۳۵
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
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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
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1449614535
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Email
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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
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
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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: Mehrnaz 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