Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

Comparison of the Effectiveness of Virtual Reality–Based Vestibular Rehabilitation and Conventional Vestibular Rehabilitation on thetreatment of Patients with Motion Sickness: A Randomized Controlled Clinical Trial

Protocol summary

Study aim
Comparison of the Effectiveness of Virtual Reality–Based Vestibular Rehabilitation and Conventional Vestibular Rehabilitation on thetreatment of Patients with Motion Sickness

Design
Randomized controlled trial with parallel groups, conducted on 45 patients. Randomization was performed using the Random Allocation Software.

Settings and conduct
Setting: School of Rehabilitation, Tehran University of Medical Sciences, Tehran. After baseline assessments, including the Motion Sickness Assessment Questionnaire (MSAQ), optokinetic after nystagmus (OKAN) test, Dynamic Visual Acuity (DVA) test, Subjective Visual Vertical (SVV) test, and static postural control under different sensory conditions using a force plate, each patient will be randomly allocated in blocks of three to one of the three groups: conventional vestibular rehabilitation (CR), conventional vestibular rehabilitation under VR (VR-C), and novel theory-based vestibular rehabilitation under VR (VR-N). Each group will include 15 participants (total = 45). Post-intervention, the same assessments will be repeated. The trial is not blinded.

Participants/Inclusion and exclusion criteria
Inclusion criteria: Diagnosed with motion sickness (MS) according to Barany Society criteria Age between 18 and 39 years Exclusion criteria: Previous use of VR with a head-mounted display Neurological disorders Musculoskeletal problems affecting gait

Intervention groups
1. CR group: Individualized conventional vestibular rehabilitation. 2. VR-C group: Individualized conventional vestibular rehabilitation delivered through virtual reality. 3. VR-N group: Individualized novel theory-based vestibular rehabilitation delivered through virtual reality.

Main outcome variables
Optokinetic after nystagmus (OKAN) time constant and Motion Sickness Assessment Questionnaire (MSAQ) score

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20160131026279N8**
Registration date: **2026-01-07, 1404/10/17**
Registration timing: **prospective**

Last update: **2026-01-07, 1404/10/17**
Update count: **0**

Registration date
2026-01-07, 1404/10/17

Registrant information

Name
Mansoureh Adel Ghahraman

Name of organization / entity

Country
Iran (Islamic Republic of)

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+98 21 7753 4364

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madel@tums.ac.ir

Recruitment status
recruiting

Funding source

Expected recruitment start date
2026-01-21, 1404/11/01

Expected recruitment end date
2027-12-30, 1406/10/09

Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Comparison of the Effectiveness of Virtual Reality–Based Vestibular Rehabilitation and Conventional Vestibular Rehabilitation on thetreatment of Patients with Motion Sickness: A Randomized Controlled Clinical Trial

Public title
Assessment of a virtual reality-based vestibular rehabilitation program in treating individuals with motion sickness
Purpose
Supportive
Inclusion/Exclusion criteria
Inclusion criteria:
Diagnosis of motion sickness (MS) according to Barany Society criteria Age between 18 and 39 years
Exclusion criteria:
Previous use of VR with a head-mounted display Neurological disorders Musculoskeletal problems affecting gait
Age
From **18 years** old to **39 years** old
Gender
Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **45**
Randomization (investigator's opinion)
Randomized
Randomization description
Method of randomization: block Unit of randomization: size 3, three equal groups Tools used in randomization: Random allocation software Random sequence generation: Random allocation software Allocation concealment: none Patients will be allocated to groups indicated in the sequence in order of enrollment in the study. For example, in a sequence of group 2, group 1, and group 3, the first patient will be allocated to group 2, and so on.
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
School of Nursing and Midwifery & Rehabilitation - Tehran University of Medical Sciences
Street address
Enghelab Ave.
City
Tehran
Province
Tehran
Postal code
1148956111
Approval date
2024-10-29, 1403/08/08
Ethics committee reference number
IR.TUMS.FNM.REC.1403.129

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
Motion Sickness Assessment Questionnaire (MSAQ) score
Timepoint
Before and after intervention, and one day after completion
Method of measurement
MSAQ questionnaire

2

Description
Optokinetic after nystagmus (OKAN) time constant
Timepoint
Before and after intervention, and one day after completion
Method of measurement
OKAN test

Secondary outcomes

1

Description
. Postural sway velocity (anteroposterior and mediolateral)

Timepoint
Before and after intervention, and one day after completion
Method of measurement
Static postural control in different sensory positions using a force plate

2

Description
DVA score
Timepoint
Before and after intervention, and one day after completion
Method of measurement
Dynamic Visual Acuity (DVA) test

3

Description
Subjective Visual Vertical (SVV) deviation degree
Timepoint
Before and after intervention, and one day after completion
Method of measurement
Subjective Visual Vertical (SVV) test

Intervention groups

1

Description
Intervention group I: CR group: Individualized conventional vestibular rehabilitation (including X1, X2, and optokinetic exercises), delivered for two months, three sessions per week, each session lasting 20–30 minutes
Category
Rehabilitation

2

Description
Intervention group II: VR-C group: Individualized conventional vestibular rehabilitation (X1, X2, and optokinetic exercises) delivered via virtual reality for two months, three sessions per week, each session lasting 20–30 minutes.
Category
Rehabilitation

3

Description
Intervention group III: VR-N group: Individualized novel theory-based vestibular rehabilitation delivered via virtual reality, delivered for two months, three sessions per week, each session lasting 20–30 minutes.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
Audiology clinic, School of Rehabilitation, Tehran University of Medical Sciences
Full name of responsible person
Mansoureh Adel Ghahraman
Street address
School of Rehabilitation, Pich-e-Shemiran, Enghelab Ave.
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Tehran University of Medical Sciences
Full name of responsible person
Dr. Kazem Malmir
Street address
School of Rehabilitation, Pich-e-Shemiran, Enghelab Ave.
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rehabilitation@tums.ac.ir
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
Mansoureh Adel Ghahraman
Position
Associate Professor
Latest degree
Ph.D.
Other areas of specialty/work
Audiology
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Person responsible for updating data

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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
Undecided - It is not yet known if there will be 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
Data files containing all data will be uploaded via https://zenodo.org/ after the deidentification of participants, named "Virtual reality rehabilitation in Motion Sickness"
When the data will become available and for how long
After the study ends and the paper is published for one year at least
To whom data/document is available
Public
Under which criteria data/document could be used
From where data/document is obtainable
Searching the file name or author names in https://zenodo.org/ and downloading the file.
What processes are involved for a request to access data/document
Searching the file name or author names in

https://zenodo.org/ and downloading the file.

Comments