

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 2026

Comparison of the Effectiveness of Virtual Reality-Based Vestibular Rehabilitation and Conventional Vestibular Rehabilitation on the treatment 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 the treatment 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)

Phone

+98 21 7753 4364

Email address

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 the treatment 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

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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

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School of Rehabilitation, Pich-e-Shemiran, Enghelab Ave.

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madel@tums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Dr. Kazem Malmir

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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

Mansoureh Adel Ghahraman

Position

Associate Professor

Latest degree

Ph.D.

Other areas of specialty/work

Audiology

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Person responsible for scientific inquiries

Contact

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Position

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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