

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Comparison the effect of virtual reality and conventional proprioception training in neck region on Craniocervical angle , Joint position sense error and balance in individual with forward head posture

Protocol summary

Craniocervical angle, Jointposition sense error

Study aim

Comparison the effect of virtual reality and conventional proprioception training in neck region on Craniocervical angle , Joint position sense error and balance in individual with forward head posture

Design

A randomized clinical trial Sampling allocated in 3 groups with 15 subjects, assessor blind and block randomization

Settings and conduct

45 people will be randomly assigned to conventional or virtual reality based exercises group or control group. The virtual reality group will perform the computer game. The stages of the game are designed easy to hard sequentially. Movement and position sense, gaze stability, head-eye coordination exercises will be performed by patients in conventional group. exercises performe in 10 sessions and all participant receives kendall exercise in 3sets and 12 repetitions in days between intervention sessions and mark them daily in checklist that they have.

Participants/Inclusion and exclusion criteria

Inclusion criteria: 18- 35 years old, Craniocervical angle less than 53 degree, Joint position sense error more than 4.5 degree Exclusion criteria: Pain in neck region during test or history of chronic neck pain, No neck pain in last 3 month, Dissyness, Individuals who dont be able to see a number size of 14 with calibri font on the screen with or without glass, Report of neurologic symptoms of nerve injury in upper limb like neuropathy and radiculopathy, History of fractures in neck region and upper limb and trumatic injuries, History of vestibular system injury, Positive vertebral artery test, Tumor in head and neck, Scoliosis

Intervention groups

3groups : virtual reality training, conventional proprioception training and control

Main outcome variables

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20181209041903N1**

Registration date: **2019-06-30, 1398/04/09**

Registration timing: **prospective**

Last update: **2019-06-30, 1398/04/09**

Update count: **0**

Registration date

2019-06-30, 1398/04/09

Registrant information

Name

niloofar jenabi

Name of organization / entity

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-07-23, 1398/05/01

Expected recruitment end date

2019-11-21, 1398/08/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison the effect of virtual reality and conventional proprioception training in neck region on Craniocervical angle , Joint position sense error and balance in individual with forward head posture

Public title

Comparison the effect of computer game and conventional proprioception training in neck region on head-neck angle , Joint position sense error and balance in individual with forward head posture

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

18- 35 years old Craniocervical angle less than 53 degree
Joint position sense error more than 4.5 degree

Exclusion criteria:

Pain in neck region during test or history of chronic neck pain
No neck pain in last 3 month
Dyssyness Individuals who dont be able to see a number size of 14 with calibri font on the screen with or without glass.
Report of neurologic symptoms of nerve injury in upper limb like neuropathy and radiculopathy
History of fractures in neck region and upper limb and trumatic injuries
History of vestibular system injury
Positive vertebral artery test
Tumor in head and neck
Scoliosis
History of cancer and chemotherapy or radiotherapy
History of diabets
Uremia and kidney failure
Uncontrolled thyroid disorders
Collagen vascular disorders
Taking neuropathic medications
Deformities and shortness of upper and lower limbs
Canal stenosis in neck , lumbar and sacral region
Central and prepheral nourologic sestem disorders like CVA, TBI or history of prepheral nouroopathy

Age

From **18 years** old to **35 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Outcome assessor
- Data analyser

Sample size

Target sample size: **45**

Randomization (investigator's opinion)

Randomized

Randomization description

Individuals with block randomization and sealed opaque envelopes concealment take place in three groups

Blinding (investigator's opinion)

Double blinded

Blinding description

In this study participants will be unaware of group assignment. Furthermore, evaluations and interventions are performed by two different physiotherapists who are unaware of each other's information and assessor is

unaware to intervention.

Placebo

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Research Ethics Committee of Shiraz School of Rehabilitation Sciences

Street address

School of Rehabilitation Sciences, Abiverdi 1 St., Chamran Blvd., Shiraz, Iran

City

shiraz

Province

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Postal code

71345-1978

Approval date

2018-12-08, 1397/09/17

Ethics committee reference number

IR.SUMS.REHAB.REC.1397.003

Health conditions studied**1****Description of health condition studied**

Forward head posture

ICD-10 code**ICD-10 code description****Primary outcomes****1****Description**

Craniocervical angle

Timepoint

Before intervention, immediately after 10th session and one month after last session

Method of measurement

With photography of lateral view of neck and estimate craniocervical angle

2**Description**

Head repositioning error

Timepoint

Before intervention, immediately after 10th session and one month after last session

Method of measurement

With laser pointer and graded page

Secondary outcomes

1

Description

Dynamic balance

Timepoint

Before intervention, immediately after 10th session and one month after last session

Method of measurement

With modified star excursion balance test

2

Description

Static balance

Timepoint

Before intervention, immediately after 10th session and one month after last session

Method of measurement

With single leg stance with open and close eye

3

Description

Fitts law

Timepoint

Before intervention, immediately after 10th session and one month after last session

Method of measurement

With particular computer software and head mouse

Intervention groups

1

Description

First Intervention group :This group do home exercises plus a computer game designed to improve cervicocephalic kinesthesia, eye-head coordination, reflexes related to head and neck, eye and vestibular system with their head and neck movements. The stages of the game are designed easy to difficult sequentially. Ten exercise sessions each lasted 20 minutes is programmed. 5 minutes warm up exercises will be performed at the beginning of each session.

Category

Rehabilitation

2

Description

Second intervention group: This group do home exercises plus conventional neck proprioceptive exercises including: The combination of joint position sense and movement sense training (by using laser beam fixed on the head), gaze stability training, eye and head coordination training will be performed in each session and they will be progressed in the next sessions.

The duration of each training session and the number of training sessions are the same as first intervention group.

Category

Rehabilitation

3

Description

Control group: individuals just do home exercise including 2 stretching and 2 strengthening exercise in 3 sets of 12 repetition

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Shiraz university of medical science

Full name of responsible person

Mohsen Razeghi

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Sponsors / Funding sources

1

Sponsor

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<http://research.sums.ac.ir/fa/contact-information/index.html>

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

Undecided - It is not yet known if there will be 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

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