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

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

Craniocervical angle, Jointposition sense error

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)

Phone

+98 21 7786 4916

Email address

jenabi_n@sums.ac.ir

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 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 History of cancer and chemotherapy or radiotherapy History of diabets Uremia and kidney failure Uncontroled thyroid disorders Colagen 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 nouropathy

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
Fars

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 computar 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 programed. 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
Street address
Zand St, Shiraz, Fars province
City
Shiraz
Province
Fars
Postal code
۱۴۳۳۶ - ۷۱۳۴۸
Phone
+98 71 3230 5410
Email
info@sums.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Shiraz University of Medical Sciences
Full name of responsible person
Dr. Ghasemi Unes
Street address
7th floor, central building of medical university, zand ST, Shiraz
City
Shiraz
Province
Fars
Postal code
71345-1978
Phone
+98 71 3235 7282
Email
vcrdep@sums.ac.ir
Web page address
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
Shiraz University of Medical Sciences
Full name of responsible person
Mohsen Razeghi
Position
Associate professor
Latest degree
Ph.D.
Other areas of specialty/work
Physiotherapy
Street address
School of Rehabilitation Sciences, Abiverdi 1 St, Chamran Blvd, Shiraz, Iran
City
Shiraz
Province
Fars
Postal code
1733-71345
Phone
+98 71 3627 1551 ext. 213
Email
RazeghM@Sums.ac.ir

Person responsible for scientific inquiries

Contact
Name of organization / entity
Shiraz University of Medical Sciences
Full name of responsible person
Mohsen Razeghi
Position
Associate professor
Latest degree
Ph.D.
Other areas of specialty/work
Physiotherapy
Street address
School of Rehabilitation Sciences, Abiverdi 1 St, Chamran Blvd, Shiraz, Iran
City
Shiraz
Province
Fars
Postal code
71947-33669
Phone
+98 71 3627 1552
Email
Razeghm@sums.ac.ir

Person responsible for updating data

Contact
Name of organization / entity
Shiraz University of Medical Sciences
Full name of responsible person
Niloofar Jenabi
Position
Master student of physical therapy
Latest degree
Bachelor
Other areas of specialty/work
Physiotherapy
Street address
School of Rehabilitation Sciences, Abiverdi 1 St, Chamran Blvd, Shiraz, Iran
City
shiraz
Province
Fars
Postal code
71947-33669
Phone
+98 71 3627 1552
Email
jenabi_n@sums.ac.ir

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