Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Investigating the added effects of subscapularis muscle dry needling to exercise therapy on pain, kinematics, and cervical position sense in individuals with forward head posture

Protocol summary

Study aim

Investigating the added effects of subscapularis muscle dry needling to exercise therapy on pain, kinematics, and cervical position sense in individuals with forward head posture

Design

Clinical trial, with a control group, double-blind, randomized, on 32 patients. A random number table is used for randomization, with 8 blocks and a block size of 4.

Settings and conduct

Two groups of subjects are selected from among those with head pronation. Subjects in one group receive exercise therapy and subjects in the other group receive dry needling of the subscapularis muscle in addition to exercise therapy. The examiner and the therapist are not the same, and thus blinding of the evaluator will be performed.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Men and women between the ages of 18 and 50, craniovertebral angle less than 50 degrees, shoulder angle less than 52. Exclusion criteria: Having central nervous system problems, musculoskeletal problems, congenital neck problems, spondylolisthesis, taking any pharmacological or non-pharmacological treatment for neck pain and postural disorders, any mental disorder such as anxiety and depression, cancer and pregnancy, conditions that dry needling cannot be used

Intervention groups

In the intervention group, participants will receive dry needling of the subscapularis muscle along with exercise therapy, and in the control group, participants will receive exercise therapy alone. Both groups will undergo 10 treatment sessions, 3 sessions per week. The exercises for both treatment groups are the same and include stretching exercises and strengthening exercises. At the end of sessions one, three, five, seven, and nine, individuals will undergo dry needling of the subscapularis muscle. To perform dry needling (5 sessions), a Huan Qiu needle, 30 mm in diameter and 50 mm high, made in China, is used.

Main outcome variables

Craniovertebral angle, shoulder angle, pain, neck range of motion, neck position sense

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20241004063260N2**
Registration date: **2025-04-02, 1404/01/13**
Registration timing: **prospective**

Last update: **2025-04-02, 1404/01/13**
Update count: **0**

Registration date

2025-04-02, 1404/01/13

Registrant information

Name

Farzaneh Yazdani

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 71 3212 2600

Email address

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2025-04-09, 1404/01/20

Expected recruitment end date

2025-10-12, 1404/07/20

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Investigating the added effects of subscapularis muscle dry needling to exercise therapy on pain, kinematics, and cervical position sense in individuals with forward head posture

Public title

The effects of adding subscapularis muscle dry needling to exercise therapy on symptoms of individuals with forward head posture

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Women and men between the ages of 18 and 50 Craniovertebral angle less than 50 degrees Shoulder angle less than 52 degrees

Exclusion criteria:

Having central nervous system problems Having musculoskeletal problems Having congenital neck problems Having spondylolisthesis Taking any pharmacological or non-pharmacological treatment for neck pain and postural disorders Having any mental disorder such as anxiety and depression Cancer Pregnancy The patient's fear of needles The patient's reluctance and negative beliefs about this method The patient's inability to obtain consent (cognitive problems and advanced age) The patient has a medical emergency or acute medical condition The patient has lymphedema in a region or an organ The patient has severe neutropenia or thrombocytopenia

Age

From **18 years** old to **50 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size

Target sample size: **32**

Randomization (investigator's opinion)

Randomized

Randomization description

The random allocation method in this study is permutation (block) randomization. Considering 8 blocks of 4 in two groups and adding individuals with an allocation ratio of 1:1 in each group, 32 patients are studied in two groups of 16. Randomization is performed using a random number table.

Blinding (investigator's opinion)

Double blinded

Blinding description

In this study, assessment and treatment are performed separately by two physiotherapists, with the assessing physiotherapist blinded to the participants' treatment. Also statistical analysis is performed by a statistician who is blinded to the participants' allocation to groups.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Research Ethics Committees of Shiraz School of Rehabilitation Sciences

Street address

Ethics Committee, Vice President for Research, School of Rehabilitation Sciences, Shahid Doran Campus, after Amir-al-momenin Burn Hospital, Sadra Town Road

City

Shiraz

Province

Fars

Postal code

7198754361

Approval date

2025-02-05, 1403/11/17

Ethics committee reference number

IR.SUMS.REHAB.REC.1403.011

Health conditions studied

1

Description of health condition studied

Forward head posture

ICD-10 code

R29.3

ICD-10 code description

Abnormal posture

Primary outcomes

1

Description

Craniovertebral angle

Timepoint

Before the start of the intervention, after the intervention and two weeks after the intervention

Method of measurement

The craniovertebral angle is the angle between two anatomical landmarks (the spinous process of the seventh cervical vertebra and the outer part of the tragus of the ear) that is examined with the Kinovea software.

Secondary outcomes

1

Description

Shoulder angle

Timepoint

Before the intervention, after the intervention, and two weeks after the intervention

Method of measurement

The shoulder angle is the angle formed by the intersection between the horizontal line passing through the acromion and the line connecting the spinous process of the seventh cervical vertebra to the acromion, and is measured with the Kinovea software.

2

Description

Pain

Timepoint

Before the intervention, after the intervention, and two weeks after the intervention

Method of measurement

Visual Analogue Scale

3

Description

Cervical positioning sense

Timepoint

Before the intervention, after the intervention, and two weeks after the intervention

Method of measurement

Joint position error test

4

Description

Cervical range of motion

Timepoint

Before the intervention, after the intervention, and two weeks after the intervention

Method of measurement

Goniometry

Intervention groups

1

Description

Intervention group: Dry needling of the subscapularis muscle combined with exercise therapy. Individuals in this group will undergo 10 sessions of treatment, 3 sessions per week. The exercises will include stretching and strengthening exercises, and at the end of sessions one, three, five, seven, and nine, individuals will undergo dry needling of the subscapularis muscle. To perform dry needling, the participant is asked to lie supine, with the shoulder in 90 degrees of abduction and 90 degrees of external rotation. The therapist uses one hand to pull the participant's shoulder further outward, palpating the outer edge of the scapula. The latissimus dorsi tendon is identified and lifted using a pincer grip to provide better access to the muscle. The needle is then inserted parallel to the chest and perpendicular to the anterior surface of the scapula. The needle entry site is cleaned with alcohol and cotton. Dry needling is performed on the muscle at three points, each point for 1 minute using a fast in-fast out method. A Chinese-made Huan Qiu needle, 30 mm in diameter and 50 mm in height, is used. Assessments will be conducted before treatment, immediately after treatment, and two weeks later.

Category

Treatment - Other

2

Description

Control group: Exercise therapy. Individuals in this group will undergo 10 sessions of therapy, 3 sessions per week. The exercises in this group are exactly the same as those in the intervention group and include stretching and strengthening exercises. Assessments will be conducted before treatment, immediately after treatment, and two weeks later.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Clinic of the Faculty of Rehabilitation Sciences, Shiraz University of Medical Sciences

Full name of responsible person

Farzaneh Yazdani

Street address

Mehr Building, Shahid Chamran Hospital, Shahid Chamran Boulevard

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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
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Full name of responsible person
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Research and Technology Vice Chancellor, 7th floor, Shiraz University of Medical Sciences Central Building, Zand Street
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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?
No
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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Full name of responsible person
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Position
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Latest degree
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Other areas of specialty/work
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Person responsible for updating data

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Other areas of specialty/work
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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
Data collection form including primary and secondary outcomes, informed consent form, and SPSS file
When the data will become available and for how long
After the publication of the study results
To whom data/document is available
Researchers working in academic and scientific institutions
Under which criteria data/document could be used
Only for recording information in scientific databases
From where data/document is obtainable
Correspondence with the project manager via email yazdani_far@sums.ac.ir
What processes are involved for a request to access data/document
Maximum one month after sending the request via email
Comments