Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of the effectiveness of adding Graston Technique versus Dry Needling to Therapeutic Exercise on Upper Trapezius Trigger Point Pain in Individuals with Upper Crossed Syndrome

Protocol summary

Study aim
Comparison of the effectiveness of adding Graston Technique versus Dry Needling to Therapeutic Exercise on Upper Trapezius Trigger Point Pain

Design
This study is a randomized, two-group, parallel clinical trial with an active comparator, blinded assessor, and two-sided superiority framework, conducted on 32 patients. Eligible participants, after enrollment, will be allocated 1:1 to one of the two treatment groups (16 patients per group).

Settings and conduct
A randomized2-group clinical trial in which participants are allocated 1:1 to two groups. Both groups receive the same corrective exercise therapy; the first group additionally receives dry needling and the second group receives Graston ;twice a week for6weeks. Study population: patients referred to the sports medicine departments of Tehran University of Medical Sciences hospitals with upper trapezius pain due to trigger points confirmed on clinical examination.

Participants/Inclusion and exclusion criteria
Upper crossed syndrome on clinical exam with painful trigger points; age18–55; baseline NPRS 3–7. Exclusion:Orthopedic disorders preventing exercise; fibromyalgia,radicular neck pain,myelopathy, or other musculoskeletal pain;migraine orCNS disorders; rheumatoid arthritis,tumor, osteoporosis; long-term steroid use;psychiatric/cognitive disorder preventing participation; contraindication to carotid massage (e.g., MI,stroke/TIA within 3 months,ventricular arrhythmia);regular exercise or pain treatment (e.g., physiotherapy) in the past 4 weeks; fracture, surgery, trauma, or whiplash in the neck/shoulder region within the past6weeks; open wound over the trapezius.

Intervention groups
One group receives exercise therapy plus dry needling, and the second group receives the same exercise program plus Graston

Main outcome variables
Numeric Pain Rating Scale;Neck Disability Index;Craniovertebral Angle;Pressure pain threshold

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20261004071287N1**
Registration date: **2026-10-19, 1405/07/27**
Registration timing: **prospective**

Last update: **2026-10-19, 1405/07/27**
Update count: **0**

Registration date
2026-10-19, 1405/07/27

Registrant information

Name
Mojdeh Yousefi

Name of organization / entity

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Iran (Islamic Republic of)

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Recruitment status
recruiting

Funding source

Expected recruitment start date
2026-11-21, 1405/08/30

Expected recruitment end date
2027-10-22, 1406/07/30

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

Scientific title
Comparison of the effectiveness of adding Graston Technique versus Dry Needling to Therapeutic Exercise on Upper Trapezius Trigger Point Pain in Individuals with Upper Crossed Syndrome

Public title
Comparing the effects of adding Graston and dry needling to exercise therapy on painful points of the upper trapezius muscle
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
Patients presenting with Upper Crossed Syndrome (UCS) on clinical postural assessment, reporting pain in the upper trapezius region, and exhibiting a trigger point in the upper trapezius muscle upon palpation using the pad of the index finger Willingness to participate in the study and provision of informed consent Age between 18 and 55 years Participants of either sex (male or female) Absence of orthopedic disorders or diseases that would prevent participation in the exercise program A baseline Numeric Rating Scale (NRS) pain score of 3–7 at the initial visit No participation in a regular exercise program and no receipt of pain-relieving treatments, such as physiotherapy, during the preceding 4 weeks No history of fractures involving the cervical or shoulder regions No history of surgery involving the cervical or shoulder regions No history of trauma to the cervical or shoulder regions and no history of whiplash injury within the preceding 6 weeks No diagnosis of fibromyalgia Absence of cervical radicular pain, cervical myelopathy, musculoskeletal pain attributable to conditions other than UpperCrossed Syndrome (UCS), or pain resulting from cervical spinal canal stenosis No history of migraine, tension-type headache, or central nervous system disorders, such as MS No diagnosis of rheumatoid arthritis, neoplastic lesions, osteoporosis, thyroid disorders, or diabetes mellitus No history of long-term corticosteroid use No open wounds in the upper trapezius region Absence of psychological or cognitive disorders that would interfere with performing the exercises or participating in the study Absence of contraindications to carotid artery massage, such as a history of myocardial infarction, stroke within the preceding three months, transient ischemic attack (TIA), or ventricular arrhythmia
Exclusion criteria:
Age
From **18 years** old to **55 years** old
Gender
Both

Phase
N/A

Groups that have been masked

- Data analyser

Sample size
Target sample size: **32**
Randomization (investigator's opinion)
Randomized
Randomization description
Eligible participants will be randomly assigned to one of two study groups using block randomization with a block size of four and an allocation ratio of 1:1. Group A will receive dry needling, while Group B will receive myofascial release using the Graston Technique Allocation will be implemented using sealed envelopes.Block randomization is a method of randomly allocating participants to study arms to maintain balance in the number of participants assigned to each group throughout the recruitment period. In this method, the allocation sequence is divided into a series of blocks,with the number of allocations to each group predetermined and equal within each block, consistent with the intended allocation ratio. However, the order of assignments within each block is determined randomly.This method is particularly useful in studies with small to moderate sample sizes or when premature termination of recruitment is possible. Compared with simple randomization, block randomization reduces numerical imbalances between study groups during recruitment and facilitates a more balanced comparison between the study arms.
Blinding (investigator's opinion)
Single blinded
Blinding description
Due to the nature of the interventions, blinding of participants and the treating therapist will not be feasible, as dry needling and the Graston Technique are distinguishable by both the participants and the therapist during treatment. However, to minimize the risk of outcome assessment bias, the outcome assessor will be blinded to group allocation. Outcome assessments will be performed at baseline and at the end of the sixth week by an assessor who will not be involved in random sequence generation, group allocation, or intervention delivery. The assessor will not be informed of the type of intervention received by each participant. Assessments will be conducted at a time and location separate from the treatment sessions. Participants will also be instructed not to disclose their assigned intervention to the outcome assessor during the assessments.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics committee of Tehran University of Medical Sciences

Street address
End of Keshavarz Boulevard, Imam Khomeini Hospital Complex, Mahdi Clinic Building, First Floor, Sports Medicine Department

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Tehran

Province
Tehran

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1419733141

Approval date
2026-08-29, 1405/06/07

Ethics committee reference number
IR.TUMS.IKHC.REC.1405.251

Health conditions studied

1

Description of health condition studied
Upper Trapezius Trigger Point Pain in Individuals with Upper Crossed Syndrome

ICD-10 code
M63

ICD-10 code description
Disorders of muscle in diseases classified elsewhere

Primary outcomes

1

Description
Numeric Pain Rating Scale

Timepoint
Before the start of the intervention and 6 weeks after the end of the intervention

Method of measurement
The patient is given a sheet on which a ruler with numbers from 0 to 10 is printed. The patient must circle the number that indicates the intensity of their pain.

2

Description
Neck Disability Index (NDI)

Timepoint
Before the start of the intervention and 6 weeks after the end of the intervention

Method of measurement
Patient-completed, condition-specific functional status questionnaire

3

Description
CranioVertebral Angle

Timepoint
Before the start of the intervention and 6 weeks after the end of the intervention

Method of measurement
Using photography from the lateral view of the patient's neck and Kinova software

4

Description
Pressure pain threshold (PPT)

Timepoint
Before the start of the intervention and 6 weeks after the end of the intervention

Method of measurement
Pressure algometers

Secondary outcomes

empty

Intervention groups

1

Description
First Intervention group: Using the Graystone tool in addition to the exercise therapy program twice a week for up to 6 weeks

Category
Treatment - Devices

2

Description
Second Intervention group: Dry needling with acupuncture needles (size 0.25 × 25 mm) applied to trigger points, in addition to the exercise program, twice a week for up to 6 weeks.

Category
Treatment - Devices

Recruitment centers

1

Recruitment center

Name of recruitment center
Sina hospital

Full name of responsible person
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Sponsors / Funding sources

1

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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
Deputy of Research and Technology, 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
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Position
Resident

Latest degree
Medical doctor

Other areas of specialty/work
Sport Medicine

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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
No - There is not 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
The present study has been registered as a proposal for a sports medicine residency thesis. The thesis resulting from this proposal, including participant data (all data), the study protocol, statistical analysis, and the study report (including all variables), will be made available to Tehran University of Medical Sciences and the Department of Sports Medicine. It should be noted that access to raw data not published in the final report or article requires contacting the responsible researcher of the study.

When the data will become available and for how long
The present study will begin on 1405/8/1 (October 23, 2026) and is projected to take one year for all stages until submission as a thesis. Access to raw data not published in the final report or article will be possible after publication of the article through contact with the responsible researcher of the study.

To whom data/document is available
The data obtained from this research will be made available to all requesting individuals, and there will be no restrictions.

Under which criteria data/document could be used
There are no restrictions on the use, publication, or processing of the data from this study, provided that the necessary coordination has been made with the responsible researcher of the study and the required permission has been issued by the responsible researcher.

From where data/document is obtainable
To access the information of this study, the applicant can contact the responsible researcher of this study via email or telephone.

What processes are involved for a request to access data/document
The permission to use the information will be issued to the applicant as soon as possible after receiving and reviewing the email or establishing telephone contact, and then the requested information will be sent to the applicant immediately via their email.

Comments