# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

11 Sep 2026

# COMPARISON OF THE EFFECTS OF MULLIGAN SUSTAINED NATURAL APOPHYSEAL GLIDES VERSUS MUSCLE ENERGY TECHNIQUE ON PAIN, DISABILITY AND FUNCTION IN PATIENTS WITH CHRONIC CERVICAL SPONDYLOSIS.

## Protocol summary


**Study aim**

The present study is aimed to compare the effects of the Mulligan technique (SNAGS) versus the muscle energy technique (MET) in chronic cervical spondylosis patients in terms of pain, range of motion, hand grip strength, craniovertebral angle, cervical proprioception, and Neck Disability Index.

**Design**

A double-blinded Randomized controlled trial with 2 groups. A total of 52 patient will be recruited from a single center. The sample size was calculated using Gpower version 3.1.9.7. Random Allocation Software Version 1.0 (as per the description of Randomization).

**Settings and conduct**

Data will be collected from Dubai Center for Physiotherapy and Medical Rehabilitation, Nasiriyah Iraq.

**Participants/Inclusion and exclusion criteria**

Inclusion criteria • Both genders. • Patients diagnosed with cervical spondylosis. • Age between 45 to 65 years. • Cervical spondylosis ≥ 6 months. • Degenerative spondylosis on X-rays. • Positive Spurling test. • Positive cervical distraction test. • Pain intensity ≥ 3 on the Numeric pain rating scale. • Patient without cervicogenic headache. • No cervical myelopathy. • No whiplash-associated disorders. • No previous cervical spine surgeries. • No cervical arterial dysfunction patients. • No deformity (e.g. Torticollis, springe's deformity, scoliosis). Exclusion criteria • Patients who are not carrying out the study for any reason. • The patient will complain of difficulty or signs and symptoms.

**Intervention groups**

Group (A), conventional physical therapy plus mulligan SNAGs. Group (B), conventional physical therapy plus Muscle Energy Technique (MET).

**Main outcome variables**

Numeric Pain Rating Scale for Pain Bubble Inclinometer for Cervical Range of Motion Digital Handheld Dynamometer for Hand Grip Strength Kinovea for Craniovertebral Angle Laser Tracker for Cervical Proprioception Neck Disability Index for Cervical Disability.


## General information

**Reason for update**

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT20090301001722N28**
Registration date: **2023-06-14, 1402/03/24**
Registration timing: **prospective**

Last update: **2023-06-14, 1402/03/24**
Update count: **0**

**Registration date**

2023-06-14, 1402/03/24

**Registrant information**


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**Name of organization / entity**

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**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**

2023-06-20, 1402/03/30

**Expected recruitment end date**
2023-09-05, 1402/06/14
**Actual recruitment start date**
empty
**Actual recruitment end date**
empty
**Trial completion date**
empty

**Scientific title**
COMPARISON OF THE EFFECTS OF MULLIGAN SUSTAINED NATURAL APOPHYSEAL GLIDES VERSUS MUSCLE ENERGY TECHNIQUE ON PAIN, DISABILITY AND FUNCTION IN PATIENTS WITH CHRONIC CERVICAL SPONDYLOSIS.

**Public title**
Comparison of Mulligan SNAGS versus Muscle Energy Techniques in Chronic Cervical Spondylosis
**Purpose**
Treatment
**Inclusion/Exclusion criteria**
**Inclusion criteria:**
Both genders. Patients diagnosed with cervical spondylosis. Age between 45 to 65 years. Cervical spondylosis ≥ 6 months. Degenerative spondylosis on X-rays. Positive Spurling test. Positive cervical distraction test. Pain intensity ≥ 3 on the Numeric pain rating scale. Patient without cervicogenic headache. No cervical myelopathy. No whiplash-associated disorders. No previous cervical spine surgeries. No cervical arterial dysfunction patients. No deformity (e.g. Torticollis, springe's deformity, scoliosis).
**Exclusion criteria:**
Patients who are not carrying out the study for any reason. The patient will complain of difficulty or signs and symptoms.
**Age**
From **45 years** old to **65 years** old
**Gender**
Both

**Phase**
N/A
**Groups that have been masked**

- Care provider
- Outcome assessor

**Sample size**
Target sample size: **52**
**Randomization (investigator's opinion)**
Randomized
**Randomization description**
Before the process of randomization, we will screen all the participants and assign them a unique number from 1 to 60. Then the process of randomization will be carried out using Random Allocation software version 1.0 (developed by the Department of Anaesthesia, Isfahan University of Medical Sciences, Isfahan, Iran). It is a randomization software for parallel group trials. It requires the total sample size and the total number of groups. We will add a total sample size of 52 participants and 2 groups into the software with only one block. The software generates an output file that can be opened with internet explorer. The output file contains a list of numbers along with assigned groups. In our case, the groups will be A and G with 26 participants in each group. Then this sequence will be used for participant allocation in the study groups.
**Blinding (investigator's opinion)**
Double blinded
**Blinding description**
The care provider will be blinded to the groups of the study which means they will not know which group is the treatment group and which group is the control group. While the outcome assessors will be blinded to the treatment protocols and study hypothesis. They will not be aware of the treatment protocols used for each group and what are the study hypothesis.
**Placebo**
Not used
**Assignment**
Parallel
**Other design features**

## Secondary Ids

empty

## Ethics committees

### 1

**Ethics committee**
**Name of ethics committee**
Faculty of Nursing and Midwifery and the Faculty of Rehabilitation - Tehran University of Medical Sc
**Street address**
School of Rehabilitation of Tehran University of Medical Sciences, Piche Shemiran, Enghelab Ave, Tehran, Iran
**City**
Tehran
**Province**
Tehran
**Postal code**
1417614411
**Approval date**
2023-06-07, 1402/03/17
**Ethics committee reference number**
IR.TUMS.FNM.REC.1402.052

## Health conditions studied

### 1

**Description of health condition studied**
CERVICAL SPONDYLOSIS
**ICD-10 code**
M47.812
**ICD-10 code description**
Spondylosis without myelopathy or radiculopathy, cervical region

## Primary outcomes

### 1

**Description**
Numeric Pain Rating Scale
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Numeric Pain Rating Scale

### 2

**Description**
Bubble Inclniometry
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Bubble Inclinometer

### 3

**Description**
Hand Grip Strength
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Digital Hand Held Dynamometer

### 4

**Description**
Craniovertebral Angle (Forward Head Posture)
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Kinovea Software

### 5

**Description**
Cervical Proprioception
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Laser Tracker

### 6

**Description**
Neck Disability
**Timepoint**
Before the first session and at the end of the last (12th) session.
**Method of measurement**
Neck Disability Index

## Secondary outcomes

empty

## Intervention groups

### 1

**Description**
Intervention group: (Group A) will receive conventional physical therapy with Mulligan Sustained Natural Apophyseal Glides. The patient will take the sitting position, this position is sustained for 8 –10 seconds, while maintaining that position as the subject inhales a breath deeply and when the subject exhaled his breath, the therapist moves to the next barrier after sustaining 8 to 10 seconds then took 2 to 3 seconds of relaxation, then repeated the same regime for 3 to7 times 3 sessions per week and single session per day for 4 weeks. Sustained natural apophyseal glides (SNAGs) were repeated 7 to 10 times in a session with a hold of 10 seconds and repeated 3 times a week for four consecutive weeks.
**Category**
Rehabilitation

### 2

**Description**
Intervention group: (Group B) will receive conventional physical therapy with Muscle Energy Techniques. For example, in C3-C4, the patient was taken in a supine position with the neck slightly flexed passively by the therapist The right middle finger will be placed over the right pillars of C3-C4 and the neck will be taken to the maximum position of side-bending rotation to the right, engaging the barrier. The left hand was placed over the patient's left parietal and temporal areas. With this hand offering counterforce, the patient will be invited to side-bend and rotated to the left, for 5 seconds. Post-isometric relaxation of these muscles following the 5-7-second mild contraction, after which the neck will be taken to its new barrier, and the same procedure will be repeated 2 or 3 times in one session, the patients will be treated 3 days per week for 4 consecutive weeks.
**Category**
Rehabilitation

## Recruitment centers

### 1

**Recruitment center**
**Name of recruitment center**
Dubai Center for Physiotherapy and Medical Rehabilitation
**Full name of responsible person**
Noor Mohammed Najeeb
**Street address**
Qalat Suker Hospital Street
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**Email**
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## Sponsors / Funding sources

### 1

**Sponsor**
**Name of organization / entity**
Tehran University of Medical Sciences
**Full name of responsible person**
Dr. Akbar Fotuhi
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**Email**
tums_research@tums.ac.ir
**Web page address**
https://en.tums.ac.ir/en
**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**
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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)**
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