

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Effect of Carpal Bones Mobilization Technique with and without Neurodynamic Technique in Chronic Carpal Tunnel Syndrome Patients

Protocol summary

Study aim

To compare the effects of Carpal Bone mobilization with and without neurodynamic technique in chronic carpal tunnel syndrome patients

Design

A randomized, single blinded, clinical trial with a parallel group design of 112 patients (divided into two groups), were selected from Physical therapy department of University of Lahore Teaching Hospital, and followed for six weeks.

Settings and conduct

The data will be collected from the University of Lahore Teaching Hospital. The study population will be consisted of patients with carpal tunnel syndrome. Participants will be randomly allocated into two groups Group A (Carpal Bones Mobilization with Neurodynamic technique) and Group B (Carpal Bones Mobilization without Neurodynamic technique).

Participants/Inclusion and exclusion criteria

Inclusion criteria will be both gender who aged between 30-60 years with Positive Tinel sign and reporting a Numeric Pain Rating Scale score between 4 and 7cm
Exclusion Criteria will be patients with systemic pathology (i.e Hypothyroidism), inflammatory disorder (i.e Rheumatoid arthritis), Patients with Cervical radiculopathy, Patients with any deformity in hand or wrist, Patients who have undergone carpal tunnel treatment within the past 3 months and Pregnant

Intervention groups

Experimental Group A will receive Carpal Bone Mobilization with neurodynamic Technique. The CBMT will be performed in 3 sets with 30 repetitions in each set, keeping a one minute gap between sets. The ND Technique will be performed in 2 sets of 5 minutes each with 1-minute rest between sets. It will be performed three times per week for six weeks consecutively. In Experimental Group B participants will receive Carpal Bone Mobilization without neurodynamic Technique Before apply mobilization routine physical therapy

consist of heat therapy for 15 minutes will be applied.

Main outcome variables

Pain Functional Status Range of Motion

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20240724062527N1**

Registration date: **2024-08-27, 1403/06/06**

Registration timing: **retrospective**

Last update: **2024-08-27, 1403/06/06**

Update count: **0**

Registration date

2024-08-27, 1403/06/06

Registrant information

Name

Fizza Nawaz

Name of organization / entity

The University of Lahore

Country

Pakistan

Phone

+92 317 8118181

Email address

fizzanawaz1122@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-12-12, 1402/09/21

Expected recruitment end date

2024-07-20, 1403/04/30

Actual recruitment start date

2023-12-12, 1402/09/21

Actual recruitment end date

2024-07-20, 1403/04/30

Trial completion date

2024-08-04, 1403/05/14

Scientific title

Effect of Carpal Bones Mobilization Technique with and without Neurodynamic Technique in Chronic Carpal Tunnel Syndrome Patients

Public title

Effect of Carpal Bones Mobilization Technique with and without Neurodynamic Technique in Chronic Carpal Tunnel Syndrome Patients

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

Aged between 30-60 years Both males and females Patients with Positive Tinnel sign Patients reporting a Numeric Pain Rating Scale score between 4 and 7cm

Exclusion criteria:

Patients with systemic pathology (i.e Hypothyroidism) Patients with inflammatory disorder (i.e Rheumatoid arthritis) Patients with Cervical radiculopathy Patients with any deformity in hand or wrist Patients who have undergone carpal tunnel treatment within the past 3 months Pregnancy

Age

From **30 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **56**

Actual sample size reached: **56**

Randomization (investigator's opinion)

Randomized

Randomization description

All the screened and willing participants will be randomly allocated to two groups (Group A and Group B) by lottery method.

Blinding (investigator's opinion)

Single blinded

Blinding description

Study will be single and assessor blinded. Participants will be masked about other groups but they will know what treatment they will be receiving or what exercises they will be doing. Principal investigator would also not be masked or blinded because investigator would be applying the techniques or participants of both groups.

Placebo

Not used

Assignment

Parallel

Other design features**Secondary Ids**

empty

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

Research Ethics Committee of University of Lahore

Street address

University of Lahore Teaching Hospital Lahore , Punjab , Pakistan

City

Lahore

Postal code

55150

Approval date

2024-01-23, 1402/11/03

Ethics committee reference number

REC-UOL-649-01-2024

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

Carpal Tunnel Syndrome

ICD-10 code

G56.0

ICD-10 code description

Carpal tunnel syndrome

Primary outcomes**1****Description**

Pain

Timepoint

Six weeks

Method of measurement

The NPRS is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0-10 integers) that best reflects the intensity of his/her pain. The common format is a horizontal bar or line. The NPRS takes <1 minute to complete Scores range from 0-10 points, with higher scores indicating greater pain intensity. The NPRS can be administered verbally (therefore also by telephone) or graphically for self-completion

2**Description**

Functional Status

Timepoint

Six weeks

Method of measurement

The Boston Carpal Tunnel Questionnaire (BCTQ) is a disease-specific measure of self-reported symptom

severity and overall functional status. The Boston Carpal Tunnel Score is a patient-reported questionnaire that examines symptom severity and overall functional status of patients with carpal tunnel syndrome. The Symptom Severity Scale (SSS) with 11 questions is scored on a Likert scale of 1-5 and the Functional Status Scale (FSS) with 8 questions is scored from 1-5 with 1 as no difficulty and 5 as difficult.

3

Description

Range of motion

Timepoint

Six weeks

Method of measurement

The term 'goniometry' is derived from the Greek words 'gonia' meaning angle and 'metron' meaning measure, therefore goniometry refers to the measurement of angles, which in rehabilitation settings refers to the measurement of angles in each plane at the joints of the body. The neutral zero method (0 to 180-degree system) is the most widely used method. The range of motion of each joint should be measured in isolation, to avoid trick movement (simultaneous movement of another joint) and muscle insufficiency which may alter the reading.

Secondary outcomes

empty

Intervention groups

1

Description

Experimental Group: Carpal Bone Mobilization with neurodynamic Technique Carpal Bone Mobilization Technique (CBMT) is the movement of the individual carpal bones in a posterior anterior (P-A) and an anteroposterior (A-P) direction in relation to the adjacent carpal bone, radius, ulna, or adjacent metacarpal. Participant will be positioned in supine lying in the middle of the couch with the forearm resting on the couch either pronated or supinated. The physical therapist will be stood by the participant's involved side beyond the hand, facing the participant's head. For P-A glide, the therapist will be positioned his hand to localize the forces on the carpal bone in such a way that the maximum breadth of the thumb tips will be placed adjacent to each other on the appropriate carpal bone or intercarpal joint; the fingers will be spread over the adjacent area of the hand for stability; and the arms and thumbs will be positioned in a P-A direction. For A-P glide, the thumbs will be contacted the palmar surface of the participant's supinated hand against the appropriate carpal bone or intercarpal joint; the fingers will be spread over adjacent areas of the hand for stability; and the thumbs and arms will be positioned in an A-P direction. The P-A or A-P movement will be produced by pressure from the therapist's arms being transmitted through the spring-like action of the thumbs against the appropriate carpal bone or intercarpal joint. The CBMT will be

performed in 3 sets with 30 repetitions in each set, keeping a gap of one minute between the sets. (a) P-A glides (b) A-P glides over carpal bones. Tendon Gliding Exercises: Tendon gliding exercises will be carried out by the participants after applying maneuver (CBMT). The participant will be in sitting position on a chair. The exercises involved sliding the flexor tendons of the hand by moving the fingers through the following five discrete positions: straight, hook, first, table top, and straight fist positions. The exercises will be actively performed by the participants who maintained each position for 7 seconds and repeated five times in each set for 3 sets, keeping one-minute rest between sets. It will be performed three times per week. (a) Straight (b) hook (c) fist (d) table top (c) straight fist. Neurodynamic Technique: This maneuver intends to yield an unrestricted gliding movement of the median nerve against the surrounding soft tissues inside the carpal tunnel. The joints will be moved in such a way that stretched the nerve proximally while releasing it distally followed by a reverse combination. For the right side, the participant will be laid supine on a plinth. The therapist will stand in stride standing (right leg in front of the left one) on the right-hand side of the plinth, facing the participant. The participant's arm will be rested on the therapist's right thigh. The therapist's left hand will be held the participant's right hand. The participant's shoulder girdle will be depressed by the therapist by pushing the right hand vertically down the plinth. The participant's shoulder will be then taken into abduction (90°) and lateral rotation, the forearm was supinated and wrist, thumb, and fingers will be extended. In this position, concurrent elbow flexion and wrist extension (a) will be alternated dynamically with concurrent elbow extension and wrist flexion (b). The therapist will alter the combination of movements depending on tissue resistance. Speed and amplitude of movement will be adjusted so that it produced no pain. The NT will be performed in 2 sets of 5 minutes each with 1-minute rest between sets. It was performed three times per week for six weeks consecutively. NDT for median nerve (a) elbow flexion with wrist extension (b) elbow extension with wrist flexion.

Category

Treatment - Other

2

Description

Experimental Group B: Carpal Bone Mobilization without neurodynamic Technique The participants randomly allocated in Group B will be received the Carpal bone mobilization without neurodynamic technique. Before apply mobilization routine physical therapy consist of heat therapy for 15 minutes will be applied. The application of this mobilization technique or procedure will mirror the methods described earlier.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

University of Lahore Teaching Hospital

Full name of responsible person

Research Ethics Committee of University of Lahore

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University of Lahore Teaching Hospital Lahore ,
Punjab , Pakistan

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Lahore

Full name of responsible person

Fizza Nawaz

Street address

1-Km Defence Road, near Bhuptian Chowk, Lahore,
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Grant name

None

Grant code / Reference number

N/A

Is the source of funding the same sponsor organization/entity?

No

Title of funding source

None

Proportion provided by this source

100

Public or private sector

Private

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

The University of Lahore

Full name of responsible person

Fizza Nawaz

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

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Person responsible for scientific inquiries

Contact

Name of organization / entity

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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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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

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Yes - There is 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

Title and more details about the data/document

Demographic data and data related to final outcome will be shared by maintaining the confidentiality.

When the data will become available and for how long

Data will be available after the publication of findings till six months

To whom data/document is available

Fizza Nawaz

Under which criteria data/document could be used

For research purpose

From where data/document is obtainable

To the corresponding author of the study, Fizza Nawaz and can contact on +92317 8118181, fizzanawaz1122@gmail.com

What processes are involved for a request to access data/document

Open access and there is the traditional public data release where anyone can get access to the data.

Comments