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 bth gender who aged between 30-60 years with Positive Tinnel 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

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Pakistan

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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 (CMBT). 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 marinated each position for 7seconds 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 will be hand 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
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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
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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 confidentially.
When the data will become available and for how long
Data will be available after the publication of findings till six moths
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