

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Study of immediate effects of Mulligan and Maitland mobilization techniques on grip strength and grip force sense in healthy young women

Protocol summary

Study aim

Immediate effects of Mulligan and Maitland mobilization techniques on grip strength and grip force sense in healthy young women

Design

A single-blind study with two arm parallel groups with outcome assessment.

Settings and conduct

This study is conducted at Shahid Beheshti University of Medical Sciences, Tehran, Iran. The Maitland group will receive 3 minutes of grade III passive Maitland mobilization on the proximal row of the carpal bones, especially scaphoid, lunate and triquetrum (Radiocarpal extension). While the Mulligan group will receive 3 sets of 6 lateral glide for non-weight-bearing wrist flexion and extension with overpressure. Participants are not aware of the type of technique.

Participants/Inclusion and exclusion criteria

Inclusion criteria: females (age 18- 30 years) with normal BMI between 20-25 who state that they are healthy and have no problem (asymptomatic). The following are considered as exclusion criteria: The job of the participants depends on heavy manual tasks, a history of carpal tunnel syndrome, wrist tendonitis, fracture and immobilization of the wrist or hand during the 6 previous months. Also receiving manual therapy techniques such as massage, joint mobilization, muscle energy techniques, manipulation during the 6 previous months. In addition, if the participant is not interested in remaining in the study, she would be excluded.

Intervention groups

The Maitland mobilization group and the Mulligan mobilization group.

Main outcome variables

Grip strength, absolute, constant and variable errors were assessed at baseline and immediately after interventions were applied to participants.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20190316043067N1**

Registration date: **2019-04-23, 1398/02/03**

Registration timing: **prospective**

Last update: **2019-04-23, 1398/02/03**

Update count: **0**

Registration date

2019-04-23, 1398/02/03

Registrant information

Name

Syedmajid Hosseini

Name of organization / entity

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2019-04-30, 1398/02/10

Expected recruitment end date

2019-05-31, 1398/03/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Study of immediate effects of Mulligan and Maitland mobilization techniques on grip strength and grip force sense in healthy young women

Public title

Effect of wrist mobilization techniques on grip strength and force sense

Purpose

Supportive

Inclusion/Exclusion criteria

Inclusion criteria:

females (age 18- 30 years) with normal BMI between 20-25 Participant states that she is healthy and has no problem (asymptomatic).

Exclusion criteria:

Being athletes (Exercise at least three days a week for two hours) their job is dependent on heavy manual tasks history of carpal tunnel syndrome in the previous 6 months history of wrist tendonitis in the previous 6 months history of hand fracture and immobilization for wrist or hand in the previous 6 months receiving manual techniques such as joint mobilization, massage, muscle energy technique and manipulation in the previous 6 months participants who are not willing to continue the study

Age

From **18 years** old to **30 years** old

Gender

Female

Phase

N/A

Groups that have been masked

- Participant

Sample size

Target sample size: **91**

Randomization (investigator's opinion)

Randomized

Randomization description

Tossing a coin. Participants were allocated in one of the two groups according to what the coin indicated. Simple randomization.

Blinding (investigator's opinion)

Single blinded

Blinding description

Participants are not informed which mobilization technique is applied.

Placebo

Not used

Assignment

Parallel

Other design features

This study also investigates the relationship between joint mobilization and force sense.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Shahid Beheshti University of Medical Sciences, Tehran , Iran.

Street address

1616913111, Damavand AVE, Imam Hossein SQ, Tehran, Iran.

City

Tehran

Province

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Postal code

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Approval date

2017-07-11, 1396/04/20

Ethics committee reference number

IR.SBMU.RETECH.REC.1396.181

Health conditions studied

1

Description of health condition studied

Comparison of the effects of Maitland and Mulligan mobilization techniques on hand power. Grip strength was measured in both groups before and after applying the mobilization of the wrist using the Maitland and Mulligan techniques.

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

grip strength

Timepoint

Pre and immediately post intervention

Method of measurement

A hand dynamometer – model SH 5002, SAEHAN

Secondary outcomes

1

Description

absolute error

Timepoint

Pre and immediately post intervention

Method of measurement

A hand dynamometer – model SH 5002, SAEHAN

2

Description

constant error

Timepoint

Pre and immediately post intervention

Method of measurement

A hand dynamometer – model SH 5002, SAEHAN

3

Description

variable error

Timepoint

Pre and immediately post intervention

Method of measurement

A hand dynamometer – model SH 5002, SAEHAN

Intervention groups

1

Description

Intervention group one: Maitland mobilization grade III with a frequency of 1 Hz is applied on the subject's wrist to promote wrist extension. In grade III of Maitland mobilization technique, a large amplitude of oscillating mobilizing movements are applied rhythmically to the barrier of the range of movement. Application of the Maitland mobilization technique takes 3 minutes. In this technique, the subject is in the supine position and her forearm is placed in mid position. The physiotherapist is standing in front of the subject and grasps the radio-carpal joint of the dominant hand. Therapist's both thumbs are placed on the dorsal side of the proximal carpal row just distal to the radial and ulnar styloid processes. Thumb and index fingers hold the scaphoid, lunate and partially triquetrum. Other fingers are placed on the palmar side of carpal bones. Before beginning the mobilization in palmar direction, joint slack is taken. Index fingers and thumbs are the major contact points which apply the force. Extension movement is applied through local grip with simultaneous wrist extension. Oscillation is finished while forearm turns back to primary position(12).

Category

Rehabilitation

2

Description

Intervention group: The technique was done in 3 sets of 6 movements and lasted about 2/5 minutes. The Mulligan technique includes carpal lateral glide with non-weight bearing wrist flexion/extension. The subject is in sitting position with the elbow in 90° flexion, the forearm in mid pronation, the wrist in resting position and the hand in neutral position. The therapist is in front of the subject and fixes the distal end of the radius laterally with the first web space. The therapist's other hand grasped the medial side of the subject's wrist joint. Then through the first web space a lateral glide was applied to the proximal carps. While the therapist was maintaining the lateral glide, the subject was asked to flex and extend her wrist and apply the pressure at the end of movement in favor of wrist extension. If required, slight adjustments were made to the intensity and direction of the lateral glide. Because the wrist joint was small, the mobilization was done slowly.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Rehabilitation

Full name of responsible person

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Sponsors / Funding sources

1

Sponsor

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Grant name

Grant code / Reference number

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

Yes

Title of funding source

Shahid Beheshti 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

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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

No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available