Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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

Seyedmajid Hosseini

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 7754 2057

Email address

majid_hoseini@sbmu.ac.ir

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
Tehran
Postal code
1616913111
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
Seyedmajid Hosseini
Street address
1616913111, Damavand Ave, Imam Hosein SQ, School of rehabilitation
City
Tehran
Province
Tehran
Postal code
1616913111
Phone
+98 21 7754 2057
Fax
+98 21 7759 1807
Email
majid_hoseini@sbmu.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Shahid Beheshti University of Medical Sciences
Full name of responsible person
Seyedmajid Hosseini
Street address
161691311, Damavand Ave, Imam Hossein SQ, School of Rehabilitation, Tehran, Iran.
City
Tehran
Province
Tehran
Postal code
1616913111
Phone
+98 21 7754 2057
Fax
+98 21 7759 1807
Email
majid_hoseini@sbmu.ac.ir
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

Person responsible for general inquiries

Contact

Name of organization / entity

Shahid Beheshti University of Medical Sciences

Full name of responsible person

Seyedeh Forough Abtahi nezhad moghadam

Position

Phyisiotherapist

Latest degree

Master

Other areas of specialty/work

Physiotherapy

Street address

1616913111, Damavand Ave, Imam Hossein SQ, School of Rehabilitation, Tehran, Iran.

City

Tehran

Province

Tehran

Postal code

1616913111

Phone

+98 21 7754 2057

Email

f.abt70@yahoo.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

Shahid Beheshti University of Medical Sciences

Full name of responsible person

Seyedmajid Hosseini

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

Street address

Damavand Ave, Imam Hosseini SQ, Postal code: 1616913111

City

Tehran

Province

Tehran

Postal code

1616913111

Phone

+98 21 7754 2057

Fax

+98 21 7759 1807

Email

majid_hoseini@sbmu.ac.ir

Person responsible for updating data

Contact

Name of organization / entity

Shahid Beheshti University of Medical Sciences

Full name of responsible person

Seyedmajid Hosseini

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

Street address

Damavand Ave, Imam Hosseini SQ, Postal code: 1616913111

City

Tehran

Province

Tehran

Postal code

1616913111

Phone

+98 21 7754 2057

Fax

+98 21 7759 1807

Email

majid_hoseini@sbmu.ac.ir

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