Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

The Effects of Mobilization with Movement (MWM) Technique on the Center of Pressure Sway in the Functional Positions and Its Changes in the Base of Support in Subjects with Knee Osteoarthritis

Protocol summary

Study aim

The effects of mobilization with movement (MWM) technique on the center of pressure sway in a functional position and its situation in the base of support in knee osteoarthritis

Design

Randomized clinical trial, with control group, 20 patients with moderate knee osteoarthritis and 10 healthy individuals

Settings and conduct

To perform medial mulligan glide, the patient was in prone position. The therapist closed a belt around her waist and down the patient's knee. Then, while she fixes the thigh and supports leg , she performed glide. The patient should have flex or extend her knee at the same time dependent of the direction of limitation. The lateral mulligan glide was also applied to the lateral direction. The exercise group received only therapeutic exercise. The exercise program was similar to the MWM group. All stages of the study were conducted at Tarbiat Modares University.

Participants/Inclusion and exclusion criteria

Inclusion Criteria 1. Unilateral or bilateral knee OA with severe pain in one knee 2. Kellgren and Lawrence 2,3 3. Age 45-70 Exclusion Criteria: 1. Discontinuing of cooperation for any reason 2.Change in patient’s situation that leads to loose inclusion criteria 3.Not complete treatment plan 4. History of: severe musculoskeletal weakness lower limb surgery Calcaneal eversion >15 and calcaneal inversion >10 osteoporosis knee valgus>15 and knee varus> 10

Intervention groups

Control group received 10 sessions of exercise therapy. The Mulligan group received 6 sessions of MWM techniques in addition to 10 sessions of exercise therapy.

Main outcome variables

pain severity, quality of life, functional balance, dynamic balance

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20101017004952N6**
Registration date: **2019-03-11, 1397/12/20**
Registration timing: **retrospective**

Last update: **2019-03-11, 1397/12/20**
Update count: **0**

Registration date

2019-03-11, 1397/12/20

Registrant information

Name
Giti Torkaman
Name of organization / entity
Tarbiat Modares University
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Iran (Islamic Republic of)
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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2017-09-23, 1396/07/01

Expected recruitment end date

2017-12-22, 1396/10/01

Actual recruitment start date

2017-10-23, 1396/08/01

Actual recruitment end date

2018-03-16, 1396/12/25

Trial completion date

2018-11-21, 1397/08/30

Scientific title

The Effects of Mobilization with Movement (MWM) Technique on the Center of Pressure Sway in the Functional Positions and Its Changes in the Base of Support in Subjects with Knee Osteoarthritis

Public title

The effects of MWM techniques on the center of pressure sway changes in knee osteoarthritis

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Unilateral or bilateral knee osteoarthritis (OA) with severe pain in one knee Grade II OA according to Kellgren and Lawrence Pain for at least 3 months Normal blood pressure 140/90 Age 45-70 Muscle strength at least 3 using dynamometer

Exclusion criteria:

Participating muscle strengthening plan at least for 3 months ago Severe muscle weakness Meniscal lesions Lower limb surgery Serious systemic or nervous disease Visual disturbance Vestibular, neurologic, neuromuscular & chronic orthopedic disease Joint injury Hard flat foot Calcaneal eversion >15 and calcaneal inversion >10 Corticosteroid injection in 6 months ago Suffering any other arthritis Osteoporosis Knee valgus>15 and knee varus> 10

Age

From **50 years** old to **70 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **10**

Actual sample size reached: **10**

Randomization (investigator's opinion)

Randomized

Randomization description

By blocked randomization method, subjects were assigned to the Mulligan group and the exercise group. The blocks of 5 were used for randomized allocation of subjects to the groups. First, the list of blocks was written and numbers 1 or 2 assigned to them. After the random selection of the number, the treatment allocation was done based on the selected number.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Committee of Ethics in Biomedical Research of Tarbiat Modares University

Street address

Jalal AleAhmad Ave., Nasr

City

Tehran

Province

Tehran

Postal code

1411713116

Approval date

2017-10-24, 1396/08/02

Ethics committee reference number

IR.TMU.REC.1396.643

Health conditions studied

1

Description of health condition studied

Knee osteoartritis

ICD-10 code

M17

ICD-10 code description

Osteoarthritis of knee

Primary outcomes

1

Description

Balance

Timepoint

Balance assessment before and 3 weeks after training

Method of measurement

Force plate

Secondary outcomes

empty

Intervention groups

1

Description

The intervention group received 10 sessions of exercise therapy with 6 sessions (twice a week) of MWM techniques. In the first step, we assessed the region of pain and direction of restriction. Then, we decided which technique for use. Medial glide for medial pain and lateral glide for lateral pain, was done. The direction of

restriction (flexion or extension) showed us the direction of movement. Internal rotation glide for all patients was performed.

Category
Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center
Tarbiat Modares University

Full name of responsible person
Dr Giti Torkaman

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Sponsors / Funding sources

1

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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
Tarbiat Modares University

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
Tarbiat Modares University

Full name of responsible person
Dr Giti Torkaman

Position
Professor

Latest degree
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Other areas of specialty/work
Physiotherapy

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Person responsible for updating data

Contact

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is 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
Yes - There is a plan to make this available
Clinical Study Report
Yes - There is a plan to make this available
Analytic Code
No - There is not 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
All data will be shared after confirmation of chief researcher.
When the data will become available and for how long
6 months after publication
To whom data/document is available
All researchers
Under which criteria data/document could be used
For scientific purposes
From where data/document is obtainable
Dr Giti Torkaman
What processes are involved for a request to access data/document
Confirmation of chief researcher
Comments