

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

The effects of adding dry needling technique to Mulligan's mobilization with movement technique along with exercise therapy on pain, range of motion, disability and balance in patients with knee osteoarthritis

Protocol summary

Study aim

Determining the effect of adding dry needling technique to Mulligan's mobilization with movement technique along with exercise therapy on pain, range of motion, disability and balance in patients with knee osteoarthritis

Design

A randomized, double blind, sham controlled clinical trial with a parallel group design of 48 patients. Random allocation method is Permuted Block Randomization.

Settings and conduct

location: official centers of bushehr university of medical science. for group 1, mulligan's mobilization with movement technique with exercise therapy with dry needling is applied on patients. for group 2, these treatments are all applied while dry needling is sham. blinding: patient, researcher, therapist, outcomes assessor, data analyzer.

Participants/Inclusion and exclusion criteria

Inclusion: age 45 to 70; knee osteoarthritis with at least one active trigger point; knee pain more than 3 in visual Analogue Scale (VAS) and disability more than 25 in Western Ontario and McMaster Universities Arthritis Index (WOMAC) scale; at least 10 degrees loss in knee flexion range of motion. Exclusion: knee replacement surgery; neurologic disease; Rheumatoid Arthritis; steroid and analgesic injection in last 3 month in knee; fibromyalgia; inflammation or infection; pregnancy; diabetes; epilepsy; needle phobia; any trigger points treatment in last 3 month; vascular disease; fracture; physiotherapy in last 3 month for knee joint.

Intervention groups

Group 1: mulligan's mobilization with movement technique with exercise therapy with dry needling & 2: all above treatments but sham dry needling.

Main outcome variables

Pain; range of motion; disability; number of active trigger points in muscles around knee; local pain assessment in

active trigger points; functional mobility; balance.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20221026056300N1**

Registration date: **2022-11-12, 1401/08/21**

Registration timing: **prospective**

Last update: **2022-11-12, 1401/08/21**

Update count: **0**

Registration date

2022-11-12, 1401/08/21

Registrant information

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Name of organization / entity

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2022-11-21, 1401/08/30

Expected recruitment end date

2023-01-19, 1401/10/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effects of adding dry needling technique to Mulligan's mobilization with movement technique along with exercise therapy on pain, range of motion, disability and balance in patients with knee osteoarthritis

Public title

The effects of adding dry needling technique to manual therapy in treatment of patients with knee osteoarthritis

Purpose

Supportive

Inclusion/Exclusion criteria**Inclusion criteria:**

Age between 45 - 70, Unilateral or bilateral knee pain and dysfunction, in bilateral knee pain, the knee with more pain will be cured, Knee osteoarthritis with grade 2 and 3 Kellgren & Lawrence, At least one active trigger point in muscles around knee that refer pain, Knee pain more than 3 in VAS scale, Ability to walk for 6 meters and more, Disability more than 25 in WOMAC scale, At least 10 degrees loss in knee flexion range of motion.

Exclusion criteria:

Neuropathic pain in lower limb, Knee replacement surgery, Surgery in other parts of lower limb in last 6 month. Radicular pain in knee, Neurologic diseases, Rheumatoid Arthritis, Steroid and analgesic injection in last 3 month in knee, Fibromyalgia syndrome, Patellar tendinopathy, Inflammation or active infection signs in knee, Pregnancy, Diabetes, Epilepsy, Immune system diseases like AIDS, Cancer, Hepatitis, Phobia of needle in dry needling technique, Any treatment for trigger points in considering muscles in last 3 month, Vascular disease associated with unusual bleeding, Treatment with Anticoagulants, Pain in lower limb associated with low back pain, Fracture or any other orthopedic problem in involved lower limb, Musculoskeletal disorders in other joints in lower limb (except osteoarthritis) Physiotherapy sessions in last 3 month for knee joint.

Age

From **45 years** old to **70 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **48**

Randomization (investigator's opinion)

Randomized

Randomization description

Random allocation method in this study is Permuted Block Randomization. A represents the person who receives mulligan's mobilization with movement

technique along with exercise therapy with dry needling technique and B represents the person who receives mulligan's mobilization with movement technique along with exercise therapy with sham dry needling technique. This method runs with considering 4 blocks that the number of all possible 4 permutations equals 6. (4 permutations blocks consist of: ABAB ,ABBA ,BAAB ,BABA ,AABB ,BBAA) We assign a number to each mode. Using Random Numbers Table, a list with 48 persons will be produced.

Blinding (investigator's opinion)

Double blinded

Blinding description

In this study, main student doing initial assessment based on inclusion and exclusion criteria and treatments in patients. assistant student collecting data from patients and analyzing them. Allocation base on Permuted Block Randomization and for blinding in patients, sham dry needling applied in that way that the patient can't realize that it is not real.

Placebo

Used

Assignment

Parallel

Other design features

This study is added value study.it means that dry needling technique is added to mulligan's mobilization with movement technique.one group receives Mulligan's mobilization with movement technique along with exercise therapy with dry needling technique and another group receives Mulligan's mobilization with movement technique along with exercise with sham dry needling technique.

Secondary Ids

empty

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

Ethics committee of shiraz university of medical sciences

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Approval date

2022-10-19, 1401/07/27

Ethics committee reference number

IR.SUMS.REHAB.REC.1401.036

Health conditions studied

1

Description of health condition studied

Knee Osteoarthritis

ICD-10 code

M17

ICD-10 code description

Osteoarthritis of knee

Primary outcomes

1

Description

Pain

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Visual Analogue Scale

2

Description

Knee Range of Motion

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Goniometer

3

Description

Disability

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Western Ontario and McMaster Universities Osteoarthritis Index questionnaire

4

Description

Number of active trigger points in muscles around knee

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Counting active trigger points

5

Description

Local pain of trigger points in muscles around knee

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Visual Analogue Scale

Secondary outcomes

1

Description

Functional mobility

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Timed Up and Go test

2

Description

Balance

Timepoint

Before treatment, After treatment, 4 weeks after treatment

Method of measurement

Modified STAR Excursion Balance Test (mSEBT)

Intervention groups

1

Description

Intervention group: Mulligan's mobilization with movement technique along with exercise therapy with dry needling technique

Category

Rehabilitation

2

Description

Intervention group: Mulligan's mobilization with movement technique along with exercise therapy with sham dry needling technique

Category

Rehabilitation

Recruitment centers

1

Recruitment center

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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

Shiraz 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

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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

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

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

Clinical Study Report

Undecided - It is not yet known if there will be 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