

Clinical Trial Protocol

Iranian Registry of Clinical Trials

13 Jun 2026

Comparison of ischemic compression and dry needling as trigger point therapy for patellofemoral pain syndrome in young adults: A double-blind randomized clinical trial

Protocol summary

Summary

The aim of this study is to compare the effectiveness of ischemic compression (IC) directly to the knee versus dry needling (DN) in improving pain, functional status and sensitivity to mechanical stimulation in patients with patellofemoral pain syndrome (PFPS). 54 patients (according to pilot study) with unilateral PFPS aged 20-30 years will be randomly selected according to the inclusion-exclusion criteria among patients referred to physical therapy clinics of Babol University of Medical Sciences (single center) in Babol, Iran. The inclusion criteria contains reported pain of more than 6 weeks' duration, reported pain in one of the following tests: vastus medialis coordination test, patellar apprehension test, eccentric step test. Volunteers were excluded if they had a history of any of ligamentous insufficiency of the knee, spine or lower extremity surgery or trauma. A blinded examiner will divide participants into 2 groups by Systematic Random allocation, also patients would be blinded to treatment allocation. Patients in both groups will treat in three sessions per week alternatively. IC consist of three sets of continuous pressure applied for on the myofascial trigger point (MTrP) of VMO. DN consist inserting a stainless steel needle on the MTrP found in VMO until feel the first twitch. Main outcome measures include Numeric pain rating scale (VAS) for pain intensity, Kujala questionnaire for functional status, and pressure pain threshold (PPT) for sensitivity to mechanical stimulation. All three were recorded before treatment, 1 week, 1 month and 3 months after the last session.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2016062028542N1**

Registration date: **2017-03-08, 1395/12/18**

Registration timing: **prospective**

Last update:

Update count: **0**

Registration date

2017-03-08, 1395/12/18

Registrant information

Name

Shabnam` Behrangrad

Name of organization / entity

Mazandaran University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 911 255 3309

Email address

dbehrang@gmail.com

Recruitment status

Recruitment complete

Funding source

investigator

Expected recruitment start date

2017-05-22, 1396/03/01

Expected recruitment end date

2017-06-20, 1396/03/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of ischemic compression and dry needling as trigger point therapy for patellofemoral pain syndrome in

young adults: A double-blind randomized clinical trial

Public title

dry needling efficacy in patients on pain and function of patient with patellofemoral pain syndrome

Purpose

Treatment

Inclusion/Exclusion criteria

The inclusion criteria are: 1) reported pain of more than 6 weeks' duration in at least two of the following situations: patellar compression, squatting, prolonged sitting, walking, stair climbing, isometric quadriceps contraction (Crossley K et al 2002; Whittingham M et al 2004; Iverson et al 2008); 2) reported pain in one of the following tests: vastus medialis coordination test, patellar apprehension test, eccentric step test (Nijs J et al 2006); 3) presence of at least one MTrP in the VMO of the symptomatic knee (pressure applied to the VMO produced pain); 4) Kujala questionnaire score between 40 and 70, and visual analog scale (VAS) score greater than 40. Volunteers will be excluded if they had a history of any of the following: ligamentous insufficiency of the knee, meniscus damage, patellar subluxation or dislocation, nerve root compression, spine or lower extremity surgery, any systemic, orthopedic or neurological disorder, or current physical therapy (Iverson CA et al. 2008; Hains G and Hains F 2010; Grindstaff TL et al 2012).

Age

From **20 years** old to **30 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **54**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

Placebo

Not used

Assignment

Other

Other design features

blocking method

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Babol University of Medical

Sciences

Street address

Babol

City

Babol

Postal code

Approval date

2017-01-19, 1395/10/30

Ethics committee reference number

MUBABOL.REC.1395.190

Health conditions studied

1

Description of health condition studied

patellofemoral pain syndrome

ICD-10 code

M70.8

ICD-10 code description

Other soft tissue disorders related to use, overuse and pressure

Primary outcomes

1

Description

pain

Timepoint

before treatment, 1 week after treatment, 1 month after treatment, 3 months after treatment

Method of measurement

NPRS

2

Description

PPT

Timepoint

before treatment, 1 week after treatment, 1 month after treatment, 3 months after treatment

Method of measurement

digital algometry

3

Description

functional status

Timepoint

before treatment, 1 week after treatment, 1 month after treatment, 3 months after treatment

Method of measurement

kujala questionnaire

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group 1: ischemic compression: Treatment in this group involves applying tolerably painful, persistent manual pressure (usually with the thumb) against the tissue barrier of the MTrP. The examiner sustained the pressure for 90 seconds. Compression was performed three times in each session, with a 30-second rest between applications. Each patient in this group will receive 3 sessions of treatment per week alternatively. Main outcome measures were recorded before treatment, 1 week, 1 month and 3 months after the last session of treatment.

Category

Rehabilitation

2

Description

Intervention group 2: dry needling: the needle was inserted perpendicularly through the skin over the MTrP area, using the fast-in and fast-out technique and moved forward until a local twitch response was obtained. Each patient in this group will receive 3 sessions of treatment per week. Main outcome measures were recorded before treatment, 1 week, 1 month and 3 months after the last session of treatment.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Babol university of medical sciences

Full name of responsible person

Shabnam Behrangrad

Street address

mazandaran, sari

City

Babol

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

investigator

Full name of responsible person

Shabnam Behrangrad

Street address

mazandaran, sari

City

Babol

Grant name

Grant code / Reference number

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

Yes

Title of funding source

investigator

Proportion provided by this source

100

Public or private sector

empty

Domestic or foreign origin

empty

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

empty

Person responsible for general inquiries

Contact

Name of organization / entity

Mazandaran University of Medical Sciences

Full name of responsible person

Shabnam Behrangrad

Position

master of science

Other areas of specialty/work

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Web page address

Sharing plan

Deidentified Individual Participant Data Set (IPD)

empty

Study Protocol

empty

Statistical Analysis Plan

empty

Informed Consent Form

empty

Clinical Study Report

empty

Analytic Code

empty

Data Dictionary

empty