Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 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 Randome 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 untile fel 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)

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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 exclud 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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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