

Clinical Trial Protocol

Iranian Registry of Clinical Trials

14 Sep 2026

The effect of dry needling on hamstring muscles stiffness and isometric strength of hamstring muscles using an isokinetic dynamometer

Protocol summary

Study aim

Determining the effect of dry needling on the stiffness and isometric strength of hamstring muscles using an isokinetic dynamometer in non-athletic subjects with comparative shortness of hamstring muscles.

Design

This study is a double-blind randomized clinical trial study along with placebo treatment in the control group.

Settings and conduct

In this study, people with adaptive hamstring shortness are placed in two dry needling and dry needling placebo groups, then they receive the desired intervention in three sessions, and they are evaluated by a different physiotherapist using an isokinetic dynamometer before the intervention, after the third session and one week after the third session.

Participants/Inclusion and exclusion criteria

Inclusion: age range between 18 and 35 years. comparative hamstring shortening $\geq 20^\circ$ in passive knee extension test. Exclusion: Needle phobia. Orthopedic or neurological diseases in the lower limbs. Back pain. History of back pain in the past year. History of back, thigh, knee, and ankle surgery. Recent hamstring injury. People who have coagulopathy or take anti-coagulant drugs. History of using dry needling

Intervention groups

Intervention group: dry needling in four hamstring points 30% and 60% of a straight line from the ischial tuberosity to the fibular head and the ischial tuberosity to the medial femoral epicondyle for 1 minute each, with the fast in-out cone-shape technique and Then the needles are left in place for 20 minutes. Control group: dry needling placebo. The needle is inserted subcutaneously and does not enter deeper tissues and then remains in place for 20 minutes.

Main outcome variables

Muscle-tendon unit stiffness. range of motion of passive knee extension test, maximal passive torque, maximal voluntary isometric contraction strength

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180728040618N6**

Registration date: **2023-02-01, 1401/11/12**

Registration timing: **prospective**

Last update: **2023-02-01, 1401/11/12**

Update count: **0**

Registration date

2023-02-01, 1401/11/12

Registrant information

Name

Holakoo Mohsenifar

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 2610 6933

Email address

mohsenifar.h@iums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-04-21, 1402/02/01

Expected recruitment end date

2023-08-23, 1402/06/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of dry needling on hamstring muscles stiffness and isometric strength of hamstring muscles using an isokinetic dynamometer

Public title
The effect of dry needling on hamstring muscles stiffness and strength of hamstring muscles

Purpose
Other

Inclusion/Exclusion criteria
Inclusion criteria:
Age range of 18 to 35 years. Adaptive hamstring shortening $\geq 20^\circ$ in the passive knee extension test
Exclusion criteria:
Needle phobia. Orthopedic or neurological diseases in the lower limbs. Back pain History of back pain in the past year. History of back, thigh, knee and ankle surgery Recent hamstring injury. Pregnancy People who have coagulopathy or take anti-coagulant drugs. People who have a history of using dry needles.

Age
From **18 years** old to **35 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Participant
- Outcome assessor

Sample size
Target sample size: **20**

Randomization (investigator's opinion)
Randomized

Randomization description
Random allocation will be done by the method of variable blocks, which includes blocks of 4 letters and is made of letters A and B. Then, the random treatment list, which will be obtained at the end of the randomization task, will be placed in the form of letters A and B inside sealed and numbered envelopes (the letter A represents dry needling and the letter B represents dry needling placebo). The process of random allocation will be done by a person outside the research team and before the start of the study. After the initial evaluation of the person by the examiner, numbered envelopes, corresponding to the sequential number of each person included in the study, will be given to him. Finally, after each patient enters the therapy sessions, the therapist will adjust the therapeutic interventions based on the letters inside the envelope. Also, it should be mentioned that after placing people in the desired group, they are asked not to share their grouping information with the examiner in order to prevent data contamination

Blinding (investigator's opinion)
Double blinded

Blinding description
The evaluation and treatment stages will be performed by two different physiotherapists and the evaluator will be impartial to the interventions to avoid bias. Individuals in the dry needle placebo group will receive a placebo and will be unaware of their grouping.

Placebo
Used

Assignment
Parallel

Other design features

Secondary Ids
empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Iran University of Medical Sciences
Street address
Iran University of Medical Sciences, Shahid Hemmat Highway, Tehran
City
Tehran
Province
Tehran
Postal code
1449614535
Approval date
2023-01-02, 1401/10/12
Ethics committee reference number
IR.IUMS.REC.1401.776

Health conditions studied

1

Description of health condition studied
Adaptive hamstring shortening

ICD-10 code
M62.45

ICD-10 code description
Contracture of muscle, thigh

Primary outcomes

1

Description
muscle-tendon unit stiffness

Timepoint
Before the intervention, after the third session and one week after the third session

Method of measurement
The values of the slope of the regression line calculated from the torque-angle relationship using the least square method

Secondary outcomes

1

Description

Range of motion of passive knee extension test

Timepoint

Before the intervention, after the third session and one week after the third session

Method of measurement

Isokinetic dynamometer

2

Description

حداکثر گشتاور غیرفعال

Timepoint

Before the intervention, after the third session and one week after the third session

Method of measurement

Isokinetic dynamometer

3

Description

Maximum voluntary isometric contraction strength

Timepoint

Before the intervention, after the third session and one week after the third session

Method of measurement

Isokinetic dynamometer

Intervention groups

1

Description

Intervention group: dry needling; This technique is performed by a physiotherapist who has an official certificate of dry needling courses from the Iranian Physiotherapy Association. The Deep dry needling method is performed using disposable stainless steel needles (0.3 x 60 mm; SMC, Seoul, Korea). People are placed on the treatment bed lying on their stomachs with their feet outside the edge of the bed. The hamstring muscles are needled in 4 places, each for 1 minute, with the fast in-out cone-shape technique, and then the needles remain in place for 20 minutes as recommended by Hong. People receive dry needling for 4 sessions. Two of the sites are in the long and short heads of the biceps femoris muscle at a point of 30% and 60% of a straight line from the ischial tuberosity to the fibular head. For Tendinous Tendinous and Membranous Tendon muscles, the dry needling site was selected at two points at 30% and 60% of a straight line from the ischial tuberosity to the medial epicondyle of the femur.

Category

Rehabilitation

2

Description

Control group: dry needling placebo; The dry needling placebo method is similar to the original method, that is, all the steps, including how to position the person, how

to perform the technique, and cleaning the desired area, are fully implemented, but the needle is inserted subcutaneously and does not enter deeper tissues. Then it remains in place for 20 minutes

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

School of Rehabilitation Sciences of Iran University of Medical Sciences

Full name of responsible person

Holakoo Mohsenifar

Street address

School of Rehabilitation Sciences of Iran University of Medical Sciences, Madadkaran St, Shah Nazari St, Madar Sq, Mirdamad Blvd, Tehran

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

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Full name of responsible person

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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

Iran 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**

Iran University of Medical Sciences

Full name of responsible person

Holakoo Mohsenifar

Position

Assistant Professor

Latest degree

Ph.D.

Other areas of specialty/work

Physiotherapy

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Fax**Email**

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Sharing plan**Deidentified Individual Participant Data Set (IPD)**

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is 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

Yes - There is a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

Deidentified individual participant data collected for the primary and secondary outcome measures will be shared if necessary.

When the data will become available and for how long

Starting 6 months after publication

To whom data/document is available

The data will be available for physical therapists working in academic institutions and also clinicians working in the field of musculoskeletal disorders

Under which criteria data/document could be used

The raw data and results of this study can be used in future relevant systematic reviews. Thus, the raw data and results of this study will be available for researchers

working in the field of dry needling.

From where data/document is obtainable

Applicants can contact the researcher of this study
zahrasadat mirkhalili by email. Email address:
zahra.mirkhalili@gmail.com

**What processes are involved for a request to access
data/document**

Applicants should explain in detail about their project
and how the data/documents of this study will be used in
their project. Then, the data/documents files will be sent
by email to applicants on request. This process may
takes 10-12 working days.

Comments