Clinical Trial Protocol
Iranian Registry of Clinical Trials

19 Jun 2026

The effect of dry needling on hamstring muscles stiffnss 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 ≥20° 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

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Iran (Islamic Republic of)

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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 stiffnss and isometric strength of hamstring muscles using an isokinetic dynamometer

Public title
The effect of dry needling on hamstring muscles stiffnss and strength of hamstring muscles
Purpose
Other
Inclusion/Exclusion criteria
Inclusion criteria:
Age range of 18 to 35 years. Adaptive hamstring shortening ≥20° 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
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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
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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
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
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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