Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of the short-term effect of therapeutic ultrasound and TECAR therapy on hamstring muscle flexibility in healthy athlete men with hamstring shortness: A randomized controlled trial

Protocol summary

Study aim
Comparison of short-term effects of ultrasound therapy and tecar therapy on hamstring flexibility in healthy athlete men

Design
Three parallel group randomised trial with control group with single blinded outcome assessment

Settings and conduct
This research was performed at the School of Rehabilitation in University of Tehran. Individuals divided in three groups of static stretching, ultrasound therapy And tecartherapy.In all groups, assessments were performed immediately before the start of treatment, immediately after the first session, as well as in the third session. The physiotherapist who performs the assessments before and after the sessions is unaware of the grouping of individuals.so this trial is single blind.

Participants/Inclusion and exclusion criteria
1-Inclusion criteria: Athletes who practice at least three two-hour sessions per week. Athletic men aged 20 to 30 years with dominant hamstring muscle shortness. 2-Exclusion criteria: Unwillingness to participate in the study.

Intervention groups
Intervention Group1:Tecartherapy with Static stretching:This group will recieve capacitive Tecartherapy for 15 minutes at the frequency of 0.5 MHz and at the intensity of 140 Hz before the static stretch.(Details of stretching are provided in control group) Intervention group2: Ultrasound therapy with static stretching: This group will receive continuous ultrasound therapy at a frequency of 1 MHz and at the intensity of 2 W/cm2 and at a speed of 2 cm / s before static stretching for 15 minutes. Control group:static stretch:Stretching is given for 30 seconds. After each stretch, rest for 5 seconds and repeat four times to achieve a total of two minutes. This process is performed three sessions a week for every other day.

Main outcome variables
flexibility of proximal head of hamstring؛ flexibility of distal head of hamstring

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20190920044826N1**
Registration date: **2020-01-18, 1398/10/28**
Registration timing: **retrospective**

Last update: **2020-01-18, 1398/10/28**
Update count: **0**

Registration date
2020-01-18, 1398/10/28

Registrant information

Name
Pouria mohamadi

Name of organization / entity

Country
Iran (Islamic Republic of)

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+98 26 3650 3372

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-06-22, 1398/04/01

Expected recruitment end date
2019-08-22, 1398/05/31

Actual recruitment start date

2019-07-13, 1398/04/22

Actual recruitment end date

2019-08-22, 1398/05/31

Trial completion date

2019-08-22, 1398/05/31

Scientific title

Comparison of the short-term effect of therapeutic ultrasound and TECAR therapy on hamstring muscle flexibility in healthy athlete men with hamstring shortness: A randomized controlled trial

Public title

Evaluation of the effect of tecartherapy on hamstring muscles shortness

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

20-30 years old shortness of hamstring muscle based on 90-90 test. Men must do exercise 3 times a week and 2 hours in each session.

Exclusion criteria:

Unwillingness to participate in the study contraindication of the TECAR intervention . history of orthopedic and neurological injuries in the lower extremities in last 6 month. Acute low back pain and low back problems

Age

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

Gender

Male

Phase

N/A

Groups that have been masked

- Investigator

Sample size

Target sample size: **30**

Actual sample size reached: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

Each individual were included in one of the TECAR therapy or ultrasound therapy or static stretching groups by simple randomization method (using the dice throw method). By throwing dice the numbers 1 and 2 fall into group 1 (TECAR therapy), and the numbers 3 and 4 fall into group 2 (ultrasound) and the numbers 5 and 6 fall into group 3 (static stretch).

Blinding (investigator's opinion)

Single blinded

Blinding description

A physiotherapist who performs pre-treatment evaluations, at the end of the first session, and at the end of the third session will not be aware of the type of treatment's group. treatment will be performed by the second physiotherapist.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of School of Nursing and Midwifery & Rehabilitation - Tehran University of Medical

Street address

Nosrat st. Tohid sq. Tehran

City

Tehran

Province

Tehran

Postal code

1419733171

Approval date

2019-06-25, 1398/04/04

Ethics committee reference number

IR.TUMS.FNM.REC.1398.063

Health conditions studied

1

Description of health condition studied

Shortness of Hamstring Muscle

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Flexibility of Distal Head of Hamstring Muscle

Timepoint

Before treatment ، Immediately after the first session ، Immediately after the third session (Intervention sessions take place 3 days in a week)

Method of measurement

Passive 90-90 test ، Active 90-90 test

Secondary outcomes

1

Description

Flexibility of Proximal Head of Hamstring

Timepoint

Before treatment ، Immediately after the first session ، Immediately after the third session (Intervention sessions take place 3 days in a week)

Method of measurement

Sit and Reach Test

Intervention groups

1

Description
Intervention Group 1:Tecartherapy with Static stretching: This group will recieve capacitive Tecartherapy for 15 minutes at the frequency of 0.5 MHz and at the intensity of 140 Hz before the static stretch , with the passive electrode plate size 230×170 mm, And the active electrode is 5 cm2 on the hamstring muscle group for 3 sessions in a week every other day.(Details of stretching are provided in control group)
Category
Rehabilitation

2

Description
Intervention group 2: Ultrasound therapy with static stretching: This group will receive continuous ultrasound therapy at a frequency of 1 MHz and at the intensity of 2 W/cm2 and at a speed of 2 cm / s before static stretching (details of stretching in the control group) for 15 minutes on the hamstring muscle group in relax situation for 3 sessions in a week every other day. For this reason, the patient is placed on a prone position.(Details of stretching are provided in control group)
Category
Rehabilitation

3

Description
Control group:static stretch: The individual is in an supine position and the hip and knee joints are stretched at 90 degrees flexion. To prevent posterior pelvic tilt and lumbar flexion، pelvic is fixed. For this reason, the opposite leg is pushed down by the examiner. The examiner gently lifts the person's knees to straighten the knee to reach the end point of the range of motion and feel stretched under his arm. Stretching is given for 30 seconds, very slowly, gently and gradually to prevent stimulation of stretch reflex and increase muscle tone. After each stretch, rest for 5 seconds and repeat four times to achieve a total of two minutes.this process were performed for 3 sessions in a week every other day.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center
School of Rehabilitation of Tehran University of Medical Sciences
Full name of responsible person
Pouria Mohamadi
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Tehran University of Medical Sciences
Full name of responsible person
Dr.Mohamadali Sahraian
Street address
Vice Chancellor for Research and Technology of Tehran University of Medical Sciences.,6th Floor.,University Central Office., Qods Ave.,Keshavarz Blvd
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1417653761
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+98 21 8163 3685
Fax
Email
vcr@tums.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
Tehran 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
Tehran University of Medical Sciences
Full name of responsible person
Pouria Mohamadi

Position
Master of Sciences Student
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Bachelor
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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
Only part of the data, such as information about the main outcome, can be shared.
When the data will become available and for how long
One year after the results were published
To whom data/document is available
Available to all physiotherapists.
Under which criteria data/document could be used
No more conditions.
From where data/document is obtainable
pooryamohamadi1372@gmail.com Email this address
What processes are involved for a request to access data/document
It takes about 3 months to send the data back to the applicant
Comments