

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

24 Jun 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 receive 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/cm<sup>2</sup> 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)

##### Phone

+98 26 3650 3372

##### Email address

pooryamohamadi1372@gmail.com

##### 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 receive 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 cm<sup>2</sup> 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/cm<sup>2</sup> 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 a relaxed 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 a supine position and the hip and knee joints are stretched at 90 degrees flexion. To prevent posterior pelvic tilt and lumbar flexion, the pelvis 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 was 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

##### Street address

Enghlab Ave, Shemiran

#### City

Tehran

#### Province

Tehran

#### Postal code

1148956111

#### Phone

+98 21 7753 0670

#### Email

rehabilitation@tums.ac.ir

## 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

##### City

Tehran

##### Province

Tehran

##### Postal code

1417653761

##### Phone

+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

**Latest degree**

Bachelor

**Other areas of specialty/work**

Physiotherapy

**Street address**

No.55, Shahid Parsi Ave., Shouhadaye Fardis Blvd.,  
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**Province**

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**Postal code**

3175998467

**Phone**

+98 26 3650 3372

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pooryamohamadi1372@gmail.com

**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Tehran University of Medical Sciences

**Full name of responsible person**

Pouria Mohamadi

**Position**

Master of Sciences Student

**Latest degree**

Bachelor

**Other areas of specialty/work**

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**Person responsible for updating data****Contact****Name of organization / entity**

Tehran University of Medical Sciences

**Full name of responsible person**

Pouria Mohamadi

**Position**

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pooryamohamadi1372@gmail.com

**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**