

Clinical Trial Protocol

Iranian Registry of Clinical Trials

11 Sep 2026

The comparison of immediate effects of Whole body vibration and muscle energy technique on hamstring muscle flexibility and stiffness in healthy young females.

Protocol summary

Study aim

Determination of acute effect of Whole Body vibration(WBV) and Muscle Energy technique(MET) on hamstring flexibility and stiffness

Design

The present study was a Randomized clinical trial. Randomization was done using balanced block randomization method. Fifty six patients were enrolled through two parallel groups

Settings and conduct

The study was carried out at the Biomechanics Laboratory of Tehran University of Medical Sciences. At first, participants were evaluated with Active Knee Extension test, Modified Sit & Reach test and Stiffness measuring. Then they were randomly assigned to one of the treatment groups. After the intervention, they did the same pre-treatment assessment again.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Women aged between 18-30 years old; BMI between 18.5-29.5; 20 degree or more extension lack during active knee extension; Satisfaction with participation in the project. Non inclusion criteria: Cardiovascular, Respiratory, Neurology and Musculo-skeletal diseases; using lower extremity prosthesis; pregnancy; severe deformity of lower extremity

Intervention groups

Intervention group 1 (Muscle Energy Technique): In the MET group, the isometric contraction of the hamstring muscle in 3 parts and the transfer of the knee to the greater range of motion are used to increase flexibility and reduce stiffness. Intervention group 2 (Whole Body Vibration): In the WBV group, vibration by platform with 3 HZ frequency and 2mm amplitude is used to increase flexibility and reduce stiffness.

Main outcome variables

Hamstring proximal head flexibility; Hamstring distal head flexibility; Stiffness

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180926041140N1**

Registration date: **2018-11-11, 1397/08/20**

Registration timing: **retrospective**

Last update: **2018-11-11, 1397/08/20**

Update count: **0**

Registration date

2018-11-11, 1397/08/20

Registrant information

Name

Maryam Azizi

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 7752 8468

Email address

pt_maryamazizi@yahoo.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-06-30, 1397/04/09

Expected recruitment end date

2018-10-29, 1397/08/07

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The comparison of immediate effects of Whole body vibration and muscle energy technique on hamstring muscle flexibility and stiffness in healthy young females.

Public title

The comparison of WBV and MET on flexibility and stiffness

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Age between 18-30 years old 20 degree or more extension lack during active knee extension BMI between 18.5 to 29.5 Satisfaction with participation in the project

Exclusion criteria:

Participation in sport activities 3 days or more in a week
Severe deformities in the back, hip, knee and ankle
Lower extremity prosthesis Chronic musculo-skeletal disorders Pregnancy Neurological and Vestibular disorders Cardiovascular and Respiratory disorders History of Epilepsy, Seizure and Migraine History of hamstring strain

Age

From **18 years** old to **30 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **56**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization was performed using a Balanced Block method, in which we designed four blocks of available probabilities, so that in each block, two were from the MET group and two from the WBV group, and the number of possible probabilities was 6. Then, using Excel we created a list of numbers from 1 to 6 and arranged the blocks according to the list of numbers.

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee on biomedical research of Tehran
University of Medical Sciences

Street address

Headquarters of the Ministry of Health and Medical Education, Simaye Iran st, Qods township

City

Tehran

Province

Tehran

Postal code

1148956111

Approval date

2018-06-20, 1397/03/30

Ethics committee reference number

IR.TUMS.VCR.REC.1397.194

Health conditions studied

1

Description of health condition studied

Hamstring tightness

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Flexibility of hamstring distal head

Timepoint

Before and immediately after intervention

Method of measurement

Goniometer

2

Description

Flexibility of hamstring proximal head

Timepoint

Before and immediately after intervention

Method of measurement

Flex tester box

3

Description

Hamstring stiffness

Timepoint

Before and immediately after intervention

Method of measurement

Biodex system 3

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Muscle energy technique, controlled isometric contraction from the target muscle and then transfer the knee to the greater extension range

Category

Rehabilitation

2

Description

Intervention group: Whole body vibration, vibrations with a frequency of 30 Hz and amplitude of 2 mm are applied through the platform to the whole body.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Biomechanic laboratory of rehabilitation faculty,
Tehran University of Medical Sciences

Full name of responsible person

Maryam Azizi

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At the corner of Safi Alishah street, Enqelab-Eslami
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Seyyed Mohsen Mir

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Rehabilitation@tums.ac.ir

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

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

Maryam Azizi

Position

Student

Latest degree

Bachelor

Other areas of specialty/work

Physiotherapy

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Other areas of specialty/work

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

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

No more information

Study Protocol

No - There is not a plan to make this available

Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

No - There is not a plan to make this available

Clinical Study Report

No - There is not a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available