Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Jun 2026

Comparison of immediate effect of whole body vibration, high power pain threshold ultrasound and deep transverse friction massage on treatment of males upper trapezius active myofascial trigger points

Protocol summary

Study aim

Determining the immediate effect of whole body vibration, high power pain threshold ultrasound and deep transverse friction massage and their comparison with each other in the treatment of males upper trapezius active myofascial trigger points

Design

Clinical trial, with parallel groups, double-blind, randomized, phase 3 on 66 patients.

Settings and conduct

patients with trigger point of the upper trapezius muscle referred to the clinic of the Faculty of Rehabilitation of Tehran University of Medical Sciences with age 18 to 45 years are examined. After finding the trigger point based on the findings of travel and simones, the location of the trigger point is marked At the beginning of the session. the active range of motion of the lateral flexion of the neck to the opposite side, the visual analog scale and the pain pressure threshold are recorded by another Therapist.

Participants/Inclusion and exclusion criteria

Inclusion criteria Age 18 to 45 years full range of abduction and scaption and internal rotation of the shoulder. only one trigger point in the upper trapezius muscle based on clinical findings:1- Touching the taut band inside the muscle2- Existence of a very sensitive point inside the taut band3. The presence of pain at least three based on the VAS scale in the initial evaluation4- The occurrence of a refferal and familiar pain pattern when stimulating a taut band. exclusion criteria Any neurological disease, fractures, posterior disorders, and any disease or use of substances that impair consciousness

Intervention groups

hole body vibration, high power pain threshold ultrasound ,deep transverse friction massage

Main outcome variables

Measuring pain through visual analog scale The active range of motion of the lateral flexion of the neck to the opposite side by the goniometer Pressure threshold pain through the algometer

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200518047498N1**
Registration date: **2020-06-12, 1399/03/23**
Registration timing: **prospective**

Last update: **2020-06-12, 1399/03/23**
Update count: **0**

Registration date

2020-06-12, 1399/03/23

Registrant information

Name

Iran Mehrdad

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 51 4426 3075

Email address

dpttehran@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-06-20, 1399/03/31

Expected recruitment end date

2020-08-21, 1399/05/31

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of immediate effect of whole body vibration, high power pain threshold ultrasound and deep transverse friction massage on treatment of males upper trapezius active myofascial trigger points

Public title

Comparison of immediate effect of whole body vibration, high power pain threshold ultrasound and deep transverse friction massage on treatment of males upper trapezius active myofascial trigger points

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Age 18 to 45 years The dominance of the right hand Ability to perform active movement in the full range of abduction and scaption and internal rotation of the shoulder There is only one trigger point in the upper trapezius muscle based on clinical findings that have the following characteristics:1- Touching the taut band inside the muscle2- Existence of a very sensitive point inside the taut band3. The presence of pain at least three based on the VAS scale in the initial evaluation4- The occurrence of a refferal and familiar pain pattern when stimulating a taut band.

Exclusion criteria:

History of shoulder surgery or trauma (dislocation, replacement, joint sprain) in the last 6 months History of chronic or acute diseases such as neurological, cardiac and metabolic diseases Pregnancy during the test Skin lesions, infections or inflammation in the trigger point area Take sedatives before or during treatment History of neck trauma injuries (Wiplash injury) History of neck surgery Any malignancy and bad posture Fibromyalgia syndrome Drug abuse Consumption of corticosteroids reatment of trigger points in the past month evere hearing problems - vision and color blindness Epilepsy Taking any medication or any specific illness that affects a person's cognitive symptoms Drink any stimulant drink (such as tea, alcohol, coffee and cocoa) before the test session. People with lower education than diplomas

Age

From **18 years** old to **45 years** old

Gender

Male

Phase

3

Groups that have been masked

- Participant
- Investigator

Sample size

Target sample size: **66**

Randomization (investigator's opinion)

Randomized

Randomization description

Patients are randomly assigned to www.randomization.com in three groups: WBV, HPPT US, and DTFM. Each participant is assigned a number, and then the numbers Through this site are randomly divided into three groups.

Blinding (investigator's opinion)

Double blinded

Blinding description

Recording of initial evaluation information and marking of triggerpoint location and reassessment after treatment is performed by one therapist and treatment is performed by another therapist.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Vice-Chancellor in Research Affairs- Tehran University of Medical Sciences

Street address

Floor 13th ,Block A,Central Headquarters of the Ministry of Health, Treatment and Medical Education ,Sima Iran St.Between Flamak South and Zarafshan,

City

Tehran

Province

Tehran

Postal code

1467664961

Approval date

2020-02-03, 1398/11/14

Ethics committee reference number

IR.TUMS.VCR.REC.1398.903

Health conditions studied

1

Description of health condition studied

myofascial trigger points

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

The range of motion of the sideflexion of the neck that is 25 to 45 degrees.

Timepoint
Three times before and immediately after treatment
Method of measurement
The patient is placed in a flat position with a 90-degree flexion of the knee and thigh while the hands are resting on the thighs. The method of measurement is that the Goniameter axis is placed on the spinous process of seventh cervical vertebra. the fixed arm of the Goniameter perpendicular to the ground and its movable arm is placed parallel to the hypothetical vertical line of the head. To measure range of motion, the movement of the head is placed in an anatomical position and the end of the movement of the ear is close to the shoulder.

2

Description
pain Pressure threshold that the pressure sensation becomes a sensation of pain or discomfort
Timepoint
Three times before and immediately after treatment
Method of measurement
The algorithmic device has a disc with a cross-sectional area of 1 cm2, which is pressed perpendicular to the desired point, to start the patient's pain.This test is performed 3 times for each point with a time interval of 30 seconds and an average of three data is recorded.

3

Description
Pain measured by the visual scale of pain, which is between zero and ten
Timepoint
before and immediately after treatment
Method of measurement
The visual scale of the pain is a 100 mm unmarked ruler, with the number zero in the painless position and the number 100 in the most painful position. After acquainting the person with this diagram, we ask him to mark the amount of pain on the ruler. We then measure the distance from the zero point to the mark.

4

Description
age
Timepoint
Before treatment, which should be between 18 and 45 years
Method of measurement
Through a questionnaire and by year

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group (WBV Whole Body Vibration): Preliminary explanations about WBV (the vibrating machine to be used in this study will be Power plate, USA, which transmits energy simultaneously and based on the Mass spring system) and how The placement on the vibration surface is given to the person, so that the person is asked to place his hands with the full extension of the elbow so that the joint is not locked, in the middle of the Platform, so that the shoulders are in the flexion position at 90 and There is no internal or external rotation in the upper limb. The head is placed in the direction of the trunk and spine and the person is asked to look at the ground so that it has no rotation or flexion and extension in the neck . The lower limb is kneeling (for safety on the ground). The person is asked to stick his hands firmly to the vibration plate and try to keep his position steady during the vibration. During the time the vibration is applied; If the person expresses discomfort, we will discontinue it. (39) WBV with a frequency of 30 Hz and a range of 5 mm, which includes 5 sets of one minute and one minute of rest between each set, is applied to the person .
Category
Rehabilitation

2

Description
Intervention group2(high power pain threshold ultrasound): After an introductory explanation of the HPPT US technique, the patient lies in a prone position while the head is in the neutral position and the hands are placed next to the body. the ultrasound probe is placed permanently on the trigger point. The frequency is set to one MHz, and the intensity is increased from 0.5 w / □cm□ ^ 2 to allow the patient to feel the unpleasant sensation. then the probe is hold for 4 seconds and then reduce the intensity by 50% and move the probe over and around the trigger point. This process is done several times over three minutes.
Category
Rehabilitation

3

Description
Intervention group3(deep transverse friction massage): After an introductory explanation of the DTFM technique, the patient lies supine while the head is in the neutral position and the hands are on the side of the body. The application of force is done by using four fingers, which are reinforced by the middle finger. The force is applied slowly and with a little pain on the trigger point of the upper trapezius muscle for three minutes.
Category
Rehabilitation

Recruitment centers

1

Recruitment center
Name of recruitment center

Faculty of Rehabilitation, Tehran University of Medical Sciences

Full name of responsible person
MohamadReza Hadian

Street address
Faculty of Rehabilitation, Tehran University of Medical SciencesPich Shemiran,Enghelab

City
tehran

Province
Tehran

Postal code
114895611

Phone
+98 21 7753 5132

Email
Rehabilitation@tums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Mohammad Ali Sahraian

Street address
Faculty of Rehabilitation, Tehran University of Medical SciencesPich Shemiran,Enghelab

City
Tehran

Province
Tehran

Postal code
114895611

Phone
+98 21 7753 5132

Email
dpttehran@gmail.com

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
Iran Mehrdad

Position
Master's degree student in physiotherapy

Latest degree
Bachelor

Other areas of specialty/work
Physiotherapy

Street address
No179,infront of drug store ,near moosavi st, somaye Ave

City
Tehran

Province
Tehran

Postal code
1581749711-4

Phone
+98 51 4426 3075

Fax

Email
dpttehran@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Iran Mehrdad

Position
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Latest degree
Bachelor

Other areas of specialty/work
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+98 51 4426 3075

Fax

Email
dpttehran@gmail.com

Person responsible for updating data

Contact

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Iran Mehrdad

Position

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dpttehran@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)

Undecided - It is not yet known if there will be a plan to make this available

Study Protocol

Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan

Undecided - It is not yet known if there will be a plan to make this available

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary

Undecided - It is not yet known if there will be a plan to make this available