# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

09 Nov 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)

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+98 51 4426 3075

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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,

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**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

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## Sponsors / Funding sources

### 1

**Sponsor**

**Name of organization / entity**
Tehran University of Medical Sciences

**Full name of responsible person**
Mohammad Ali Sahraian

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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**
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

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## Person responsible for scientific inquiries

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**Latest degree**
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## Person responsible for updating data

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**Position**

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**Latest degree**

Bachelor

**Other areas of specialty/work**

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## 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