

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Prophylactic and therapeutic effects of active isolated stretching, myofascial release and olive oil phonophoresis in exercise induced muscle damage

#### Protocol summary

##### Study aim

Comparison of Prophylactic and therapeutic effects of active isolated stretching, myofascial release and olive oil phonophoresis in exercise induced muscle damage

##### Design

The current study investigated the prophylactic and therapeutic effects of myofascial release (MFR), Active isolated stretching (AIS) and Olive oil phonophoresis protocol versus control over a period of seven days in experimentally induced muscle soreness. The study design was a single blinded, 4 X 2 X 9 factorial design with repeated measures, the three factors were intervention (s), limb (s) and time. The repeated measures involved the time factor

##### Settings and conduct

The study was carried out in Healthy, untrained and sedentary college/university students age ranging between 18-30 years without any upper arm injury or musculoskeletal disease at university of Sargodha. After screening, Randomization was carried out by stratified block randomization scheme. The subjects was allocated to one of the interventional group or control group. The outcome measures was recorded by a trained physical therapist of the department who was blinded about treatment and time status.

##### Participants/Inclusion and exclusion criteria

Healthy, untrained and sedentary adults age ranging between 18-30 years, without any upper arm injury or musculoskeletal disease

##### Intervention groups

The study constitutes Active isolated stretching , Myofascial release, olive oil Phonophoresis, and a control group. We had used limb to limb comparison model in each group, randomly one limb was allocated to prophylactic intervention limb (PIL) and the other to therapeutic intervention limb (TIL)

##### Main outcome variables

1. Muscle pain intensity by VAS 2 Muscle Soreness Score by VAS 3. Pain pressure Threshold by Algometer 4. Passive Range of motion by univerval goniometer 5. Grip strength by dynamometer

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20181228042154N1**

Registration date: **2019-06-08, 1398/03/18**

Registration timing: **retrospective**

Last update: **2019-06-08, 1398/03/18**

Update count: **0**

##### Registration date

2019-06-08, 1398/03/18

##### Registrant information

##### Name

Muhammad Mustafa Qamar

##### Name of organization / entity

University of Sargodha

##### Country

Pakistan

##### Phone

+92 48 9232015

##### Email address

mmustafaqamar@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2018-09-01, 1397/06/10

##### Expected recruitment end date

2018-12-10, 1397/09/19

**Actual recruitment start date**

2018-09-01, 1397/06/10

**Actual recruitment end date**

2018-12-10, 1397/09/19

**Trial completion date**

2020-12-31, 1399/10/11

**Scientific title**

Prophylactic and therapeutic effects of active isolated stretching, myofascial release and olive oil phonophoresis in exercise induced muscle damage

**Public title**

exercise-induced muscle damage; prophylactic and therapeutic countermeasures

**Purpose**

Prevention

**Inclusion/Exclusion criteria****Inclusion criteria:**

Healthy, untrained and sedentary adults age ranging between 18-30 years, without any upper arm injury or musculoskeletal disease. Absence of any known history of cardiovascular, neurological or metabolic disorders. Not trained for resistance training in the previous 6 months.

**Exclusion criteria:**

Participants were excluded who are Using Corticosteroid, NSAID or other painkillers• Taking some herbal medicine• Having a history of Psychiatric illness including anxiety, depression or bipolar disorder• Having a Previous history of any surgical procedure of the shoulder, elbow or wrist within 6 months before the participation• Having symptomatic osteoarthritis of shoulder, elbow, or wrist, • Having any skin abnormalities of upper extremity that may affect local tolerability• Having a History of allergy (cutaneous) • Having a History of known analgesic, alcohol or narcotic abuse• Having Joint hypermobility

**Age**

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

**Gender**

Both

**Phase**

N/A

**Groups that have been masked**

- Outcome assessor

**Sample size**

Target sample size: **130**

More than 1 sample in each individual

Number of samples in each individual: **2**

We used limb to limb comparison model in each group , randomly one limb was allocated to prophylactic intervention limb (PIL) and the other to therapeutic intervention limb (TIL)

Actual sample size reached: **120**

More than 1 sample in each individual

Actual sample size in each individual: **2**

We had used limb to limb comparison model in each group , randomly one limb was allocated to prophylactic intervention limb (PIL) and the other to therapeutic intervention limb (TIL)

**Randomization (investigator's opinion)**

Randomized

**Randomization description**

Randomization was carried out by stratified block randomization scheme. The subjects were allocated to one of the interventional group or control group. An independent allocator randomly allocated the participants for the allocated group. The subjects were instructed and explained about the study protocol and rating criteria of the variables.

**Blinding (investigator's opinion)**

Single blinded

**Blinding description**

All the data was recorded by a trained physical therapist of the department who was blinded about treatment and time status. He kept all record of performed intervention which was collected at the end of the study for statistical analysis.

**Placebo**

Not used

**Assignment**

Factorial

**Other design features**

The study design of the current study was a 4 X 2 X 9 factorial design with repeated measures, the three factors were intervention (s), limb (s) and time. The repeated measures involved the time factor. The study constitutes Active isolated stretching, Myofacial release, olive oil Phonophoresis, and a control group. We had used limb to limb comparison model in each group , randomly one limb was allocated to prophylactic intervention limb (PIL) and the other to therapeutic intervention limb (TIL)

**Secondary Ids**

empty

**Ethics committees****1****Ethics committee****Name of ethics committee**

University of Sargodha ethics committee

**Street address**

Main university road, university of sargodha

**City**

Sargodha

**Postal code**

40100

**Approval date**

2017-10-30, 1396/08/08

**Ethics committee reference number**

no/uos/oric/1266

**Health conditions studied****1****Description of health condition studied**

Exercise induced muscle damage

**ICD-10 code**

M79

**ICD-10 code description**

Other and unspecified soft tissue disorders, not elsewhere classified

**Primary outcomes****1****Description**

Pain intensity

**Timepoint**

Recorded at baseline, after one hour and from day 1 to 7 after the induction of muscle soreness.

**Method of measurement**

Pain intensity was assessed by Visual analog scale.

**2****Description**

Muscle Soreness Score

**Timepoint**

Recorded at baseline, after one hour and from day 1 to 7 after the induction of muscle soreness.

**Method of measurement**

Muscle soreness was assessed by Visual analog scale.

**3****Description**

Pain pressure Threshold

**Timepoint**

Recorded at baseline, after one hour and from day 1 to 7 after the induction of muscle soreness.

**Method of measurement**

Pain Pressure threshold was measured by algometer (Baseline, Fabrication Enterprises, USA).

**4****Description**

Passive Range of motion at wrist joint

**Timepoint**

Recorded at baseline, after one hour and from day 1 to 7 after the induction of muscle soreness.

**Method of measurement**

It was measured by a universal goniometer (ISOM Plastic, Isokinetics incorporation, USA)

**5****Description**

Grip strength

**Timepoint**

Recorded at baseline, after one hour and from day 1 to 7 after the induction of muscle soreness.

**Method of measurement**

Recorded by a hand-held dynamometer (Baseline, Fabrication Enterprises, USA).

**Secondary outcomes**

empty

**Intervention groups****1****Description**

Active isolated stretching Group: The participants received an unassisted AIS (Agonist contraction stretching) of the flexor of the hand at the wrist joint. After sitting on a comfortable, height adjusted chairs (90 degrees of hip and knee flexion and feet on floor), each participant was advised to actively move the hand into extension at the wrist joint, beginning the stretch of the flexors. Then requested to use their left hand to gently move the hand into further extension and apply a gentle stretch (Force should not exceed 1 pound). The stretch phase was not exceeded more than 2 seconds. After performing the stretch, A time of 10 seconds was given to relax. The same protocol and procedure were used for all participants during the project. The participants repeated the same protocol for 8- 10 times . The prophylactic limb received AIS before the induction of muscle soreness, while therapeutic limb received AIS after the induction of muscle soreness.

**Category**

Rehabilitation

**2****Description**

Myofascial Release Group: The subjects in MFR group was performed self-myofascial release technique by using Tennis ball with an invariant stroking rhythm from wrist all the way to the elbow on flexor aspect of the forearm with speed of 2-3 seconds a with moderate pressure. Circular, back and forth stroking were performed in the prescribed area. The prophylactic limb received MFR before the induction of muscle soreness, while therapeutic limb received MFR after the induction of muscle soreness.

**Category**

Rehabilitation

**3****Description**

Olive oil Phonophoresis group. The participants received 1 MHz continuous ultrasound (Enraf Nonius Sonopuls 490) with a power of 1 Watt/cm<sup>2</sup> was used with a 3.5 cm diameter probe to the flexor aspect of the forearm from elbow to wrist in circular and figure of 8 manners. To ensure absorption, the probe was used at right angles. The session comprised of 10 minutes. The prophylactic limb received phonophoresis before the induction of muscle soreness, while therapeutic limb received phonophoresis after the induction of muscle soreness.

**Category**

Rehabilitation

#### 4

##### **Description**

Control group: They follow the same routine of physical activity and diet

##### **Category**

Rehabilitation

### **Recruitment centers**

#### 1

##### **Recruitment center**

###### **Name of recruitment center**

University of sargodha

###### **Full name of responsible person**

Muhammad Mustafa Qamar

###### **Street address**

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###### **Phone**

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### **Sponsors / Funding sources**

#### 1

##### **Sponsor**

###### **Name of organization / entity**

University of Sargodha

###### **Full name of responsible person**

Muhammad Mustafa Qamar

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##### **Grant name**

National Research Program for Universities

##### **Grant code / Reference number**

10094

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

No

##### **Title of funding source**

Higher Education Commission, Pakistan

##### **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**

University of Sargodha

###### **Full name of responsible person**

Muhammad Mustafa Qamar

###### **Position**

Assistant Professor

###### **Latest degree**

Specialist

###### **Other areas of specialty/work**

Physiotherapy

###### **Street address**

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### **Person responsible for scientific inquiries**

##### **Contact**

###### **Name of organization / entity**

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###### **Full name of responsible person**

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###### **Position**

Assistant Professor

###### **Latest degree**

Specialist

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## Person responsible for updating data

### Contact

**Name of organization / entity**

University of Sargodha

**Full name of responsible person**

Ayesha Basharat

**Position**

Lecturer

**Latest degree**

Master

**Other areas of specialty/work**

Physiotherapy

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**Phone**

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**Email**

doc\_ayesha@yahoo.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**

After completion of the study, I will publish it

**When the data will become available and for how long**

Twelve months

**To whom data/document is available**

Faculty members and students

**Under which criteria data/document could be used**

Request through email

**From where data/document is obtainable**

Email to mmustafaqamar@gmail.com

**What processes are involved for a request to access data/document**

Email to mmustafaqamar@gmail.com

**Comments**