

## Immediate effect of myofascial decompression versus passive stretching on unilateral trapezitis pain in domestic helpers

Mandira Sangpal <sup>1,\*</sup>, Siddhi Tendulkar <sup>2</sup> and Sucheta Golhar <sup>3</sup>

<sup>1</sup> Intern, PES Modern College of Physiotherapy, Pune Maharashtra, India.

<sup>2</sup> Assistant Professor, PES Modern College of Physiotherapy, Pune Maharashtra, India.

<sup>3</sup> Principal, Professor, PES Modern College of Physiotherapy, Pune Maharashtra, India.

International Journal of Science and Research Archive, 2023, 09(02), 639–647

Publication history: Received on 22 June 2023; revised on 01 August 2023; accepted on 04 August 2023

Article DOI: <https://doi.org/10.30574/ijrsra.2023.9.2.0601>

### Abstract

**Objectives:** The purpose of this study is to examine the immediate effects of passive stretching vs myofascial decompression on unilateral trapezius pain to establish one treatment option for those domestic helpers who fail to do daily exercise and cannot visit OPD or clinic for long-term treatment.

**Method:** The study began with the synopsis presentation to an ethical committee of PES Modern College of Physiotherapy, and ethical clearance from the committee was obtained. Various home was visited to assess trapezitis among domestic helpers. The subjects were selected based on inclusion and exclusion criteria. Written consent was taken from issues before starting the intervention. Pre and Post intervention data recorded.

**Result:** The finding of this study leads that passive stretching and myofascial decompression had shown a significant decrease in pain post-treatment. But the relief through pain was observed more among those who were treated with cupping therapy.

**Conclusion:** This study shows that Myofascial Decompression (cupping therapy) is more effective than passive stretching for trapezitis pain among domestic helpers. In the future, cupping treatment will be one treatment option to reduce pain effectively in fewer treatment sections.

**Keywords:** Immediate effect; Cupping therapy; Passive stretching; Trapezitis pain; Repetitive work

### 1. Introduction

Domestic assistants frequently do repeat and physically demanding chores, which can negatively affect their performance and general well-being due to musculoskeletal discomfort; this discomfort can, particularly in the trapezius muscles, as it is in a demanding position during much work.

The trapezius is a major back muscle responsible for moving, rotating and stabilising the scapula and extending the head and neck.

It is a broad, flat, superficial muscle covering most of the neck's upper back and posterior. Like most other muscles, two trapezius muscles, a left and a right trapezius, are symmetrical and meet at the vertebral column. Trapezitis is an inflammatory pain from the trapezius muscle causing severe pain over the neck region. Trapezius muscle pain is the most common musculoskeletal disorder in individuals who work with an awkward neck position for a prolonged period,

\* Corresponding author: Mandira Sangpal

with repetitive movements<sup>(1)</sup>. Trapezius pain is the classic stress pain, usually caused by too much stress or strain on the trapezius muscle.

The upper trapezius muscle is designated as postural muscle and is highly susceptible to overuse. Trapezius muscles help with neck rotation, side bending and extension. Bad posture while working is frequently incriminated as the leading cause of trapezititis. Repeatedly working the same chores with an awkward posture or putting stress on the same muscles for long durations can cause neck pain due to trapezititis. Pain in the muscles can decrease the range of motion of the neck. The decrease in motion can negatively affect the mobility of the neck. A limited range of motion increases soft tissue tightness, with an ensuing pain-spasm cycle that can be challenging to break<sup>(1)</sup>. On the one hand, Myofascial Decompression, also known as Cupping Therapy, is not used as such in clinical practice. On the other hand, passive stretching is the most commonly used treatment.

- **Myofascial decompression (cupping therapy)**-Cupping therapy is one of the oldest complementary therapies used in early human civilisation Evidence shows that it was first practised by the Ancient Egyptians more than 5500 years ago and then introduced to the Greeks, the Romans, and the rest of the world. This therapy's main postulated aim is to extract harmful substances or toxins from the body by creating negative pressure in a cup. Cupping therapy is done by applying small round cups made of glass, bamboo, ceramic or plastic to the area of pain. The negative pressure is generated by heat or by other vacuums like manual pumps. This negative pressure fixes the cup onto the skin and creates a suction effect which pulls the skin upwards into the cup. Its mechanism includes pain gate theory, conditioned pain modulation, and reflex zone<sup>(2)</sup>.
- **Passive Stretching**- Pain reduction following static stretching could be due to the inhibitory effect of the Golgi tendon organ, which reduces the motor neuronal discharges, thereby causing relaxation of the musculotendinous unit by resetting length. These reflexes will allow relaxation and decrease pain perception. Passive stretching reduces muscle tissue stiffness, most likely by signalling connective tissue remodelling via fibroblasts<sup>(3)</sup>.

### *Need of study*

The number of people who work as domestic helpers in India is estimated to range up to 4.75 million, of which 3 million are women (according to the International Labour Organization)<sup>(4)</sup>.

Incidences of trapezititis in domestic helpers are found to be expected.

Domestic helpers induce most ergonomic risk factors due to their work demands (chopping, mopping, dusting, washing utensils, washing clothing, cooking), so they are a venerable group to developing trapezititis<sup>(5)</sup>.

However, no study is yet to be done on domestic helpers with unilateral trapezius pain of the dominant side.

Hence our study is an effort to highlight a comparison between the immediate effect of myofascial decompression versus passive stretching with cryotherapy in pain relief among domestic helpers.

### *Aim*

The study compares the immediate effect of myofascial decompression and passive stretching on unilateral trapezititis pain in domestic helpers.

### *Objectives*

- To study the immediate effect of myofascial decompression with cryotherapy on trapezititis pain assessed using NPRS in domestic helpers.
- To study the immediate effect of passive stretching with cryotherapy on trapezititis pain assessed using NPRS in domestic helpers.
- To Compare the immediate effect of myofascial decompression and passive stretching with cryotherapy on trapezititis pain assessed using NPRS in domestic helpers.

## 1.1. Hypothesis

### 1.1.1. Null hypothesis ( $H_0$ )

There will be no significant difference between cupping and stretching for immediate pain relief over unilateral trapezitis in domestic helpers.

### 1.1.2. Alternate hypothesis

- Alternate hypothesis ( $H_1$ ): Cupping will significantly affect immediate pain relief over unilateral trapezitis in domestic helpers.
- Alternate hypothesis ( $H_2$ ): There will be a significant effect of stretching on immediate pain relief over unilateral trapezitis in domestic helpers.

---

## 2. Review of literature

- Arif J. Warren, PhD, ATC, Zach lacross, MS, ATC, [...], and Matthew S. O'Brien, PhD, ATC., in their study acute outcomes of myofascial decompression (cupping therapy) compared to self-myofascial release on hamstring pathology after a single treatment - Based Journal of Sports Physical Therapy, North American Sports Medicine Institute. Concluded that - Both treatments are beneficial in increasing hamstring length. Patients, though, felt an enhanced treatment effect using MFD over SMR for perceived benefits to hamstring flexibility. 2020 Aug 15
- Jongeun Yima, Jun Hyuck Park, Hongseob Kima, Juyeon Wooo, Soyeong Jooa, Sumin Lee, and Jewon Song ., in their study Comparison of the effects of muscle stretching exercises and cupping therapy on pain thresholds, cervical range of motion and angle: a cross-over study- Based Physical Therapy Rehabilitation Science. Concluded that - Cupping treatment is more effective in improving ROM of the cervical spine and pain thresholds than the McKenzie stretching technique. In the future, cupping treatment will be one of the treatment options for pain and ROM impairments of the cervical spine. 2017; July 9

---

## 3. Material and method

- Sample size- 70
- Study setting- Home visit in Pune.
- Sample method- convenient
- Study population - Domestic helpers
- Study design – a comparative study
- Study duration- 6 months

### 3.1. Criteria

#### 3.1.1. Inclusion criteria

- Females with trapezitis pain over the dominant side.
- Those performing at least three out of seven kitchen and household tasks (chopping, washing clothes, washing utensils, lifting, stirring, mopping and dusting) collectively not < 4 hours/day, working for over 20 years.
- Restrictions in neck movement due to trapezitis pain.
- Age 35- 45 years.
- Engaged in mild to moderate work.
- Mild to moderate pain as per NPRS (<6).

#### 3.1.2. Exclusion criteria

- Cervical radiculopathy
- Any degenerative arthritis of the spine
- Fracture of cervical vertebrae up to post one year
- Cervical spondylosis
- Spondylolisthesis
- Diagnosed case of fibromyalgia
- Recent surgery in and around the shoulder and cervical region.
- Traumatic neck injury

- Tumour over the neck region
- Any spine deformity

### 3.2. Materials

- Cupping set
- Coconut oil
- Cotton
- Ice pack
- Chair

### 3.3. Outcome measure

**NPRS** – the severity of pain is evaluated according to numeric which subject selected between 0 to 10

- 0 - represents no pain
- 10- represent the most severe pain

### 3.4. Procedure

- Study began with a presentation of a synopsis to an ethical committee in PES MCOP.
- Study began after the committee granted ethical clearance.
- The study involved a human sample; the samples were taken only after the ethical committee approval. The individual was informed about the study.
- The various homes were visited. Many trapezitis patients who work as domestic helpers experiencing mild to moderate pain on NPRS have been selected based on inclusion criteria.
- The subjects were explained about the study, and their consent was obtained before starting treatment.
- Pre-assessment of the participants was done using outcome measure NPRS
- Seventy females fulfilling the inclusion criteria having unilateral trapezitis were considered for the study.
- The study population consisted of between 35 to 45 years of age
- Two groups were divided using the lottery method; the subjects were divided into group 1, receiving myofascial decompression (cupping therapy) and group 2, receiving passive stretching.
- Group 1 received Myofascial decompression (Fig.1)
- Patient position: sitting on a chair comfortably with a supported back, elbow flexed, and forearm placed on a pillow.
- Oil was applied over the trapezius using the cup itself, cups were selected according to the patient's surface area, cups were placed by applying pressure using the gun pressure was applied according to patient comfort. The pressure was applied for 10 min.
- Later, an area was cleaned using cotton, and an ice pack was applied for 5 min



**Figure 1** Cupping therapy

Group 2 received Passive stretching (Fig.2)

- Patient position: sitting comfortably in a supported chair, arm rested by the armrest. Back straight and sustained stretching was given for the upper trapezius. Passive stretching was applied for 30 sec with a 30-sec rest interval thrice.
- Later, a 5 min ice pack was applied.



**Figure 2** Stretching technique

- Post-assessment was done using an outcome measure numeric pain rating scale.
- Comparison of outcomes was done.
- Data analysis and interpretation were done.

### 3.5. Protocol

#### 3.5.1. Group 1

- Cupping protocol (static)
- 15 min of dry cupping<sup>(3)</sup>
- Positioning the patient in sitting with the back supported and comfortable. Clean the area, apply oil as lubricant place the cup at the site.
- 5 min of icing after cupping.

#### 3.5.2. Group 2

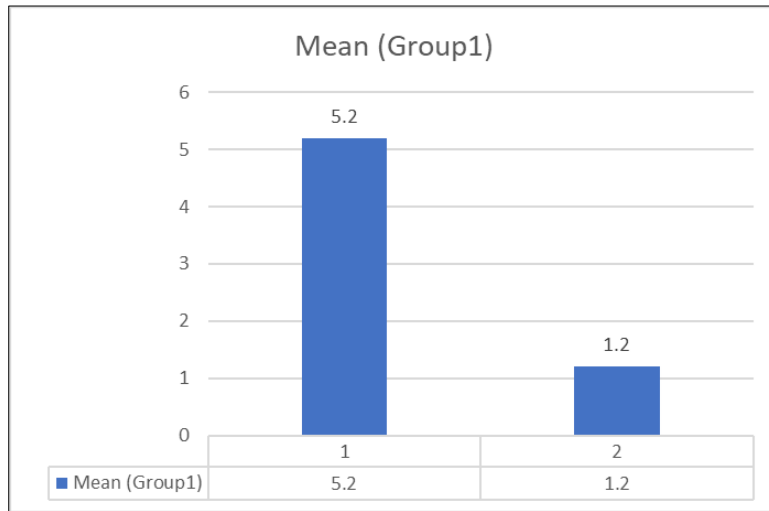
- Stretching protocol (static)
- Side stretch
- Flexion stretches
- Three times with 30-sec hold with 15-sec rest in between. Positioning the patient in sitting with the back supported and comfortable. 5 min of icing after stretching<sup>(3)</sup>.

### 3.6. Data analysis

**Table 1** Effectiveness of Myofascial decompression (Group 1) on NPRS. It shows the result.

	<b>PRE</b>	<b>POST</b>
Mean	5.20	1.20
SD	0.76	0.96
T value	23.6643	

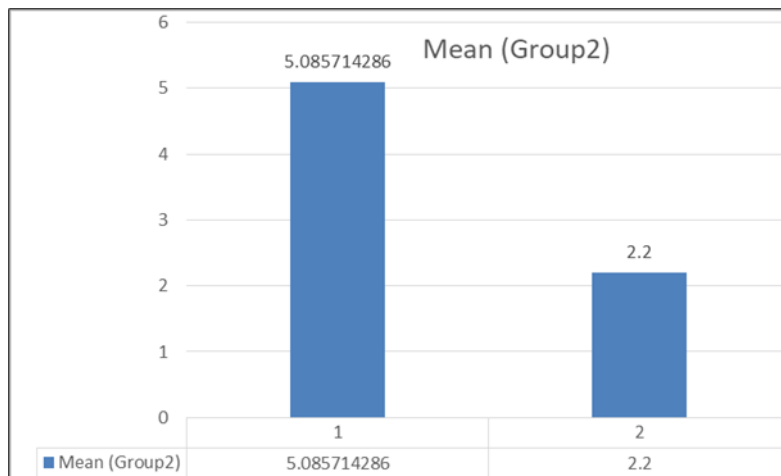
p-value	<0.0001	
Significance	Extremely significant	



**Figure 3** Effectiveness of Myofascial decompression Group 1 on NPRS. It shows the results.

**Table 2** Effectiveness of Passive Stretching (Group 2) on NPRS. It shows the result.

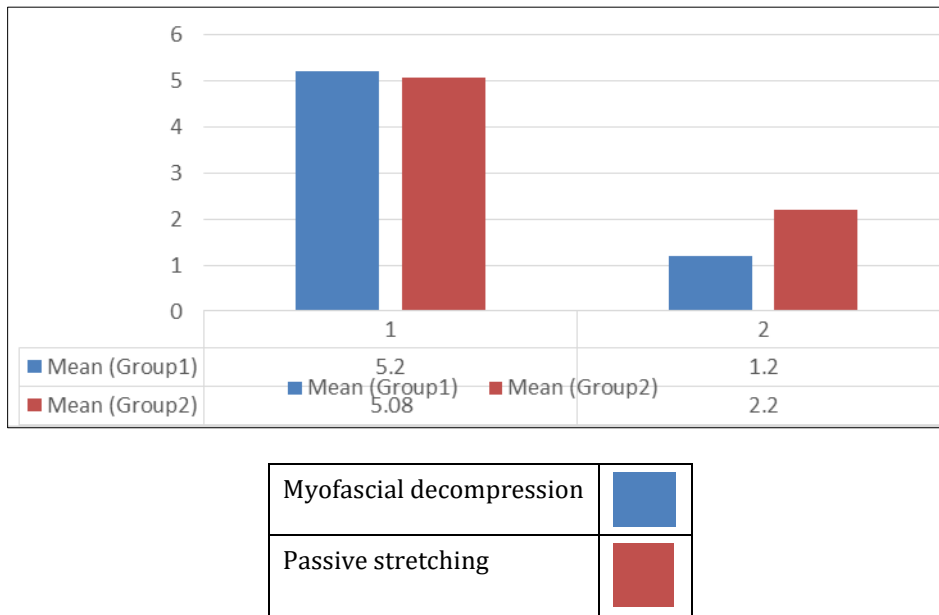
	PRE	POST
Mean	5.085714	2.20
SD	5.09	0.98
T value	20.2107	
P value	<0.0001	
Significance	Extremely significant	



**Figure 4** Effectiveness of Passive Stretching (Group 2) on NPRS: It shows the results

**Table 3 A** comparison of the mean difference between Myofascial decompression and Passive Stretching on pain.

	Group 1	Group 2
Mean	1.2	2.2
SD	0.96	0.99
T value	4.2722	
P value	<0.0001	
Significance	Extremely significant	



**Figure 5** Compares the mean difference between Myofascial decompression and Passive Stretching on pain.

#### 4. Results

After analysis of the data, we can see that.

- Table 1 and Figure 3 represent myofascial decompression pre-treatment and post-treatment data analysed by paired t-test and show highly significant with a p-value <0.0001.
- Table 2 and Figure 4 represent passive stretching pre-treatment and post-treatment data analysed by paired t-test and show highly significant with the p-value <0.0001.
- Table 3 and Figure 5 compare myofascial decompression and passive stretching post-treatment data analysed by unpaired t-test. It shows extreme significance on NPRS
- Hence Group 1 and Group 2 have significantly improved in reducing pain in female domestic helpers with unilateral trapezitis, but Group 1 is more effective than Group 2. (Figure 5)

#### 5. Discussion

The study aimed to determine the immediate effect of Myofascial decompression vs Passive stretching on unilateral trapezitis pain in domestic helper females aged 35 to 45.

Upper trapezitis pain at the dominant hand in females who work as domestic helpers is more likely to appear as they are unaware of the ergonomics of working, making them more prone to trapezitis.

Several mechanisms act together as the negative pressure builds inside the cup, creating an upward pull of soft tissues to reduce pain perception. Firstly, the main action of cupping is to enhance the microcirculation, promoting capillary

endothelial cell repair, thus helping normalise the patient's functional state and promoting progressive muscle relaxation. Secondly, it releases a chemical transmitter that can block pain, such as serotonin, endorphin and cortisol, ultimately relieving pain. Thirdly, the cupping treatment reduces pain through antinociceptive and counter-irritation effects, further reducing pain.

Jongeun Yima et al. did a study Comparing the effects of muscle stretching exercises and cupping therapy on pain thresholds, cervical range of motion and angle. This study concluded that cupping treatment improves ROM of the cervical spine and Pain threshold more effectively than the McKenzie stretching technique.

After this study, Kostopoulos et al. found significant pain reduction in the group treated with passive stretching of the upper trapezius. The decrease in the pain following static stretching could be due to the inhibitory effect of Golgi tendon organs, which reduces the motor neuronal length and pacinian corpuscle relaxation of the musculotendinous unite by resulting in its resting length and pacinian corpuscle modification. These reflexes will allow relaxation in musculotendinous unit tension and decreased pain perception.

Cryotherapy is the local or systemic application of cold for therapeutic purposes, as the relief of pain by cold application is the local anaesthetic action of cold on the pain fibres. It decreases nerve conduction. Thus, the relaxation of skeletal muscle is assumed <sup>(8)</sup>.

Similarly, in the present study, when myofascial decompression and passive stretching were given to the participants, both groups showed significant results in reducing the trapezitis pain, but when both techniques were compared with each other myofascial decompression showed a more substantial effect over Passive stretching.

---

## 6. Conclusion

This study concludes that myofascial decompression and passive stretching immediately relieve trapezitis pain. Still, when Myofascial decompression was compared with Passive stretching, Myofascial decompression appeared more effective than Passive stretching for immediate pain relief in domestic helpers with unilateral trapezitis.

### *Limitations*

- A follow-up cannot be done; hence, it is difficult to comment on the lasting effects of the treatment interventions.
- Cup sanitisation after each patient makes treating many at a time difficult.

### *Future scope*

- Study can be conducted on male domestic helpers.
- Study can be conducted in other age groups.
- A large population size can be used.
- Study can be done using different occupations.
- A study can be done comparing different interventions.

---

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

---

## References

- [1] Ravish VN, Helen S. To compare the effectiveness of myofascial release technique versus positional release technique with laser in patients with unilateral trapezitis. *Journal of evolution of medical and dental sciences*. 2014 Mar 3;3(9):2161-7.



- [2] Al-Shidhani A, Al-Mahrezi A. The role of cupping therapy in pain management: A literature review. *Pain Management-Practices, Novel Therapies and Bioactives*. 2020 Sep 25.
- [3] Immediate effect of myofascial release vs passive stretching on pain in females with unilateral trapezitis Dr Diptee Waingankar<sup>1</sup>, Dr Siddhi Tendulkar<sup>2</sup>, Dr Mahendra Shende<sup>3</sup> BPT Maharashtra University of Health Science, PES Modern College of Physiotherapy, Pune, Maharashtra, India 2018
- [4] About domestic work. International Labour Organization. [https://www.ilo.org/newdelhi/areasofwork/WCMS\\_141187/lang--en/index.htm](https://www.ilo.org/newdelhi/areasofwork/WCMS_141187/lang--en/index.htm).
- [5] Sharma SM, Shaikh FV, Bhovad PD, Kale JS, Gupta YP, Bhuta MB. Risk of musculoskeletal disorders associated with kitchen platform tasks in young and middle-aged women of a metropolitan city: An observational cross-sectional study. *Indian J Occup Ther* 2019;51:130-5
- [6] Stephens SL, Selkow NM, Hoffman NL. Dry cupping therapy for improving nonspecific neck pain and subcutaneous hemodynamics. *Journal of Athletic Training*. 2020 Jul 1; 55(7):682-90.
- [7] Kostopoulos D, Nelson Jr AJ, Ingber RS, Larkin RW. Reduction of spontaneous electrical activity and pain perception of trigger points in the upper trapezius muscle through trigger point compression and passive stretching. *Journal of musculoskeletal pain*. 2008 Jan 1; 16(4):266-78.
- [8] Olson JE, Stravino VD. A review of cryotherapy. *Physical Therapy*. 1972 Aug 1; 52(8):840-53.