



COMPARATIVE STUDY OF MYOFASCIAL RELEASE AND HOT PACK IN UPPER TRAPEZIUS SPASM.

Physiotherapy

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ABSTRACT

Background: Neck pain commonly seen in back of neck and between the bases of neck to shoulder mainly indicates the involvement of upper trapezius muscle. About two third of people will experience neck pain at some point in their lives. A considerable proportion of patients with upper trapezius spasm had been treated with medical and physical therapy interventions. The study aims to compare the effectiveness of Myofascial Release technique (MFR) versus hot pack in relieving pain, improving cervical ROM and pressure pain threshold in upper trapezius spasm patients. **Methodology:** Total 60 subjects will be assessed which will be divided into 2 groups A and B and then they'll be given MFR and Hot pack treatment respectively to both groups. They'll be assessed and monitored throughout the treatment and their NPRS pain intensity scale will be recorded week by week. **Result:** Out of 60 participants 15 were eliminated because of various conditions which wasn't applicable for the study. 27 were females and 18 were males in them. In this comparison the MFR seems to be slightly more effective than Hot pack in upper trapezius spasm. **Conclusions:** The study shows that although both techniques are effective in depletion of symptoms and associated disability in upper trapezius muscle spasm, Myofascial Release Technique gave better results as compared to Hot pack.

KEYWORDS

NPRS (Numeric Pain Rating Scale), Tenderness Grading Scale, MFR and Hot pack.

INTRODUCTION

The trapezius muscle is a large superficial back muscle that resembles a trapezoid. It extends from the external protuberance of the occipital bone to the lower thoracic vertebrae and laterally to the spine of the scapula. The trapezius has upper, middle, and lower groups of fibers.

The trapezius is a shawl muscle or musculus calcitratus (shaped like a monk's hood) because of its shape and location. The low – level activity of the upper trapezius is frequently found during sitting and standing which is related to head posture and is a common source of tension and neck pain in people who work at a desk and computers or who spend many hours driving (1)

Neck pain is very common in the region of the upper trapezius muscle. About two - thirds of people experience neck pain at some point in their lives. In middle age, Prevalence is highest and women are more affected than men.

Myofascial release is a soft tissue mobilization technique, defined as “the facilitation of mechanical, neural and psychophysiological adaptive potential as interfaced via the myofascial system. (2)

By MFR there is a change in the viscosity of the ground substance to a more fluid state which eliminates the fascia's excessive pressure on the pain – sensitive structure and restores proper alignment. (2)

Only a few studies have looked at the impact of myofascial release (MFR) techniques on the primary metrics of patient outcomes.

Myofascial release is a form of manual therapy that aims to release tension and tightness in the fascia, which is the connective tissue that surrounds and supports muscles and organs. It involves applying sustained pressure to specific points on the body to release tension and improve circulation. Myofascial release has been shown to be effective in reducing pain and improving range of motion in people with a variety of musculoskeletal conditions, including neck and shoulder pain.

Upper trapezius spasm, on the other hand, is a condition that is often treated with stretching and massage of the affected muscle. Stretching and massage can help to relieve tension and reduce pain in the upper trapezius muscle. However, the effectiveness of these treatments may vary depending on the severity of the spasm and the underlying cause of the condition.

In this study, we aim to compare the effectiveness of myofascial release and upper trapezius spasm in reducing pain and improving range of motion in people with upper trapezius spasm. We will be looking at factors such as pain intensity, range of motion, and

functional status to determine which treatment is more effective for this condition.

Previous research has shown that MFR improves ROM and decreases pain. Furthermore, Kain et al. reported significant improvements in shoulder joint ROM among healthy recipients of either MFR or hot pack therapy (HPT).

The post - treatment effects of MFR intervention have been postulated to parallel those of massage and soft tissue mobilization techniques. These effects include circulatory changes, blood flow changes, capillary dilatation, cutaneous temperature changes, and changes in metabolism. These changes are reflected in increased ROM, improved biomechanics of the joint, increased Extensibility of tissues, improved flexibility, muscle relaxation, reduction of spasm, decreased tone, reduction of edema and analgesia.

The purpose of this study was to compare end results spasm, after MFR techniques and hot pack application. Heat in its various forms has been a popular longstanding modality used to facilitate healing. Transmission of heat, either by conduction, convection, radiation, and / or conversion, comprises the most common methods of heat usage.

Hot packs are designed to deliver moist heat to the affected area, promoting muscle relaxation, increased blood flow, and pain relief. The heat penetrates deep into the muscle tissue, helping to relax tense muscles, decrease muscle spasms, and improve flexibility. Additionally, the increased blood flow to the area can aid in the removal of metabolic waste and promote the delivery of oxygen and nutrients, accelerating the healing process.

The application of a hot pack on the upper trapezius typically involves wrapping the pack in a towel or using a specialized cover to protect the skin from direct heat. The pack is then placed on the affected area for a specific duration, usually around 15-20 minutes. It's important to ensure that the temperature is comfortable and not too hot to avoid burns or skin irritation.

For this study, hot packs were chosen as our comparative modality for a number of reasons:

- (1) The simplicity of access to the modality
- (2) The ease of application
- (3) The accepted usage within the field of rehabilitation
- (4) Minimal contraindications
- (5) Standardization of application.

Methodology Study Design and Setting

Study Design: COMPARATIVE STUDY**Study Duration:** 4 weeks (5 sessions per week)**Population**

□ Subjects with upper trapezius spasm between 20 - 40 years of both sexes.

Selection Criteria**Inclusion Criteria**

- AGE : 20 - 40 years
- Patient complains of pain in upper trapezius for more than 1 month.
- Subjects are willing to participate .

Exclusion Criteria

- Patients taking 3 or more tablets of 500 mg. paracetamol in a day for pain relief.
- Neurological disorders .
- Any other condition than upper trapezius spasm .
- Any other therapy for trapezius spasm .

Sampling Method and Sample Size**Sampling Method:** Simple random sampling**Sample Size:** 60**Procedure**

A therapist assessed patients at the orthopedic and sports physiotherapy department who had been recommended by an orthopedic physician . The included patients ranged in age from 20 to 40 years old , had neck pain from at least one month , both male and female , displayed the jump sign , which is characterized by patient vocalization or retreat , and had a palpable painful site in the upper trapezius muscle . If they had a history of latent trigger points , healing fractures over the neck and upper back , dermatitis over the upper back , clotting disorders , wounds over the neck region , shoulder pathology , or a degenerative cervical spine , cervical radiculopathy or myelopathy they were eliminated.

The exercises' procedures will be shown, and the subjects will be given instructions on what to do and what not to do .

60 Subjects will be selected according to the selection criteria and the informed consent will be obtained from them . They will be assessed with Neck disability index , NPRS and Tenderness and their respective scores will be documented . The selected subjects will be randomly divided into 2 groups A and B group with nearly same subjects in each group .

All 60 subjects will be randomly assigned to 1 of 2 treatment groups :

- Group - A (n=20) MFR + exercises ,
- Group - B (n=20) Hot pack + exercises ,
- Hot pack : position – Sitting
- Duration – 20 minutes

Figure 1 illustrates the screening results , which revealed that 15 people were eliminated , 8 did not give consent , and 2 had cervical radiculopathy and 5 had wounds over the neck region

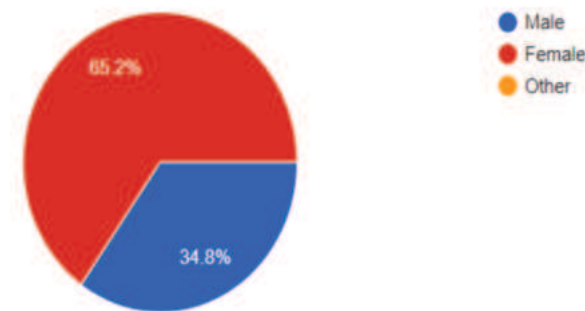
In this study , 45 participants - 27 females and 18 males – aged 20 to 40 years were enrolled . A consent form was signed by everyone and They were then randomly allocated , using sealed envelopes , into three groups , group B .

Outcome Measures

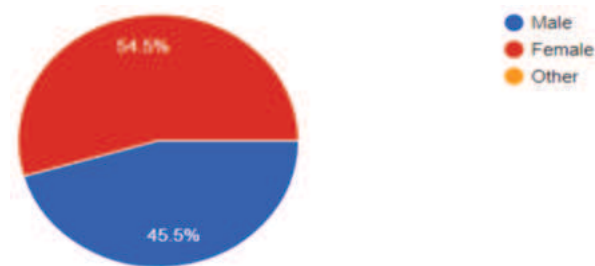
1. NPRS (NUMERICAL PAIN RATING SCALE): This scale is for assessing the pain score of a patient on different week throughout the treatment.
2. Neck Disability Index.
3. Tenderness Grading.

RESULTS**1. Gender Distribution**

- There was total 45 participants which was participated in the treatment. They were nearly equally divided in 2 groups A and B.
- 23 patients were in Group A which had MFR in the sessions. 22 patients were in a Group B which had Hot pack therapy.
- Total 27 females and 18 males participated in the treatment.

Group (A) Gender Distribution for MFR

(1.1)

Group (B) Gender Distribution for Hot pack

(1.2)

- Chart 1.1 and 1.2 represents the Gender distribution for both Group A and B respectively.

2. Age Distribution

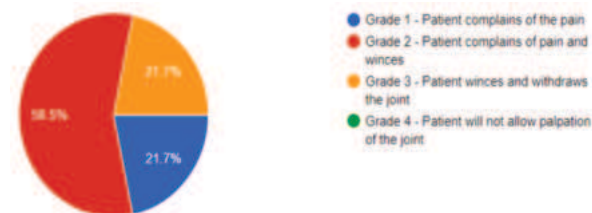
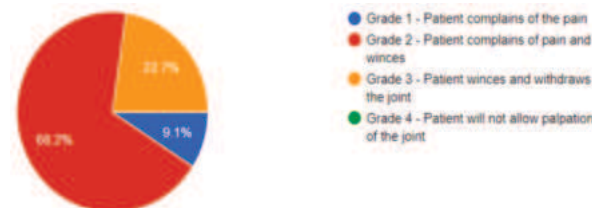
- The mean age of MFR treatment for participants was 30.038 contains 23 people.
- The mean age of Hot pack treatment participants was 31.045 contains 22 people.

(2.1) Age Distribution for both group

3. Tender Grading Scale Distribution

Measures	Mean
Group A	30.038
Group B	31.045

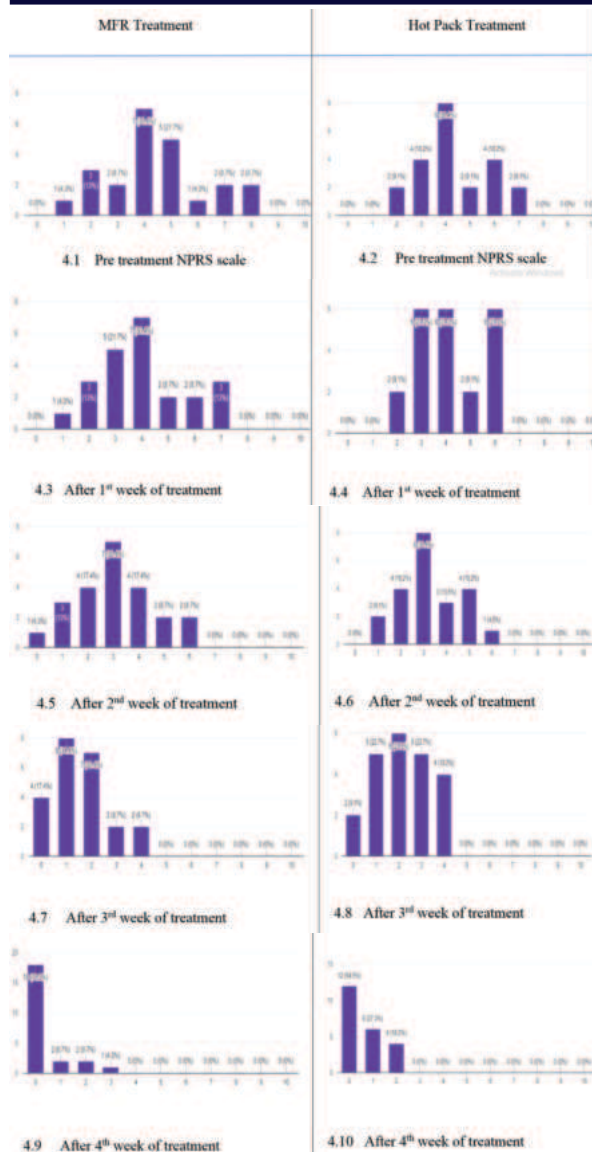
- Tenderness scale for every patient recorded before pretreatment.

**3.1 Group A Tender Grading Scale Distribution****3.2 Group B Tenderness Grading Scale Distribution**

- These 2 pie charts 3.1 and 3.2 represents the tenderness grading scale of participants from Group A and Group B respectively.

4. Pain Intensity Comparison

- Numeric pain rating scale measured for pretreatment and then week by week for both treatments.
- Here presenting tables and graphs for NPRS scale.



- Graph 4.1 and 4.2 represents the pain intensity of participants before treatment.
- Graph 4.3 and 4.4 represents the pain intensity of participants after 1st week treatment of MFR and Hot pack respectively.
- Graph 4.5 and 4.6 represents the pain intensity of participants after 2nd week treatment of MFR and Hot pack respectively.
- Graph 4.7 and 4.8 represents the pain intensity of participants after 3rd week treatment of MFR and Hot pack respectively.
- Graph 4.9 and 4.10 represents the pain intensity of participants after 4th week treatment of MFR and Hot pack respectively.

Differences Between Pain Intensity Throughout The Different Treatments Accordingly.

Measures	Mean value of Pain	Difference Of pain intensity
	Pre treatment	Post
Group A	5.06	0.42
Group B	4.46	0.65

(4.11) Mean value difference for both treatment

- This table 4.11 represents the difference between pretreatment pain intensity and post treatment of participants.
- Pretreatment pain intensity in Group A was 5.06 and post treatment value was 0.42 which occurs the difference of 4.64.
- Pretreatment pain intensity in Group B was 4.46 and post treatment value was 0.65 which occurs the difference of 3.81.

DISCUSSION

- This was a comparative study to evaluate the efficacy of hot pack

and MFR on trapezius muscle pain due to spasm, the most found musculoskeletal disorder.

- The treatment time duration was 5 sessions per week for 4 weeks for both of Group A and B which had 23 and 22 participants in respective Group.
- After analysis of baseline data and post treatment scores, it reveals significant improvement ($p < 0.05$) in group A after 4 weeks treatment session.
- There was significant difference ($p < 0.05$) in post treatment comparison between MFR and hot pack group. The findings of this study suggested both MFR and hot pack along with shoulder girdle and cervical exercises were effective in the treatment of upper trapezius.
- The results revealed that both methods of treatment applications provided a similar physiological response on the spasm of trap muscle. The hot pack inducing an increase of blood circulation in the superficial tissue and leading to fluid distribution in the trigger point area and therefore decreasing tissue density.
- Thermal effect further induced blood circulation toward the treated area, resulting in physiological changes and clinical outcomes such as reduced muscle spasm, altered threshold of receptors, minimizing hypoxia, alleviating pain and promoting the healing process.

Whereas, in MFR the stretch is applied to the fascia, which being the superficial structure has the direct effect. Muscle being the deeper structure will have an indirect effect. So, instant effect in terms of relief in the pain and spasm will be seen immediately following treatment, but it may not last for long period. Multiple sessions may be required to have the cumulative effect and sustained relief.

CONCLUSION

As the study shows that although both techniques are effective in depletion of symptoms and associated disability in upper trapezius muscle spasm, Myofascial Release Technique gave better results as compared to Hot pack.

Limitations

- Ergonomical advices and posture correction not employed.
- Limited Age Group, may applicable to larger age group.
- The study had a small sample size.
- No follow up taken after 4 weeks to see the sustained effect of therapy.
- Side specific involvement as per the dominance was not considered for analysis.
- Short duration of the study.

Future Recommendations

- It is believed that the conclusion of present study utilizes in the future researches. There is a need for long term studies on efficacy of treatments in reducing symptoms of trap muscle spasm using advanced techniques.
- Thus future studies should use the multidimensional approach regarding the treatments. By this study a good treatment plan can be made for better recovery of patient.
- This study can be further investigated with a large number of samples in relation with lifestyle modification and physiotherapy intervention.

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