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Original research article

A randomised controlled trial comparing ischemic compression therapy and ultrasound with stretching for the treatment of upper trapezius trigger points

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Abstract

This randomised controlled experiment compared the efficacy of ultrasound with stretching and ischemic compression therapy for treating upper trapezius trigger points. Thirty participants who met the requirements for participation were split into Group A (Ischemic Compression Therapy) and Group B (Ultrasound with Stretching) i.e. 15 participants in each group. Cervical flexion, rotation, and pain measures were taken before and after the intervention. Both treatments had a noticeable impact on each group's range of motion and pain levels. Increased flexion and rotation were seen, along with lower post-intervention pain levels. These results emphasise the potential advantages of both approaches in treating trigger points in the upper trapezius.

Keywords: ischemic compression therapy, ultrasound with stretching, upper trapezius trigger points

Introduction

In general internal medicine practise, the incidence of myofascial pain, which is characterised by the existence of trigger points, is a significant issue [1]. In the general population, it has been linked to depressed symptoms and persistent musculoskeletal discomfort [2]. Furthermore, it has been demonstrated that headache problems, particularly myofascial pain, affect sick leave and the use of medical services [3]. Despite the clinical significance of myofascial pain, different doctors have different diagnostic procedures and treatment plans for it [4].

Myofascial trigger sites have been studied as potential candidates for manual interventions, including ischemic compression therapy and ultrasonography with stretching [5, 6]. In patients with myofascial pain syndromes, these treatments have shown promise in lowering pain and enhancing function [7, 8]. To learn more about the precise impacts of these therapies and their relative effectiveness, however, more study is required.

Aims and Objectives

1. To assess the efficiency of stretching in ischemic compression therapy and ultrasound for the relief of trigger points in the upper trapezius.
2. To evaluate how the therapies affected the pain and range of motion in those with chronic trapezius trigger points.
3. To compare the outcomes of the two intervention groups, particularly with regard to pain relief and advancements in flexion and rotation.

Methodology

1. **Sample selection:** The study's thirty subjects were chosen using a stratified random selection methodology from Pacific College of Physiotherapy, Udaipur. Based on the inclusion and exclusion criteria, patients were screened.
2. **Inclusion criteria:** The individuals ranged in age from 18 to 60 and included both males and females. They exhibited trapezius trigger points that persisted for more than three months, as well as perceptible tense bands in the muscles of the upper back.
3. **Exclusion criteria:** The study excluded participants with severe orthopaedic abnormalities, cervical disc prolapse, systemic disorders, migraines, recent changes in medication or other treatments, systemic or psychological disorders, malignancy in the cervical thoracic region, and findings of nerve root irritation.
4. **Materials used:** A goniometer for assessing range of motion, a pen, a pencil, and paper for

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recording, cotton and a towel, a treatment couch, a chair with back support, an ultrasound machine, and gel were among the supplies used in the study.

5. **Outcome measurement scale:** The universal goniometer was used to evaluate cervical lateral flexion and rotation and the visual analogue scale (VAS) was utilised to measure discomfort.
6. **Intervention:** Group A and Group B were created out of the subjects.

Group A: Technique for Ischemic Compression Therapy
Therapists used their thumbs to provide ischemic compression to trigger sites in the upper trapezius muscle. Until the discomfort subsided or two minutes had elapsed, pressure was gradually increased, maintained for 30 seconds, released for 2-3 seconds, and repeated. To lessen skin friction, talcum powder was administered before to the surgery. Depending on the patient's comfort, the pressure was applied for periods of 30 to 90 seconds.

Group B: Stretching while using ultrasound
Each trigger site received 5 minutes of continuous wave ultrasound therapy at a frequency of 3MHz and an intensity of 1.4 watts per cubic centimetre. The therapist placed comfortable positions for the patients before applying ultrasonic gel to the treatment region.
Both Group A and Group B underwent passive stretching techniques. The patient was lying on his or her back with the head rotated to the opposite side, the chin tucked, and the shoulder on the same side pulled down. The therapist gently stretched the patient for 10–15 seconds, then did it twice more.
Pre-Intervention and Post-Intervention Procedure: Before and after the interventions, measures of cervical lateral flexion and rotation were made using a goniometer and a VAS for pain.

Results
There were 15 participants in Group A with ages ranging from 28 to 57, making up the age distribution. The age group with the most subjects was 34 (13.3%), followed by a number of other age groups with one subject each, demonstrating a variable distribution throughout several age ranges while 15 participants in Group B with ages ranging from 24 to 59, making up the group's age distribution. The age categories with the most participants were 47 and 46, each with two (13.3%). The following age categories each included one participant, demonstrating that there was also a variety in the distribution of ages in this group.
The gender split in Groups A and B was about equal, with 53.3% female and 46.7% male participants in each group. There were a total of 15 participants in each group. With a wide variety of ages represented, the age distribution of the groups revealed some commonalities. However, there were very modest variations among the various age groups. Ages in Group A ranged from 28 to 57, with 34 being the most prevalent age group. The age range in Group B was 24 to 59, with the age brackets of 47 and 46 being the most prevalent. Overall, both groups showed a wide range in age distributions, while there were modest variations in the precise age ranges.

Table 1: Comparison of Pre-and Post-Intervention Measurements in Group A

Group-A	Mean	Std. Deviation
Pre FLEXION	21.0000	6.60087
Post FLEXION	38.0000	5.60612
Pre ROTATION	51.6667	6.45497
Post ROTATION	69.6667	4.41858
Pre VAS	6.8667	.99043
Post VAS	1.7333	1.33452

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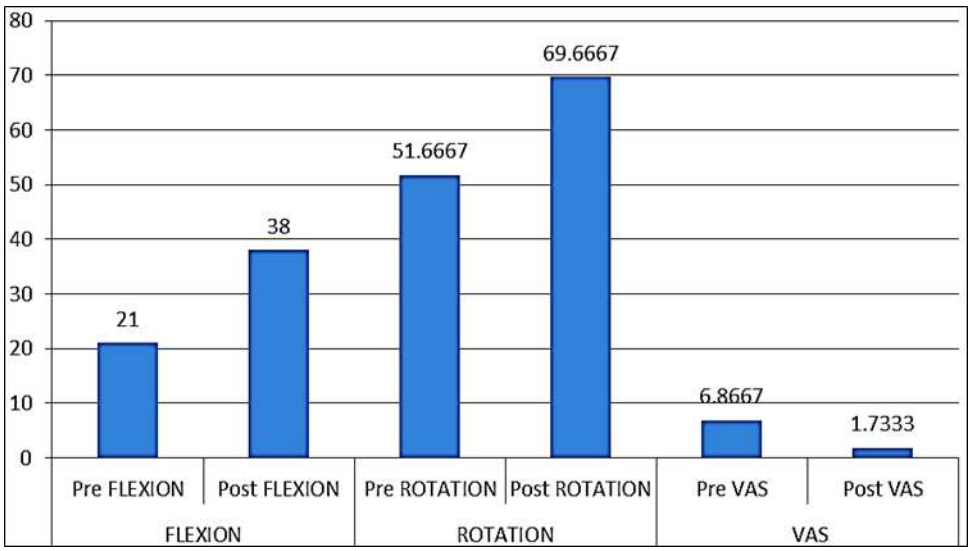
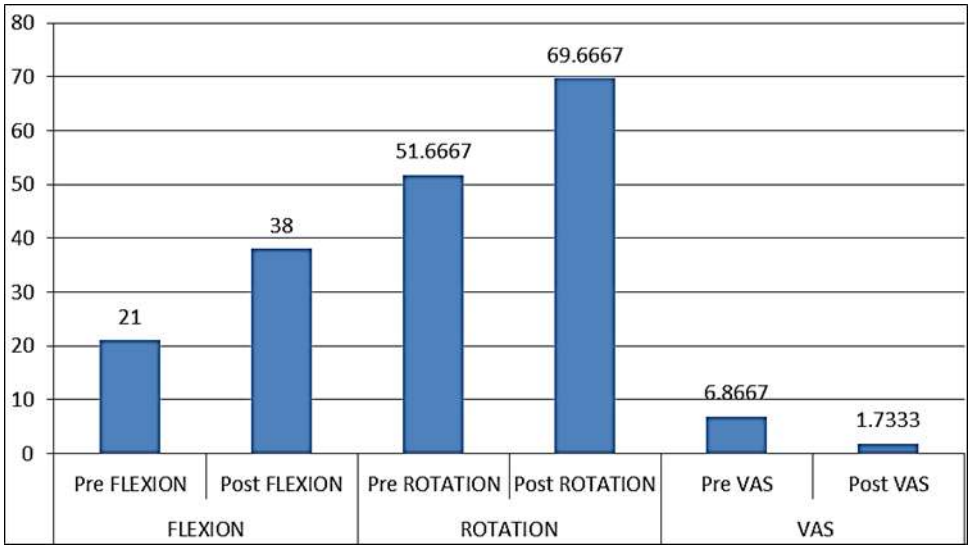


Graph 1: Comparison of Pre- and Post-Intervention Measurements in Group A

The intervention significantly reduced the amount of discomfort and increased range of motion in Group A. Lower post VAS values compared to pre-intervention measures showed a significant drop in pain levels together with a noticeable increase in flexion and rotation after-intervention.

Table 1: Comparison of Pre- and Post-Intervention Measurements in Group B

Group-B	Mean	Std. Deviation
Pre FLEXION	18.3333	4.87950
Post FLEXION	33.3333	3.08607
Pre ROTATION	44.0000	11.68026
Post ROTATION	69.0000	6.03561
Pre VAS	7.0000	1.06904
Post VAS	2.0667	1.33452



Graph 2: Comparison of Pre- and Post-Intervention Measurements in Group B

The intervention significantly reduced the amount of discomfort and increased range of motion in Group B. Lower post VAS values compared to pre-intervention measures showed a significant drop in pain levels together with a noticeable increase in flexion and rotation after-intervention.

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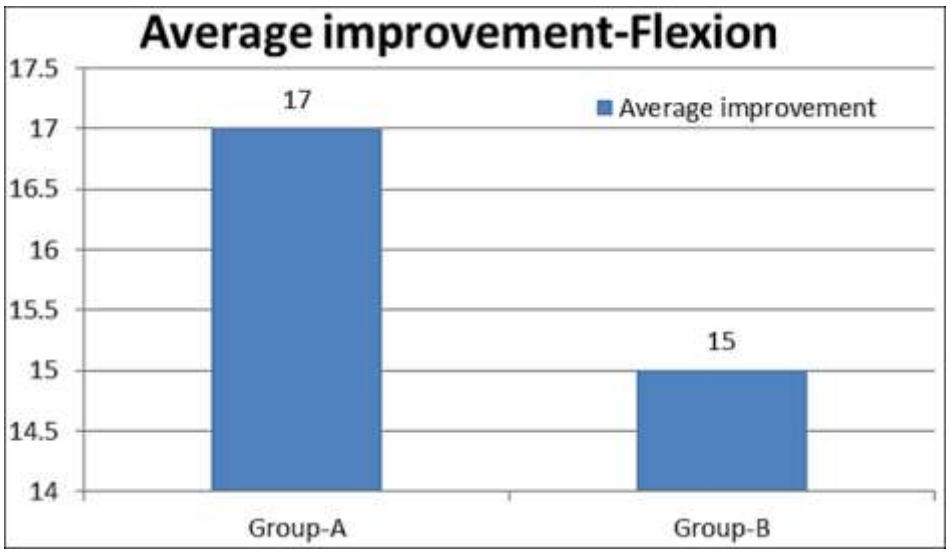
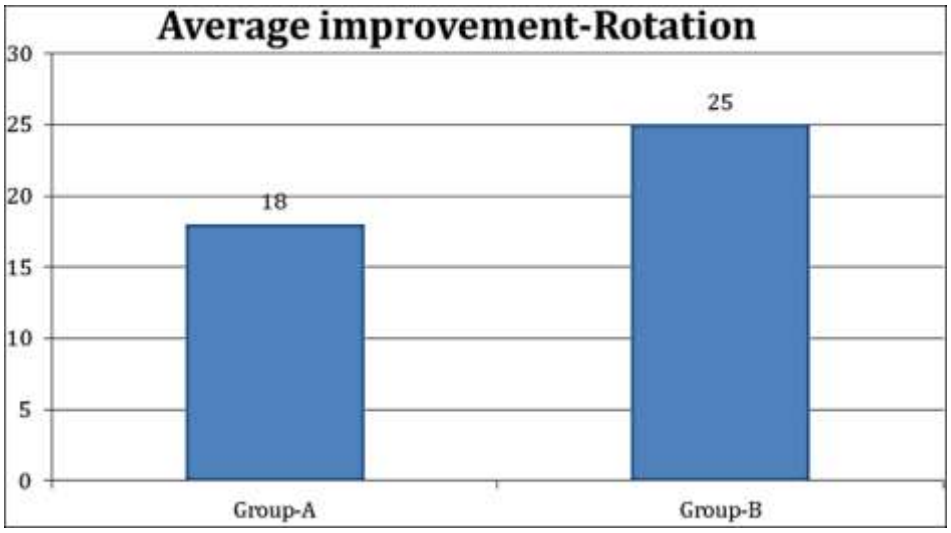


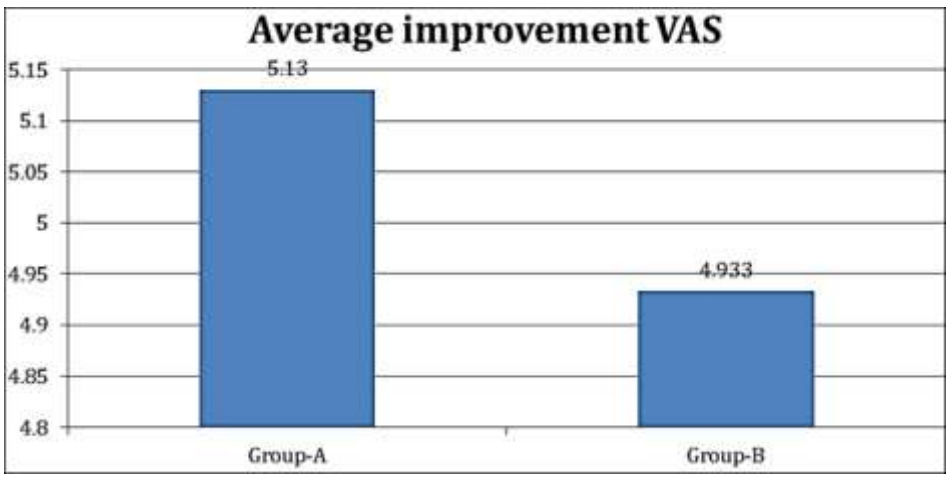
Graph 3: Shows average improvement in flexion in group A and group B

Above graph shows Group A exhibited a higher average improvement in flexion (17) compared to Group B (15), suggesting that Group A participants experienced greater gains in their flexion range.



Graph 4: Shows average improvement in rotation in group A and group B

Above graph shows, Group B demonstrated a notably higher average improvement in rotation (25) compared to Group A (18), implying that Group B participants experienced more significant gains in their rotational abilities.



Graph 5: Shows average improvement in VAS in group A and group B

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Group A exhibited a slightly higher average improvement in VAS (5.13) compared to Group B (4.933), suggesting that Group A experienced a marginally greater reduction in pain levels.

Conclusion

Both ischemic compression therapy and ultrasound with stretching significantly reduced pain and increased range of motion in patients with upper trapezius trigger points in this randomised controlled experiment. Lower post-intervention Visual Analogue Scale (VAS) ratings reflect a discernible reduction in pain levels as a result of the therapies. Following the therapies, cervical flexion and rotation significantly increased as well. These results imply that Ischemic Compression Therapy and Ultrasound with Stretching can both be beneficial therapy modalities for those with chronic upper trapezius trigger points, potentially resulting in pain alleviation and better functional outcomes. In order to verify these findings and investigate the long-term impact of these therapies, further investigation and larger-scale studies are required.

Limitations

1. **Sample size:** With only 15 individuals in each group, the study's sample size was rather modest. The ability to generalise the results to a wider population may be hampered by the small sample size.
2. **Short duration:** The material presented made no indication of how long the intervention or follow-up period would last. Longer intervention and follow-up periods would provide researchers a better understanding of the therapies' long-term impacts.

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