

To Compare The Effectiveness of Positional Release Therapy Versus Active Release Technique with Posture And Body Mechanics Training in working Women with Trapezius Myalgia.

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Abstract:

Introduction: Neck pain is a frequent and disabling complaint in general population. Trapezius strain is one of the most common causes of trapezius muscle pain in the neck and upper back. It often affects women, especially who work at a desk, and do repetitive reaching and lifting types of jobs. A lack of ability to assume a good posture and utilize good body mechanics for any reason will affect our ability to perform a wide variety of active functional activities. Good posture will help improve one's mental, physical and spiritual state of being and Getting Clarity on "Natural Curves". "Indeed, until one can learn to keep his spine straight, he will never know how to relax perfectly."

A Proactive way of taking the initiative by acting rather than reacting to events is necessary. This study aims to accomplish this by providing evidence based interventions to patients with Trapezius myalgia with a "holistic" global approach to address the area of dysfunction striving to achieve EFFICIENCY in movement, structure, neuromuscular function, and motor control achieving OPTIMAL function for every patient. Hence this study is aimed to determine the effect of Positional release therapy and Active release technique with Posture and body mechanics training in trapezius myalgia.

Need For The Study: Studies have shown the effect of Positional release therapy and Active release technique individually on various muscles. No studies have been done on effect of Active release technique and Positional release therapy with significant importance to posture and body mechanics training which is said to be a prime concern. Proper Posture and body mechanics includes all self-care approaches like regular exercising, stretching, relaxation and proper ergonomic care.

Aim: To compare the effect of Positional release therapy and Active release technique with Posture and body mechanics training on trapezius myalgia.

Procedure: The samples who satisfied the inclusion criteria were selected by simple random sampling and divided into two groups, namely Group A and Group B. Each group consisted of 15 patients. Prior informed consent was taken explaining the research procedure. Test for trapezius shortening was done. Pre intervention measures were taken as follows: Neck range of motion measured with goniometer, Intensity of pain was scored with visual analogue scale and disability was scored with neck disability index for both the groups. Hot packs were applied to both the groups on upper trapezius region. Group A was treated with Positional release therapy and group B was treated with active release technique for 5 consecutive days.

Results: The study shows statistically no significant changes in mean difference for Range of motion and Pain at $p < 0.05$ and slight significant changes with Disability index at $p < 0.05$ for Group B comparatively with Group A.

I. Introduction

Neck pain is a frequent and disabling complaint in general population. In neck pain studies, the prevalence ranged from 10% to 72% depending on the work task, type of design or activities of daily living. Trapezius strain is one of the most common causes of trapezius muscle pain in the neck and upper back. It often affects women, especially who work at a desk, and do repetitive reaching and lifting types of jobs. A lack of ability to assume a good posture and utilize good body mechanics for any reason will affect our ability to perform a wide variety of active functional activities. Our physiotherapists are specially trained to identify these problems and prescribe one-on-one training to help our patients get their life back. Like many things in life, good training and thoroughness occurs on a bell-shaped curve. The most common source of skeletal muscle pain (muscle, connective tissue and fascia) is myofascial pain syndrome, which is responsible for generating disability in patients who have pain in this genre box, but many health professionals have a recognition flawed on this issue [1], [2], [3]

WOMEN'S ISSUES: Narrow bra straps can compress the upper trapezius muscles, worsen neck pain, and create headaches, especially among females with large chests. Racer-back sports bras have wider straps and are a better choice. A purse slung over one shoulder can also perpetuate muscle imbalances to which female dental professionals are prone, since the trapezius muscle must contract unilaterally to support the weight. Neck muscles show a strong tendency to develop hyper tonicity, spasm and alter proprioceptive input. Therefore common cause of neck pain is muscle tightness. Trapezius pain is the classic stress pain and it is the most common musculoskeletal disorder. It is usually caused by placing too much stress or strain over the trapezius muscle. The upper trapezius muscle is designated as postural muscle and it is highly susceptible to overuse. Trapezius muscles help with the function of neck rotation, side bending and extension. The trapezius is a broad triangular muscle which attaches to the base of the skull, and lies at the back of the neck, over the upper shoulders and extends down your upper back to your mid back. It is one of the most likely muscles to get sore knots or "trigger points".

The trapezius muscles are the only muscles which can lift the outside of your shoulders to create a "shrug". They move the head and neck toward the shoulder of the other side. The middle of the muscles pull the shoulder blades together, while the lower draw the shoulder blades downward. They support the weight of the arms. Often these movements are at play when we are under stress, and doing the activities that cause stress. All of the muscles in the tension triangle are particularly vulnerable to pressure. Tightness in the muscles can decrease the range of motion of the neck. The decrease in motion can negatively affect the mobility of the cervical joints. Conversely it leads to an increase in soft tissue tightness, with an ensuing pain-spasm cycle which can be difficult to break. Physiotherapy techniques like myofascial release technique, Active release technique and Positional release therapy has been proposed as an adjunct to conventional therapy to treat trapezius myalgia. Rolf has described the ideal state of posture as "equipoise" in which the individual stands upright. Recently, the importance of posture to wellbeing has become popularized through the works of authors such as Alexander, ⁴ Pilates, ^{5,6} Feldenkrais, ^{7,8} and others.

Yogananda often said, "A bent spine is the enemy of Self-realization." Patanjali stated in his Yoga Sutras, "The fruit of right poise is the strength to resist the shocks of infatuation or sorrow." In *The Art and Science of Raja Yoga*, Swami Kriyananda wrote, "Right posture is one of the first known written books on Hatha Yoga, the *Hatha Yoga Pradipika*, explained that asana should be practiced for gaining steady posture, health and lightness of body." The importance of good posture is undisputed and vitally important to the yogi. Poor posture impedes energy flow, with a resultant negative impact on one mentally, physically and spiritually. Conversely, good posture will help improve one's mental, physical and spiritual state of being and Getting Clarity on "Natural Curves"

After stating the importance of right posture in *The Art and Science of Raja Yoga*, Swami Kriyananda goes on to say: "A bent spine impairs the flow of energy. It also cramps the breath, making it almost impossible to breathe deeply. Right posture, however, from a standpoint of yoga, is by no means the rigid stance of a soldier on parade. One must be relaxed even while standing straight. "Indeed, until one can learn to keep his spine straight, he will never know how to relax perfectly."

POSTURE: Normal cervical posture can be defined as the cervical lordosis assumed and maintained in holding the head directly within the center of gravity.

Normal posture implies:

- Essentially minimal or no muscular activity needed to support the head.
- Intervertebral discs maintained in proper alignment and experience no excessive anterior / posterior vertebral disc annular compression.
- Nucleus remains in its proper physiologic center.
- Zygapophyseal joints are properly aligned and do not bear excessive weight upon the body assuming the erect posture.
- Intervertebral foramina remain appropriately open and the nerve roots emerge with adequate space. Improper posture affects all these factors and impairs effortless balance with resultant pain and impairment. Good posture has the following benefits:
- Reduces pain
- Reduces headaches related to the neck
- Is one of the major factors in preventing recurrence
- Improves breathing
- Improves appearance

Proper posture requirements:

1. Good muscle flexibility
2. Normal motion in the joints

3. Strong postural muscles
4. A balance of muscles on both sides of the spine
5. Awareness of your own posture, plus awareness of proper posture which leads to conscious correction. With much practice, the correct posture for standing, sitting, and lying down (as described below and on the following page) will gradually replace your old posture.

This kind of Physiotherapy begins with an evaluation of your body mechanics and posture, which the therapist uses to then develop a custom treatment and recovery plan to realign your body using a variety of techniques, including manipulation, exercise, and even occupational therapy. A Proactive way of taking the initiative by acting rather than reacting to events is necessary. Therapists do not just want to help patients with pain. They want to give the tools to prevent the pain from ever coming back! This study aims to accomplish this by providing evidence based interventions to patients with Trapezius myalgia with a "holistic" global approach to address the area of dysfunction striving to achieve EFFICIENCY in movement, structure, neuromuscular function, and motor control achieving OPTIMAL function for every patient. Hence this study is aimed to determine the effect of Positional release therapy and Active release technique with Posture and body mechanics training in trapezius myalgia.

II. Need For The Study

Trapezius is one of the muscle which goes in shortening resulting in reduced cervical range of motion causing pain. Studies have shown the effect of Positional release therapy and Active release technique individually on various muscles. No studies have been done on effect of Active release technique and Positional release therapy with significant importance to posture and body mechanics training which is said to be a prime concern. Proper Posture and body mechanics includes all self-care approaches like regular exercising, stretching, relaxation and proper ergonomic care. So this study aims to compare the effect of Positional release therapy and Active release technique with Posture and body mechanics training on trapezius myalgia.

III. Hypothesis

Null Hypothesis: There is no significant effect of Positional release therapy and Active release technique with Posture and body mechanics training on trapezius myalgia.

Alternative Hypothesis:

- Positional release therapy has significant effect than Active release technique with Posture and body mechanics training on trapezius myalgia.
- Active release technique has significant effect than Positional release therapy with Posture and body mechanics training on trapezius myalgia.

IV. Aim And Objectives

Aim: To compare the effect of Positional release therapy and Active release technique with Posture and body mechanics training on trapezius myalgia.

V. Objectives

- To study the effect of Positional release therapy with Posture and body mechanics training on trapezius myalgia.
- To study the effect of Active release technique with Posture and body mechanics training on trapezius myalgia.
- To compare the effect of Positional release therapy and Active release technique with Posture and body mechanics training on trapezius myalgia.

VI. Materials And Methods

Study design: Quasi experimental study

Study setting: Krishna institute of medical sciences deemed university, Karad.

Target population: All female patients diagnosed having neck pain.

Sample population: All working adult females having neck pain with trapezius spasm.

Sampling method: Simple random sampling

Sample size: 30

Inclusion criteria:

- Working adult females within the age group 25 – 50 years.
- Patients having neck pain with a duration of 2 weeks and trapezius spasm.
- Patients having less than 45 degrees of side flexion and rotation of neck.

Exclusion criteria:

- Patients with inflammatory conditions around neck region.
- Patients with recent history of trauma or fracture of cervical spine.
- Patients with pathological conditions pertaining to cervical spine or marked degenerative changes.
- Disabled patients in any form.

Materials used:

Universal goniometer, hot packs and Neck disability index scoring sheets

Outcome measures:

Visual analogue scale, Range of motion and neck disability index

VII. Procedure

The samples who satisfied the inclusion criteria were selected by simple random sampling and divided into two groups, namely Group A and Group B. Each group consisted of 15 patients. Prior informed consent was taken explaining the research procedure. Test for trapezius shortening was done. Pre intervention measures were taken as follows: Neck range of motion measured with goniometer, Intensity of pain was scored with visual analogue scale and disability was scored with neck disability index for both the groups. Hot packs were applied to both the groups on upper trapezius region. Group A was treated with Positional release therapy and Group B was treated with Active release technique. Both the groups were treated for 5 consecutive days and on 5th day the scores of pain, range of motion and disability were recorded as post intervention scores and the scores were applied with statistical measures for data analysis.

VIII. Data Analysis And Interpretation

Statistics used:

Data analysis was done with the strength, range of motion and the level of perceived soreness which was recorded and tabulated. Statistical analysis was done using paired “t” test and unpaired “t” test. Intergroup significance was calculated by using paired “t” test and Intragroup significance was calculated by using unpaired “t” test.

Tables And Graphical Representation

Table: 1 Comparison Of Pre And Post Range Of Side Flexion In Groip A

Group	Pre-Treatment (In Degree)		Post-Treatment (In Degree)	
	Mean	Sd	Mean	Sd
Rom- Side Flexion	33.48	4.549	38.28	2.815

There is significant change in Pre-treatment and Post-treatment range of side flexion of 4.8 with $p < 0.05$

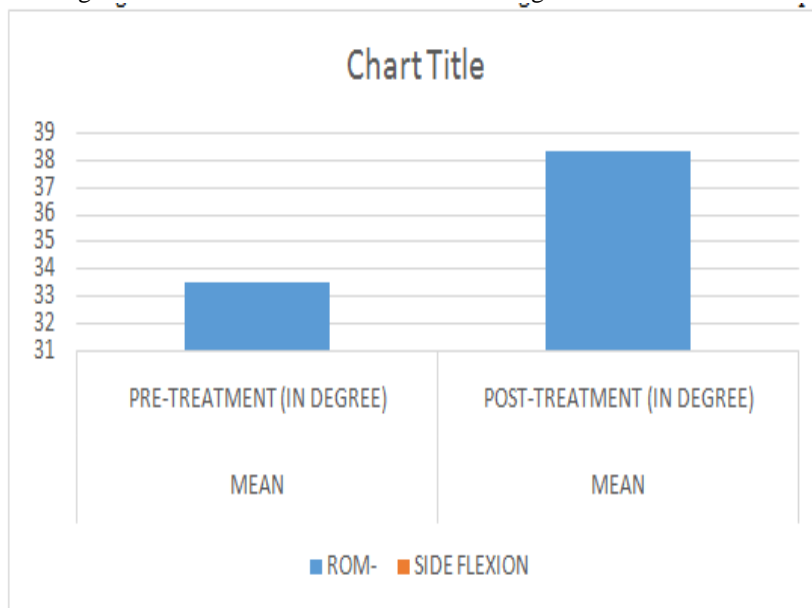


Table: 2 Comparison Of Pre And Post Range Of Rotation In Groip A

Group	Pre-Treatment (In Degree)	Post-Treatment (In Degree)
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A	Mean	Sd	Mean	Sd
Rom- Rotation	35.14	8.14	37.94	6.86

There is significant change in Pre-treatment and Post-treatment range of Rotation of 2.8 with $p < 0.05$

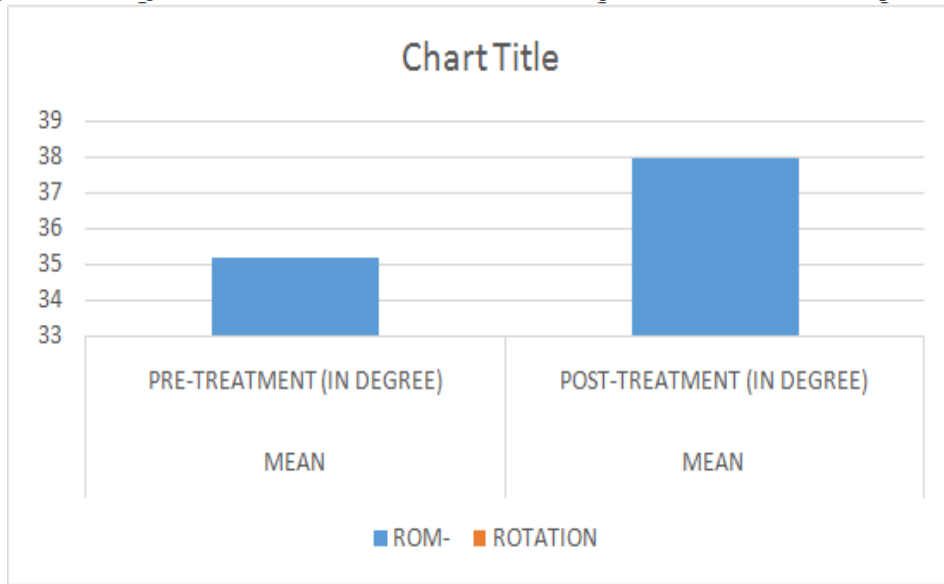


Table: 3 Comparison Of Pre And Post Vas Scores In Groip A

Group	Pre-Treatment		Post-Treatment	
	Mean	Sd	Mean	Sd
Vas	6.55	1.5	4.05	1.906

There is significant change in the Pre-treatment and Post-treatment intensity of pain of 2.5 with $p < 0.05$

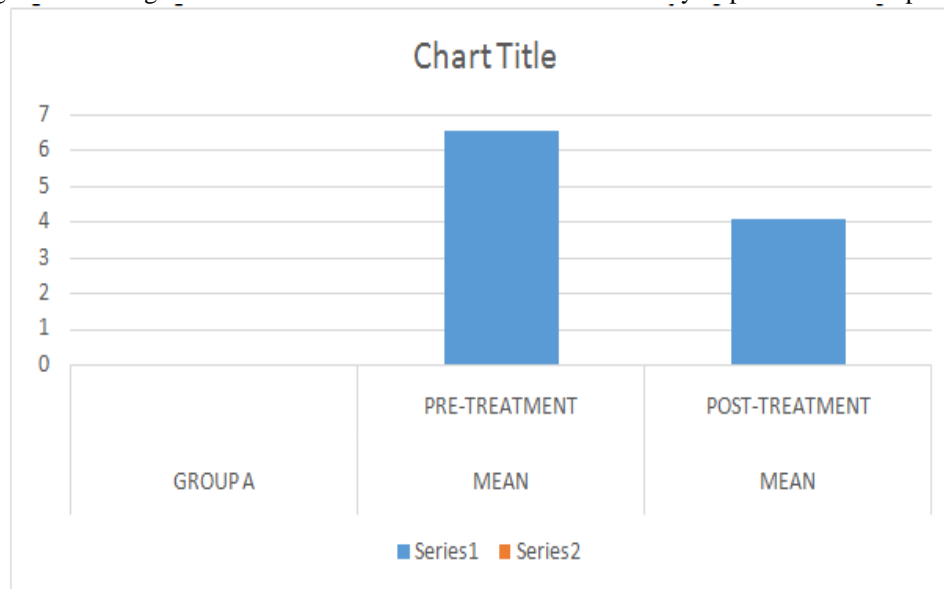


Table: 4 Comparison Of Pre And Post Ndi Scores In Groip A

Group	Pre-Treatment		Post-Treatment	
	Mean	Sd	Mean	Sd
Ndi	27.93	10.46	13.79	5.497

There is significant change in the Pre-treatment and Post-treatment Functional disability of 14.14 with $p < 0.05$

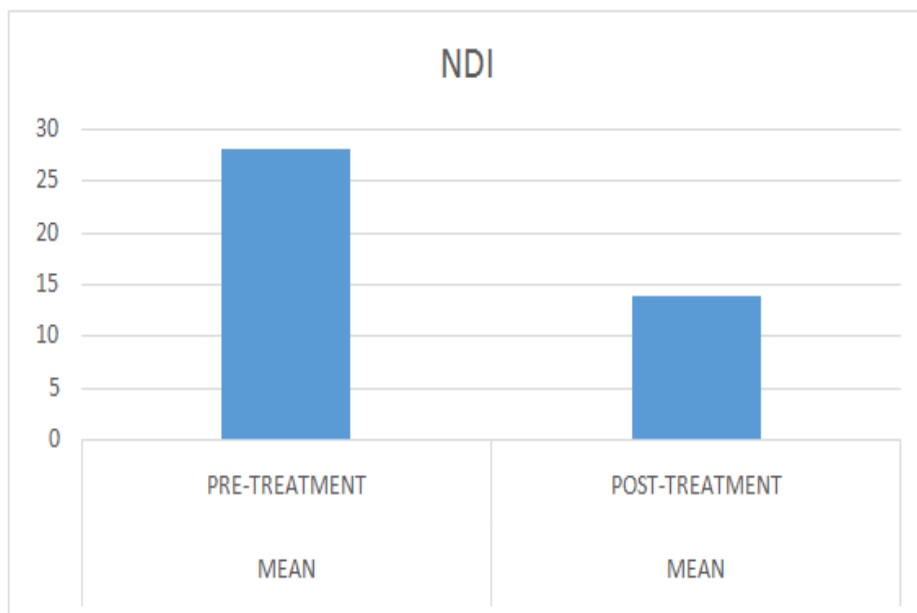


Table: 5 Comparison Of Pre And Post Range Of Side Flexion In Groip B

Group	Pre-Treatment (In Degree)		Post-Treatment (In Degree)	
	Mean	Sd	Mean	Sd
Rom- Side Flexion	31.86	4.612	37.12	3.701

There is significant change in Pre-treatment and Post-treatment range of side flexion of 5.26 with $p < 0.05$

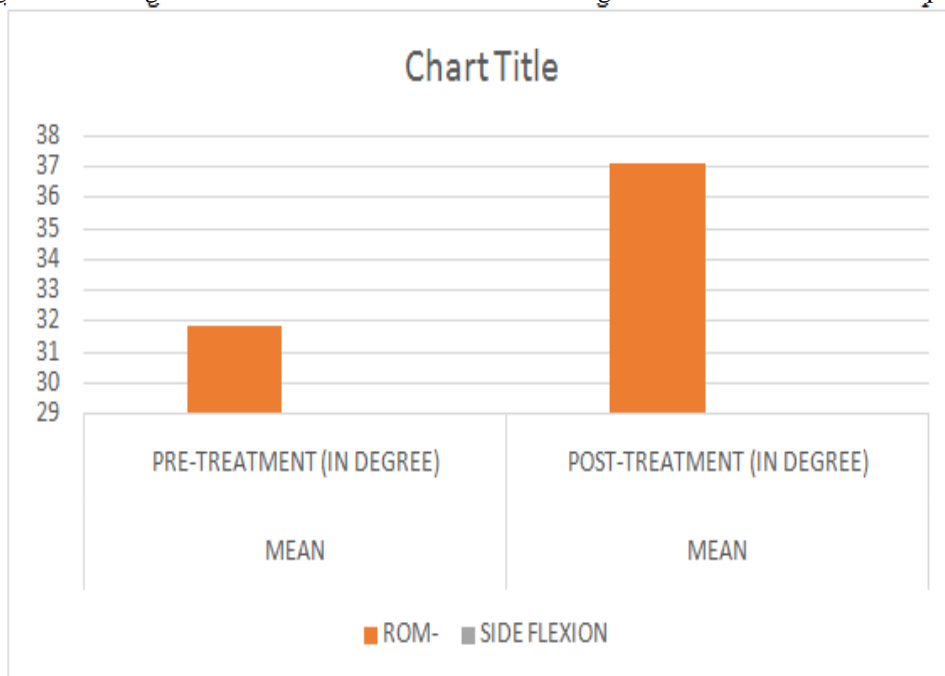


Table: 6 Comparison Of Pre And Post Range Of Rotation In Groip B

Group	Pre-Treatment (In Degree)		Post-Treatment (In Degree)	
	Mean	Sd	Mean	Sd
Rom-Rotation	37.07	6.964	40	5.542

There is significant change in Pre-treatment and Post-treatment range of Rotation of 2.93 with $p < 0.05$

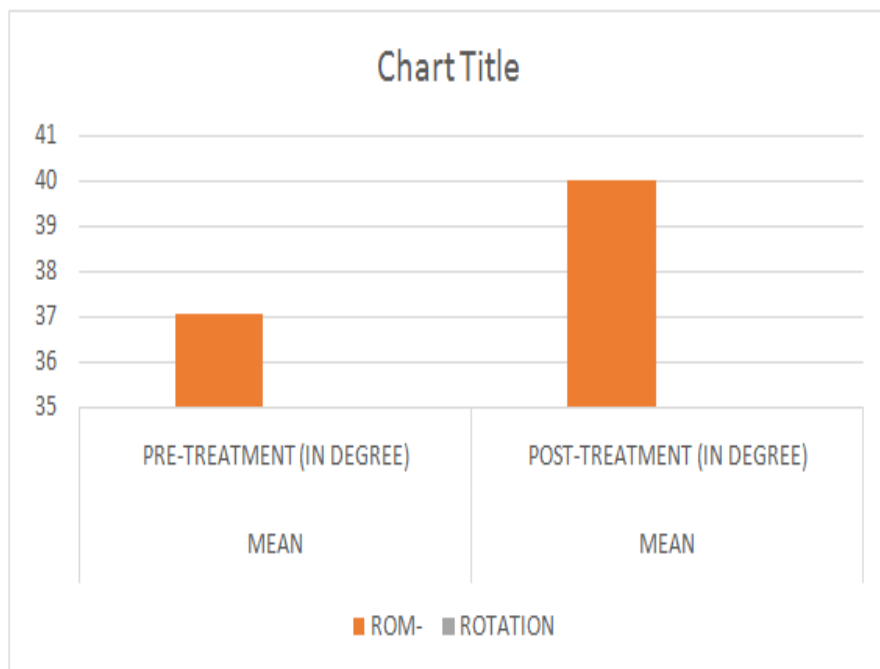


Table: 7 Comparison Of Pre And Post Vas Scores In Groip B

Group	Pre-Treatment		Post-Treatment	
	Mean	Sd	Mean	Sd
B	5.96	1.623	3.113	1.312

There is significant change in the Pre-treatment and Post-treatment intensity of pain of 2.847 with $p < 0.05$

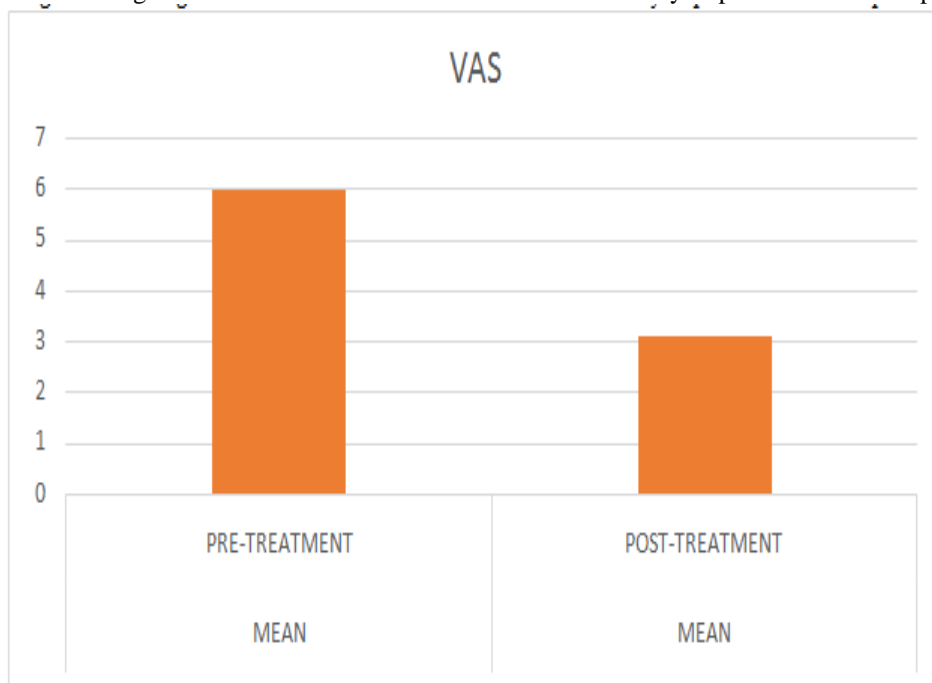


Table: 8 Comparison Of Pre And Post Ndi Scores In Groip B

Group	Pre-Treatment		Post-Treatment	
	Mean	Sd	Mean	Sd
B	18.68	9.556	10.32	6.139

There is significant change in the Pre-treatment and Post-treatment Functional disability of 8.36 with $p < 0.05$

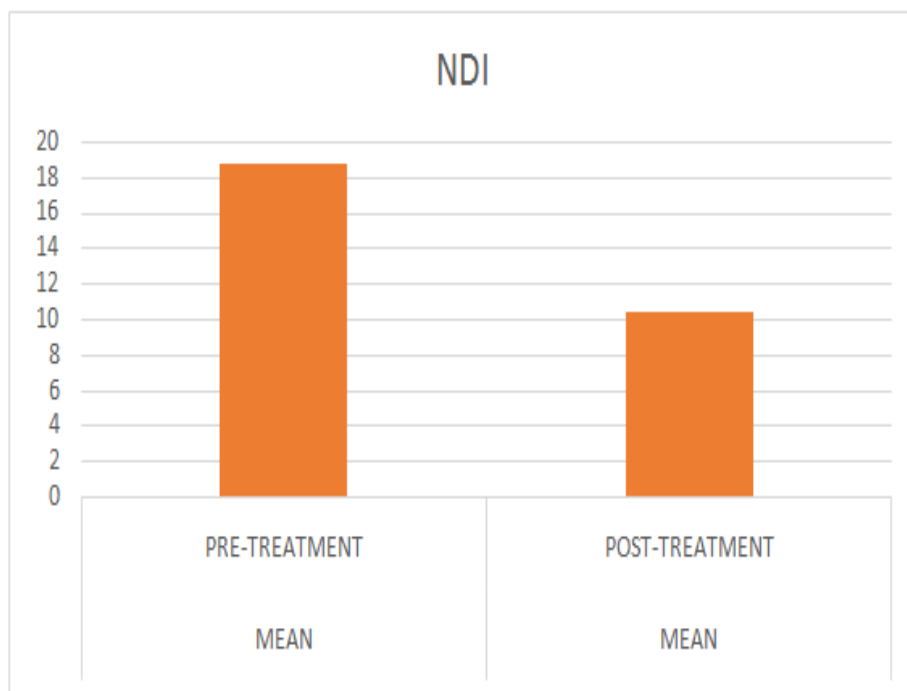


Table: 9 Comparison Of Mean Differences Of Side Flexion In Groip A Group B

Outcome	Group A		Group B	
	Mean	Sd	Mean	Sd
Rom- Side Flexion	4.8	2.678	5.2	2.077

Group B showed a difference of 0.4 degrees more than Group A in ROM of side flexion with $p < 0.05$

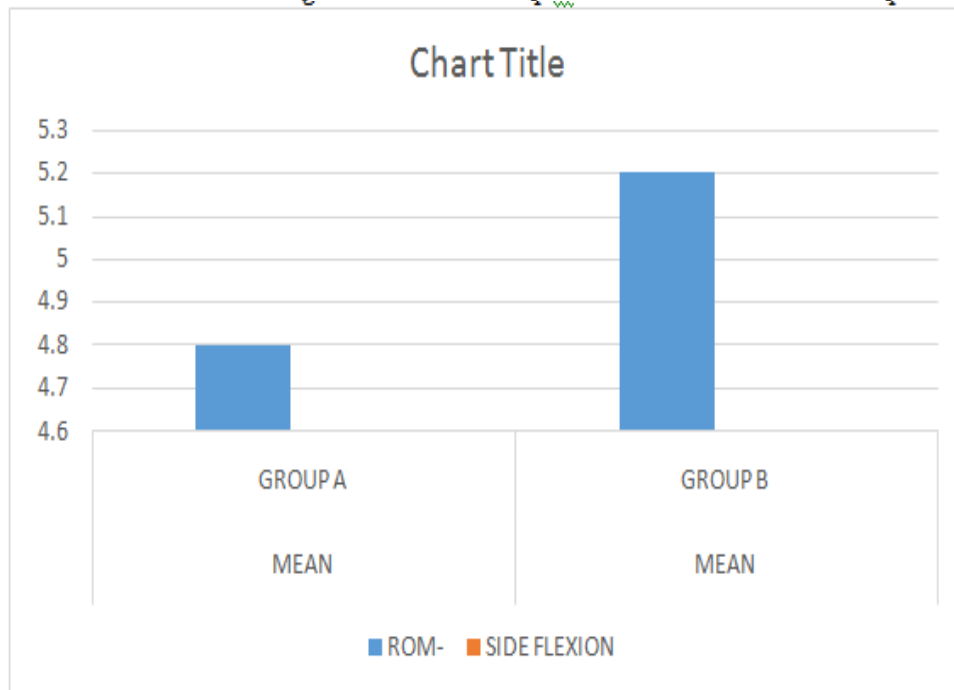


Table: 10 Comparison Of Mean Differences Of Rotation In Groip A Group B

Outcome	Group A		Group B	
	Mean	Sd	Mean	Sd
Rom- Rotation	2.8	2.111	2.933	2.404

Group B showed a difference of 0.13 degrees more than Group A in ROM of rotation with $p < 0.05$

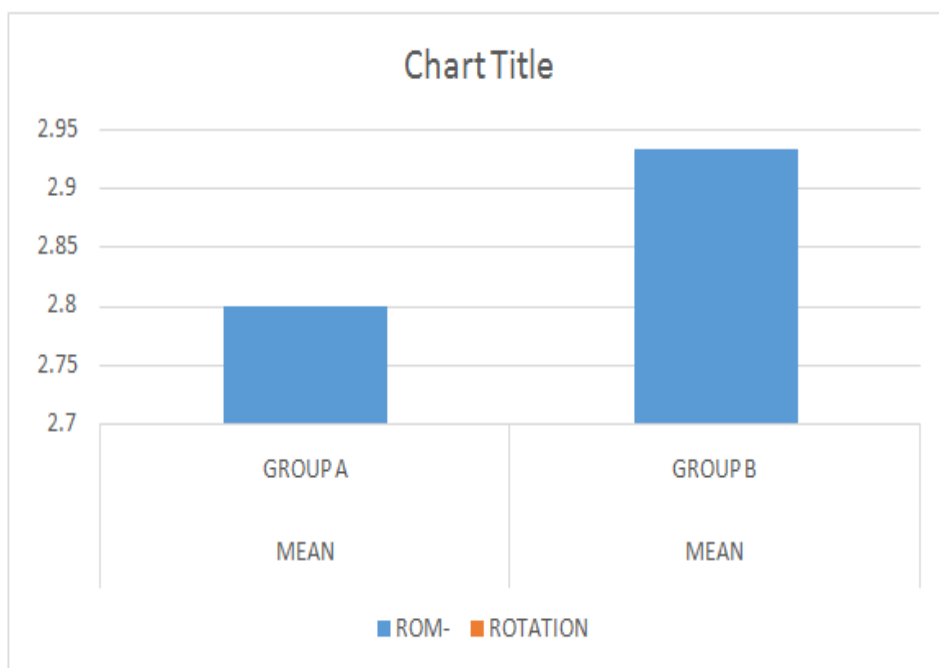


Table: 11 Comparison Of Mean Differences Of Vas Scores In Groip A Group B

Outcome	Group A		GROUP B	
	Mean	Sd	Mean	Sd
Vas	2.5	0.862	2.847	1.089

Group B showed a difference of 0.347 less than Group A in VAS score with $p < 0.05$

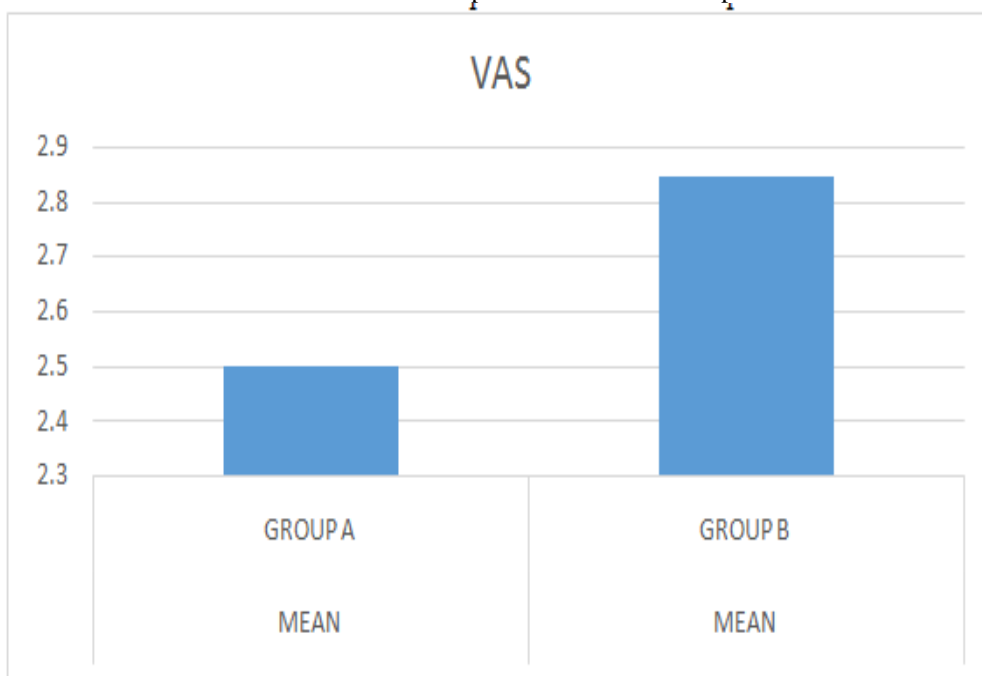
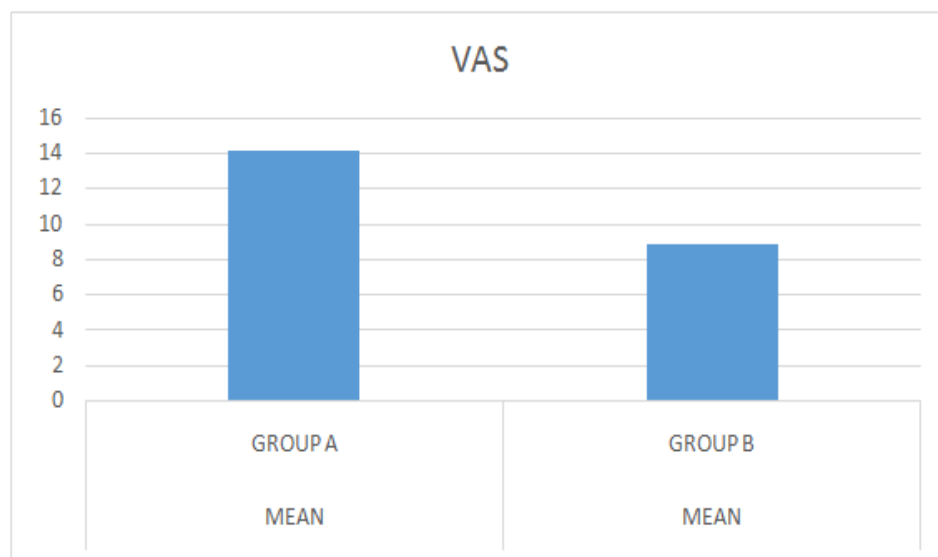


Table: 12 Comparison Of Mean Differences Of Ndi Scores In Groip A Group B

Outcome	Pre-Treatment		Post-Treatment	
	Mean	Sd	Mean	Sd
Ndi	14.14	7.378	8.893	6.776

Group B showed a difference of 5.247 less than Group A in NDI score with $p < 0.05$



IX. Results

The statistical difference in mean values with Group A (Positional release therapy) post treatment is as follows: (Tables 1-4)

- Increase in the range of side flexion with mean value of 4.8
- Increase in the range of rotation with mean value of 2.8
- Reduction in pain with mean value of 2.54
- Reduction in functional disability with mean value of 14.14

The statistical difference in mean values with Group B (Active release technique) post treatment is as follows: (Tables 5-8)

- Increase in the range of side flexion with mean value of 5.26
- Increase in the range of rotation with mean value of 2.93
- Reduction in pain with mean value of 2.8
- Reduction in functional disability with mean value of 8.36

The statistical difference in mean values with Group A (Positional release therapy) and Group B (Active release technique) post treatment is as follows: (Tables 9-12). The values shows statistically no significant changes in mean difference for Range of motion and Pain at $p < 0.05$ and slight significant changes with Disability index at $p < 0.05$ for Group B comparatively with Group A.

- Group B shows a slight increase in side flexion by 1.2
- Group B shows a slight increase in rotation by 0.133
- Group B shows additional pain reduction by 0.347
- Group B shows higher range of Disability reduction by 5.247

X. Discussion

The present study shows that both Positional release therapy and Active release technique could be beneficial in the treatment of neck pain having trapezius spasm. Adult women with postural changes between the ages of 25 and 50 years are no longer influenced by structural growth. Activities of daily living, including lifestyle choices, and occupational and sports activities may affect postural alignment and predispose adults to injury. Occupations that require prolonged static positioning, heavy manual work, shift work, and repetitive activities, all contribute to postural adaptations and resultant pain symptoms. The subjects of the study proves the several factors that affect postural change for this age group. The social expectations of caregiving, financial stress, abuse (physical and sexual), high-risk social behaviors and fashion trends (e.g., high-heel shoes and tight clothing) can all contribute to postures that compromise joint position, muscle balance, and movement patterns resulting in recurrent Trapezius myalgia.^{9,10}

Surgery, chronic illness, motor vehicle accidents, and mental health are other factors that can change a woman's posture. These years are an optimal time for women to develop and maintain healthy postural and exercise habits before entering the middle and elder years, where postural changes may become more structural.^{11,12}

Posture is a multi-faceted topic that is still not yet fully understood. Based on the findings of the research presented, the possibility of postural realignment is debatable and the effectiveness of corrective programs is questionable. There is some evidence from sports participants to suggest that changes in posture may occur as a result of certain activities but research results on the effectiveness of postural correction are mixed. In Group A, PRT within group was calculated by using paired “t” test which showed $p < 0.05$ for pain intensity, range of motion and functional disability. One way of dealing with the affected muscle group is the “Positional Release Therapy” (PRT), a method for assessing the whole body. It is a treatment that uses sensitive points and a position of comfort to solve the associated dysfunction. PRT is a passive and indirect therapy for tissue resistance (application of the technique in the direction of ease), using the positioning of the body and sensitivity to identify and monitor the injury. By doing so, it improves the function, relieves the tension and eases the musculoskeletal pain.¹³⁻¹⁷

Assuming the work environment for the 'typical' sedentary office worker is not changing any time soon, this solution explains how to incorporate a specific training program into their day, the types of exercises to select (and why) and how to implement them with minimal impact to their day. Example of an office exercise plan is also provided. ART is not deep tissue massage therapy. Although ART and massage therapy work extremely well together as adjunctive therapies, massage therapy often does not effectively deal with muscular adhesions and scar tissue. Deep tissue massage uses a stripping motion or deep pressure to try to smash the adhesion which can be very painful. ART uses a lighter pressure combined with active lengthening of involved muscles to develop greater tension into the adhesions or scar tissue. This creates increased friction to break the adhesions up, is much less painful, and has longer lasting results. ART is very specific and the results achieved utilizing this technique are much more predictable.¹⁸⁻²⁰

Group B ART within group significance was calculated using paired “t” test which showed $p < 0.05$ for pain intensity, range of motion and functional disability. ART originally built its reputation on success with elite triathlon participants. From there its reputation spread throughout the sporting world, as elite athletes from a variety of sports traveled great distances to be treated by the few ART providers. As a larger network of ART providers has developed, reports of ART's effectiveness has spread to the workplace and the common person dealing with many different soft tissue injuries. Though anyone can develop soft tissue injuries through trauma, stress, or overuse of muscles, the following individuals are especially likely to develop these problems and experience results with ART treatment.²¹⁻²⁵ Since ART has no contraindications, it can be applied to patients of all ages as well as pre and post-surgical patients and pregnant women and many workers. The study demonstrates clinically significant decrease in Pain (VAS), Disability (NDI), and increase in cervical range of motion. This improvement may be due to rapid hypo analgesic effects of mobilization induced analgesia with posture and body mechanics training which is vital to treat somatic dysfunctions that result in cervical motion restriction. In a recent randomized controlled trial of Bronfort suggested that substantial improvement in the neck disability index was observed in the groups, but no significant differences between groups reported ($p < 0.05$). In contrast to these findings, our study demonstrated significant improvement in neck disability score after 5 days of treatment. It's because NDI assesses different aspects of neck pain and daily activities. It is suggested that improvement in the score might be due to combined effects of reduction in pain and improvement in neck muscle strength.

XI. Conclusion

A very subtle posture correction in alignment can make the difference between complete recovery and being stuck with managing a chronic problem. Manual therapy, Massage and stretching are most effective when they are gentle and gradual. Too vigorous an attack on a taut muscle can provoke more stiffening. But done with a light touch, massage and stretching ease the muscle back to normal. There are measures to help prevent tension buildup. The best is to exercise on a regular basis. Not only does it seem to help people relax, but exercise helps condition the body to cope with stress. Once the ideal posture and body mechanics has been achieved in treatment, the self-help techniques and strategies will be beneficial for the healthy changes to be maintained. Active release therapy will be more beneficial and the patients could be self-reliant in performing on their own with tennis ball and other methods.

XII. Future Recommendations

Further research on the role of the muscular and neural systems will also be of use. Understanding the interplay of the muscular and neural aspects of postural control will give insight into posture in general and perhaps provide knowledge necessary to develop an effective corrective program.

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