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Comparative Effect Of Post Isomeric Relaxation And Positional Release Technique On Myofascial Pain For Unilateral Upper Trapezius In Post - Natal Women.

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ABSTRACT

Background: Myofascial pain syndrome is a musculoskeletal condition marked by localized pain and trigger points, commonly affecting the upper trapezius. Post-natal women are particularly prone due to physiological and postural changes.

Objective: To compare the effectiveness of Post-Isometric Relaxation (PIR) and Positional Release Technique (PRT) in reducing upper trapezius myofascial pain among post-natal women.

Methodology: Thirty-eight post-natal women (aged 20–40) with unilateral upper trapezius pain were randomly assigned to two groups: Group A (PIR) and Group B (PRT). Outcomes measured were neck disability index (NDI) and cervical range of motion (CROM). Assessments were done pre-intervention and after six days.

Results: Both groups showed significant improvement in NDI and CROM ($p < 0.05$). No Statistically significant difference was found between groups post-intervention ($p > 0.05$).

Conclusion: Both PIR and PRT effectively reduced myofascial pain and improved cervical motion in post-natal women, with PRT being slightly more effective overall.

Key words:

Post-Isometric Relaxation (PIR), Positional Release Technique (PRT), Myofascial Pain ,Upper Trapezius, Post-Natal Women, Neck Disability Index, Cervical Range of Motion**.**

INTRODUCTION:

Myofascial pain is clinical syndrome of soft tissue pain arising from skeletal muscle.[1]Myofascial trigger points is demarcated as hyperirritable point which is situated inside a tight or inflexible band of skeletal muscles.[2] Trigger points can occur in any muscle, but it is usually seen to occur in muscles that help to maintain posture, the most commonly involved muscle is the upper trapezius.[3]

The upper trapezius muscle, a crucial postural muscle, is highly prone to overuse, leading to persistent pain that intensifies with activity and persists even at rest.[4]

Causes of upper trapezius pain in post-natal women is due to increase in breast size, having big breast can put a stress over chest, not enough support is received from surrounding muscle of body, the weight of breast makes it difficult to maintain good posture even leads to spinal deformity which in turn causes pain. Trigger point form from excessive release of acetylcholine which constant depolarization.[5]

Pain occurs due to excessive involuntary muscle contraction, leading to stiff areas, palpable bands of tension within the muscle tissue and fascia, and hypersensitive points known as myofascial trigger points.[6]

Muscle energy technique (MET) is active muscle-based treatment approaches that involved the voluntary contraction of muscle in precisely direction against a counterforce provide by a therapist.[7]

MET may be used to reduce pain, stretch tight muscle and fascia, reduce muscle tonus, improve local circulation, strengthen weak musculature and mobilize joint restrictions. Post isometric relaxation (PIR) is used to relax and lengthen a hypertonic and shortened muscle.[8]

Positional Release Technique (PRT) is an osteopathic treatment method that involves placing the affected tissue in a position of maximum comfort to reduce the irritability of tender points and normalize the tissue associated with dysfunction.[9]

Positional release technique (PRT) is a gentle, passive, pain, relax muscle and released dysfunction by resetting muscle tone and enhancing circulation.[10,11,12]

In PRT affected muscle is set in a shortened and comfortable position in order to decrease the excessive impulse from the spindle muscle.[13]

OBJECTIVE:

To compare the effect of post isometric relaxation and positional release technique on myofascial pain for unilateral upper trapezius in post-natal women.

METHODOLOGY:

A comparative experimental study was conducted among postnatal women selected through simple random sampling from a tertiary care hospital. The study was carried out over a duration of six months with a total sample size of 38 participants, determined using the formula $n = 2z1^2s^2 / d^2$

SELECTION OF CRITERIA:

INCLUSION CRITERIA:

- Post natal women undergone full term normal delivery and lower segment cessation section.
- Post natal women with myofascial pain in upper trapezius.
- Age 20-40 years.
- VAS is above 4.
- Post natal women with unilateral trapezitis.

EXCLUSION CRITERIA:

- Patient not willing for study.
- Cervicogenic headache.
- Patient with cognitive problems.
- Torticollis.
- Disc pathology.
- Patient age below 20.
- Cervical injury.
- Open wound.
- Recent surgery over cervical region.

OUTCOME MEASURE:

- Neck Range of motion of cervical lateral flexion and cervical rotation
- DISABILITY INDEX (NDI)

PROCEDURE:

Patients were divided into Group A and Group B. Group A received post isometric relaxation technique and Group B received positional release technique .

Group A-Post isometric relaxation

For post isometric technique, in sitting position patient neck was passively flexed towards the opposite side where they feel the pain and rotate on to the same side of the pain until tension was felt by the therapist and a moderate stretch was felt by the patients and against the therapist hand for 7 – 10seconds, followed by 3 seconds of relaxation. This was repeated for 5 times in a session. At the end of the session Cryotherapy was given by using ice pack for 15minutes.

Group B-Positional Release Technique

For positional release technique patient was positioned in supine position with cervical spine in neutral, with the therapist standing on trigger point side. The patient's head was laterally flexed towards the trigger point side passively; the therapist grasps the patients forearm and abducts the shoulder to approximately 90^0 and slight flexion or extension to fine tune the position. Therapist maintains contact on the trigger point

throughout the procedure and applies intermittent pressure over the trigger point to monitor the reduction in the palpable tone of trigger point and reduction in the pain intensity.

Ideal position (position of comfort) was determined subjectively by reduction in palpable tone of trigger point and reduction in the pain intensity to its minimum.

This position of comfort was maintained for 90 seconds. After 90 seconds the patients were bought back to original position passively and slow. At the end of the session Cryotherapy was given by using ice pack for 15minutes.

RESULT:

The data presented in the Table 1 and Figure 1 shows that, the age of Samples varied from 20- 30 years, in case of Group-A maximum samples 18 (94.7 %) were in the age group of 20 to 30 years followed by 01 (5.26 %) were in the age group of 31 to 40 years while in case of Group-B, Maximum samples 14 (73.68 %) were in the age group of 21 to 30 years while 5 (26.31 %) were in the age group of 31-40 years .

TABLE 1
Frequency and Percentage distribution of Samples according to their Age.
N=19+19

SRNO	Demographic variables	Group – A		Group – B	
		Frequency	Percentage	Frequency	Percentage
1.	Age a. 20- 30 Yrs b. 30-40 Yrs	18 01	94.75% 5.26%	14 05	73.68% 26.31%

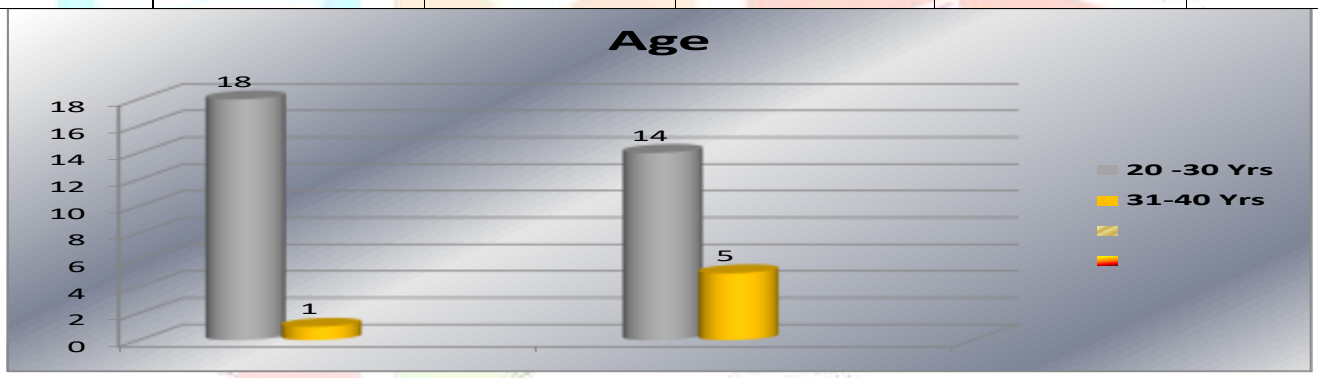


Figure.no-01 : Frequency and Percentage distribution of Samples according to their Age.

A total of Thirty-Eight (38) Post natal women were selected for the study and were divided into two groups as Group-A and Group-B, each group was consisted of 19 samples. Group - A samples were subjected to post-isometric relaxation technique Group - B samples were subjected to Positional release technique among post-natal women to explore impact of interventions on Neck disability index and Cervical lateral Flexion & lateral Rotation among Postnatal women, the findings are tabulated below.

Table.no -2
Mean and Standard Deviations of Samples patients before and After Interventions
N1 + N2= 19+19

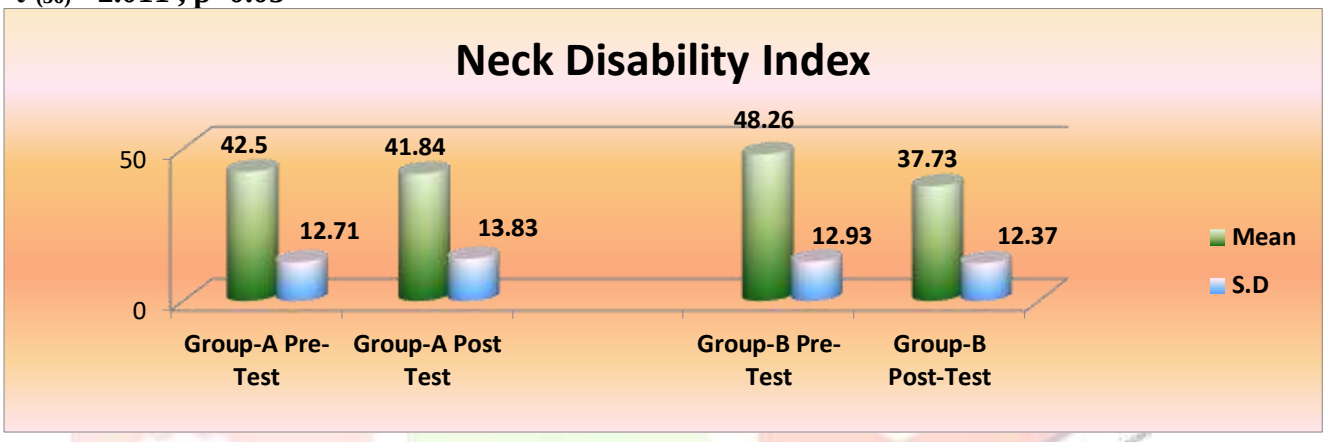
Parameters		Pre –test		Post-Test	
		Mean	S.D	Mean	S.D
Neck Disability Index	Group A	42.50	±12.71	41.84	± 13.83
	Group - B	48.26	±12.93	37.73	±12.37
Cervical lateral Flexion	Group A	41.68	±02.49	45.15	±02.65
	Group B	40.31	±03.48	47.05	±04.32

Cervical lateral Rotation	**Group A**	**62.57**	**±02.47**	**65.36**	**±02.85**
	Group B	**60.47**	**±02.67**	**67.89**	**±02.37**

Table.no – 03
$n_1+n_2=38$
Intergroup analysis of Neck Disability Index

Neck Disability Index	Mean	Mean difference	Standard Error Difference	Independent 't' test	P-Value
Post Isometric Relaxation	**41.842**	**04.105**	**04.105**	**0.992**	**0.341**
Positional Release Technique	**37.73**				

't'$_{(36)}$= 2.011 , p>0.05



The results in Table No. 3 show a mean difference of 4.105 between Post-Isometric Relaxation and Positional Release Technique for the Neck Disability Index. The independent t-test value (0.992) is lower than the critical value (2.011), and the p-value (0.341) is greater than 0.05, indicating no statistically significant difference between the two interventions. This suggests that both techniques have a similar effect on reducing neck disability among post-natal women.

Table.no – 04
$n_1+n_2=38$
Intergroup Comparison of Cervical Lateral Flexion

Cervical Lateral Flexion	Mean	Mean difference	Standard Error Difference	Independent 't' test	P-Value
Post Isometric Relaxation Exercise	**45.15**	**01.894**	**01.164**	**01.628**	**0.112**
Positional Release Exercise	**47.05**				

't'$_{(36)}$= 2.011 , p>0.05

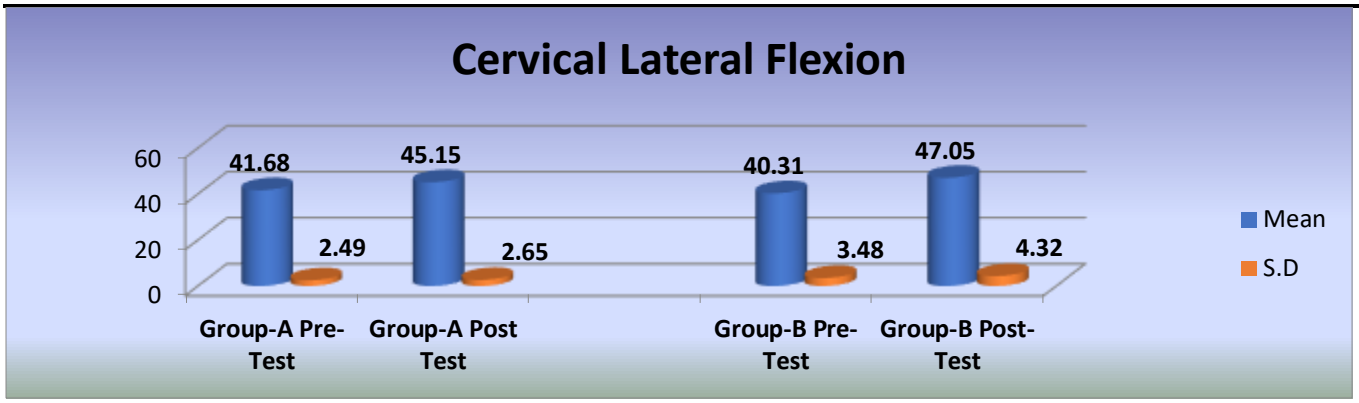


Table No. 4 shows a mean difference of 1.984 between Post-Isometric Relaxation and Positional Release Exercise for cervical lateral flexion. The obtained t-value (1.628) is lower than the critical value (2.011), and the p-value (0.112) is greater than 0.05, indicating no significant difference between the two techniques. This suggests that both interventions are similarly effective in improving cervical lateral flexion among post-natal women.

Table.no – 05
Intergroup Comparison of Cervical Lateral Rotation

Cervical Lateral Rotation	Mean	Mean difference	Standard Error Difference	Independent 't' test	P-Value
Post Isometric Relaxation Exercise	65.36	02.526	0.8519	01.965	0.105
Positional Release Exercise	67.89				

't'$_{(36)}$= 2.011 , p>0.05

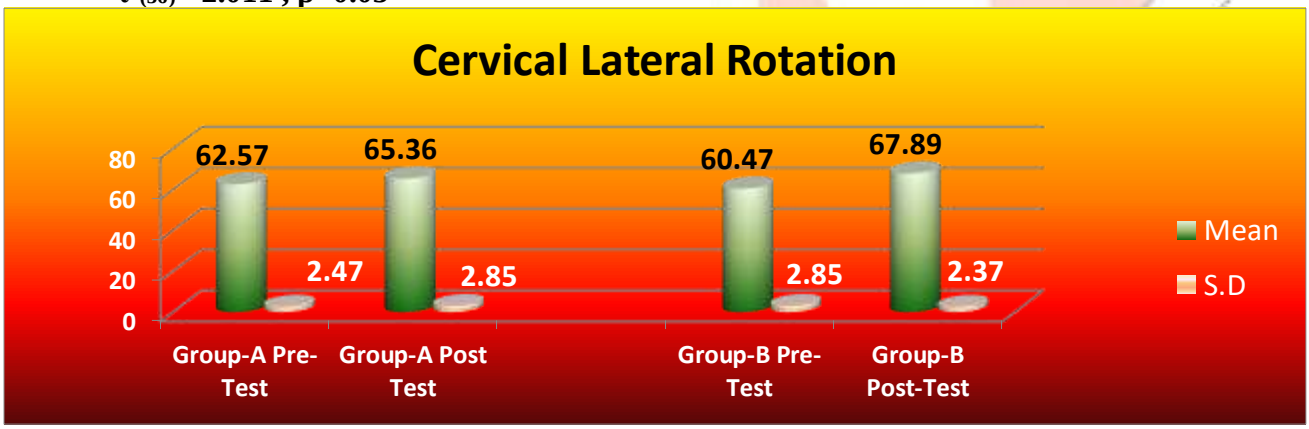


Table No. 5 show a mean difference of 2.526 between Post-Isometric Relaxation and Positional Release Technique for cervical lateral rotation. The calculated t-value (1.965) is lower than the critical value (2.011), and the p-value is greater than 0.05, indicating no statistically significant difference between the two groups. This suggests that both techniques provide a similar effect on improving cervical lateral rotation among post-natal women.

DISCUSSION:

The present study was undertaken to compare the effectiveness of Post-Isometric Relaxation (PIR) and Positional Release Technique (PRT) on myofascial pain of the unilateral upper trapezius among postnatal women. A total of 38 participants were divided equally into two groups: Group A received PIR and Group B received PRT. Post-Isometric Relaxation acts by engaging the affected muscle in a gentle isometric contraction followed by relaxation, which allows muscle fibers to reset their resting length and reduce tension. This results in decreased pain and improved flexibility. Similarly, Positional Release Technique works on the principle of placing the muscle in a position of maximal comfort, leading to reduced muscle spindle activity, pain relief, and normalization of tissue tone.

PIR works by gently contracting the tight muscle isometrically, followed by relaxation. This decreases muscle spindle activity, increases Golgi tendon organ input, and allows the muscle fibers to reset to their normal resting

length, resulting in reduced tension and improved flexibility . PRT functions by placing the muscle in its position of greatest comfort, which reduces nociceptor activity, decreases gamma motor neuron firing, and relaxes hyperactive muscle fibers through a sustained strain–counterstrain mechanism.

The results of the study revealed a significant improvement in both groups with respect to Neck Disability Index (NDI), Cervical Lateral Flexion, and Cervical Lateral Rotation following intervention. In Group A (PIR), there was a noticeable reduction in neck disability ($t = 4.782$, $p < 0.05$) and significant improvement in cervical lateral flexion and rotation ($p < 0.05$). Similarly, Group B (PRT) demonstrated a greater reduction in neck disability ($t = 9.798$, $p < 0.05$) and significant enhancement in cervical lateral flexion ($t = 10.467$) and rotation ($t = 11.036$).

However, when comparing the post-test values between the two techniques using an independent t-test, statistically significant difference was found ($p > 0.05$) for any of the measured parameters. The study showed that the Positional Release Technique (PRT) was statistically more effective than the Post-Isometric Relaxation (PIR) technique in improving outcomes among post-natal women, particularly in reducing pain and enhancing cervical range of motion. However, both techniques were found to be effective in the management of myofascial pain in the upper trapezius.

These findings are consistent with previous research that highlights the efficiency of muscle energy techniques and positional release techniques in relieving muscle tension and enhancing flexibility.

CONCLUSION:

The present study concluded that both Post-Isometric Relaxation (PIR) and Positional Release Technique (PRT) are effective in reducing myofascial pain and improving cervical range of motion in post-natal women with unilateral upper trapezius involvement. The study showed that the Positional Release Technique (PRT) was statistically more effective than the Post-Isometric Relaxation (PIR) technique in improving outcomes among post-natal women, particularly in reducing pain and enhancing cervical range of motion.

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