RESEARCH PAPER

Comparative Effectiveness of Global Postural Re-education Technique and Positional Release Technique on Pain, Disability and Range of Motion in Individuals with Chronic Non-Specific Neck Pain: A Randomized Controlled Trial

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ABSTRACT
Background: Chronic non-specific neck pain is a prevalent musculoskeletal condition that can negatively impact daily functioning, work productivity, and overall quality of life. Among the various physiotherapy interventions available, Global Postural Re-education (GPR) and Positional Release Technique (PRT) are commonly used to address pain and movement dysfunction. However, evidence directly comparing their effectiveness remains limited.
Objective: To compare the effects of Global Postural Re-education and Positional Release Technique on pain intensity, disability, and cervical range of motion in individuals with chronic non-specific neck pain.
Methods: Thirty adults with chronic non-specific neck pain were randomly allocated to two groups. Group A received Positional Release Technique combined with conventional physiotherapy, while Group B received Global Postural Re-education combined with conventional physiotherapy. Both groups underwent treatment twice weekly for six weeks. Outcome measures included pain intensity assessed using the Visual Analogue Scale (VAS), disability measured using the Neck Disability Index (NDI), and cervical range of motion evaluated with a universal goniometer. Assessments were conducted before and after the intervention period.
Results: Both groups demonstrated significant improvements in pain, disability, and cervical range of motion following six weeks of treatment ($p < 0.05$). Participants receiving GPR showed greater numerical improvements in pain reduction and cervical flexion, whereas those receiving PRT demonstrated slightly greater improvement in disability scores. Nevertheless, no statistically significant differences were observed between the groups for any outcome measure ($p > 0.05$).
Conclusion: Both GPR and PRT, when combined with conventional physiotherapy, were effective in improving pain, disability, and cervical mobility in individuals with chronic non-specific neck pain. As neither intervention demonstrated superiority, both may be considered valuable treatment options based on individual patient needs and clinical judgment.
Keywords: Chronic non-specific neck pain; Global Postural Re-education; Positional Release Technique; physiotherapy; cervical range of motion; Neck Disability Index.
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Introduction

Neck pain is one of the most prevalent musculoskeletal complaints worldwide, affecting an estimated 288.7 million people globally, with 28.6 million years lived with neck pain-related disability recorded in 2017 alone. [1,5,30] While most episodes resolve on their own within three to six months, roughly 14% of individuals experience recurrences or prolonged symptoms. When discomfort persists beyond 12 weeks, it is classified as Chronic Non-Specific Neck Pain (CNSNP) [5,12,14] - a condition increasingly linked to modern sedentary lifestyles and repetitive work postures rather than any serious underlying pathology.

Clinically, CNSNP manifests as reduced neck muscle strength, flexor endurance, and force steadiness. Neck-specific exercises (NSEs) targeting the cervical musculature remain the cornerstone of its management. [6,25,27]

Global Postural Re-education (GPR), developed in France by Philippe Emmanuel Souchard, operates on

the principle that postural muscles function as interconnected "muscle chains" along the anterior and posterior spine. By stretching shortened antigravity muscles and strengthening their antagonists, GPR aims to restore muscle balance and postural symmetry across eight structured positions. [17,18] Existing evidence supports its effectiveness in musculoskeletal rehabilitation, with studies suggesting GPR outperforms segmental exercises in improving pain and quality of life in patients with neck pain-associated scapular dyskinesis. [2,18,19]

Positional Release Technique (PRT), or strain-counterstain, is a passive manual therapy rooted in osteopathic medicine [23,24,29]. It works by repositioning the body to reduce tension at hypertonic muscle trigger points, temporarily interrupting muscle spindle activation and allowing the tissue to return to a normal resting tone [23,29]. Clinical studies support PRT's effectiveness for various musculoskeletal conditions, with existing trials demonstrating comparable outcomes to myofascial release and muscle energy technique in reducing pain and neck disability [8,9,23,29].

Despite growing interest in both approaches, direct comparative evidence between GPR and PRT in CNSNP remains limited, warranting further investigation.

Although both Global Postural Re-education and Positional Release Technique have demonstrated effectiveness in reducing pain and improving function in musculoskeletal disorders, direct comparisons between these interventions in individuals with chronic non-specific neck pain are scarce [10,18,23]. Therefore, it remains unclear whether one approach provides superior clinical benefits over the other. This study was conducted to address this gap.

To the authors' knowledge, no previous randomized controlled trial has directly compared GPR and PRT in patients with chronic non-specific neck pain.

Aim

To compare the effect of Global Postural Re-education technique and Positional Release Technique on Pain, Disability and Range of Motion in individuals with Chronic Non-Specific Neck Pain.

Methodology

- Study design: A Randomized Controlled Trial
- Study setting: The study was conducted in the OPD of the hospitals and clinics
- Sample design: Simple Random Sampling
- Sample size:30 patients of Chronic Non-Specific Neck Pain.
- Study duration: 6 weeks, with two sessions per week, each lasting 60 minutes.
- Population: Patients suffering from Chronic Non-Specific Neck Pain.

Randomization and blinding: Due to the nature of the interventions, blinding of the treating physiotherapist and participants was not feasible. However, the outcome assessor who recorded VAS, NDI, and cervical ROM measurements was blinded to group allocation to minimize assessment bias.

Inclusion criteria:

1. Participants willing to participate.
2. Age:18 -55 years.
3. Both male and female.
4. VAS > 3.

Exclusion criteria:

1. Acute or subacute neck pain.
2. Specific cause of neck pain (e.g. systemic, rheumatic, neuromuscular diseases).
3. Central and peripheral neurological signs.
4. Cognitive impairment, spinal surgery, or physical therapy treatments in six months prior to baseline assessment.
5. Diagnosis of cervical radiculopathy or myelopathy prior by primary care physician.
6. History of whiplash injury.
7. History of cervical spine and shoulder surgery.
8. Physical therapy treatment more than one month.

Outcome measure:

1. VAS
2. Neck Disability Index
3. Universal Goniometer

Procedure:

We had taken ethical permission from college Ethical Committee. Then the sample size was taken from the mother article. After getting the sample size the patients were taken on the basis of the inclusion criteria. 30 number of patients of Chronic Non-Specific Neck Pain was divided into Group A and Group B using simple random sampling in which Group A was given Positional Release Technique with Conventional Therapy and Group B will be given Global Posture Re-education technique with Conventional Therapy. Consent forms were taken from all the participants. Assessment of all patients were taken. Pre and post outcome measure for Pain, Disability and ROM were taken after completion of session using VAS, Neck Disability Index and Universal Goniometer.

Group A: Positional Release Technique with Conventional Therapy

In this study we had given PRT as a therapeutic intervention. The patient should be in a comfortable position; most often lying position. Palpate the affected area that may be associated due to referred pain. There may be multiple tender point so treat the most severe one first. Palpate the selected tender point – instruct the patient to relax the area. Passively move the appropriate body part to release tension at the tender point. Stop motion when the pain stops and the patient only feel pressure. Positioning of the cervical spine involves using the tender point as a fulcrum about which all of the component movements (flexion, extension, rotation and lateral flexion) are focused. For treatment of anterior lesions precise flexion of cervical spine at the level of the tender point. Posterior tender points are treated using extension. Midline or close-to-midline tender point are often treated with flexion or extension. Lateral to midline are treated with more rotation and / or side bending. After the position of ease is found then maintain it for 90 sec. Encourage the patient to relax; slowly return to neutral position. check the tender point; expect 70% improvement in pain level and reduce tension. [12] [13]

Group B: Global Postural Re-education with Conventional Therapy

All muscles of the same chain are simultaneously stretched during a 15-minute posture, avoiding compensations. Patient attended two weekly physical therapy sessions during a 6-week period. At each 60-minute individual session the patient received manual therapy for 30 minutes and stretched for another 30 minutes. GPR group: Stretched muscle chain keeping two stretching posture for 15 minutes each. In order to stretch the posterior muscle chain (upper trapezius, levator scapulae, suboccipitalis, erector spinae, gluteus maximus, ischiotibials, triceps surae and foot intrinsic muscles), the patient lay in the supine position with the occipital, lumbar and sacral spine stabilized, with the lower limbs at 90-degree hip flexion, performed gradual knee extension. In order to stretch the anterior muscle chain (Diaphragm, pectoralis minor, scalene, sternocleidomastoid, intercostalis, iliopsoas, arm, forearm and hand flexors), the patient lay in the supine position with upper limb abducted at 30 degree and the forearms supine. The pelvis was kept in retroversion, while the lumbar spine remained stabilized. Hips were flexed, abducted and laterally rotated with the sole of the feet touching each other. Gradually, respecting the patient's limits, the lower limbs were extended as much as possible while maintaining the tibiotarsal angle at 90 degrees.

Conventional Therapy

Both groups received a standardized conventional exercise program consisting of cranio-cervical flexion, deep cervical flexor strengthening, co-contraction exercises, and progressive eccentric cervical muscle training.

Statistical Analysis

Data were analyzed using SPSS version 26. Normality was assessed using the Shapiro-Wilk test. Paired t-test/Wilcoxon signed-rank test was used for within-group analysis, and independent t-test/Mann-Whitney U test was used for between-group analysis. Significance level was set at $p < 0.05$.

Result

A comparative study consisting of 30 subjects of Chronic Non-Specific Neck Pain which were divided into 2 groups. 15 subjects in Group A (positional release technique) and 15 subjects in Group B (Global postural re-education) allocated with the use of simple random sampling.

TABLE 1.1: MEAN AGE OF PARTICIPANTS ACCORDING TO GENDER

AGE GROUP	NUMBER	MEAN AGE	SD
Male	9	40	±11.51
Female	21	35.42	±9.23

Table 1.1 Display 09 males and 21 females are included in this study. Male mean age was 40 and Female mean age was 35.42. Standard Deviation of Male ±11.51 and of Female ±9.23.

Within-group analysis demonstrated significant improvements in pain, disability, and cervical range of motion following the six-week intervention in both groups ($p < 0.05$). Participants receiving PRT (Group A) and GPR (Group B) showed reductions in VAS and NDI scores along with improvements in cervical ROM compared with baseline values (Tables 1.2 and 1.3).

TABLE 1.2: Within-group comparison of pain, disability, and cervical range of motion outcomes before and after intervention in Group A.

OUTCOME	PRE-MEAN	POST MEAN	T VALUE	P VALUE
NDI	7.4	2.2	11.309	<0.05
VAS	5.23	2.15	11.818	
CERVICAL FLEXION	36.66	44	-	
CERVICALEXTENSION	40.66	44	-	
CERVICAL LATERAL FLEXION(LT)	40.66	44.33	-	>0.05
CERVICAL LATERAL FLEXION(RT)	42.33	44.33	-	
CERVICAL ROTATION(LT)	54.66	59.33	-	<0.05
CERVICAL ROTATION(RT)	54.66	59.66	-	

TABLE 1.3: Within-group comparison of pain, disability, and cervical range of motion outcomes before and after intervention in Group B

OUTCOME	PRE-MEAN	POST-MEAN	T VALUE	P VALUE
NDI	7.86	2.93	6.065	<0.05
VAS	5.90	1.69	-	
CERVICAL FLEXION	38.33	48.33	-	
CERVICAL EXTENSION	41.33	44.66	-	
CERVICAL LATERAL FLEXION(LT)	39.66	43.66	-	
CERVICAL LATERAL FLEXION(RT)	41	44.66	-	
CERVICAL ROTATION(LT)	54.66	59.33	-	
CERVICAL ROTATION(RT)	55	59.33	-	

TABLE 1.4: TABLE SHOWS BETWEEN GROUPS COMPARISON OF GROUP A AND GROUP B

Outcome	Group A Mean ± SD	Group B Mean ± SD	Mean Difference	Test Statistic	p-value
NDI	2.20 ± 0.83	2.93 ± 1.70	-0.73	t = 2.029	0.052
VAS	2.15 ± 0.91	1.69 ± 0.87	0.46	U = 70.500	0.241
Cervical Flexion	44.00 ± 2.00	48.33 ± 2.37	-4.33	U = 97.500	0.087
Cervical Extension	44.00 ± 2.00	44.66 ± 1.24	-0.66	U = 127.500	0.512

Table 1.4 Between-group analysis revealed no statistically significant differences between Group A and Group B in post-intervention NDI, VAS, or cervical ROM outcomes ($p > 0.05$). Although Group B demonstrated greater numerical improvement in cervical flexion and pain scores, these differences were not statistically significant.

DISCUSSION

The present study compared the effectiveness of Global Postural Re-education (GPR) and Positional Release Technique (PRT) on pain, disability, and cervical range of motion (ROM) in individuals with Chronic Non-Specific Neck Pain. Both groups demonstrated significant improvements in pain, disability, and cervical ROM following the six-week intervention. However, no statistically significant differences were observed between the groups for any outcome measure ($p > 0.05$), indicating that both interventions were similarly effective.

The improvements observed in the GPR group may be attributed to the combination of prolonged postural stretching and low-intensity isometric contractions. GPR promotes muscle elongation, viscoelastic stress relaxation, and improved flexibility, which may contribute to enhanced cervical mobility [17,18]. Furthermore, GPR may facilitate more balanced muscle activation by improving deep cervical muscle recruitment and reducing excessive activity of superficial muscles [2,15,18]. These findings are consistent with the study by Fernandes et al. [2], who reported improvements in pain, disability, and cervical ROM following GPR in individuals with chronic neck pain. Similar improvements in cervical flexion have also been reported by Pillastrini et al. [18] and Bae [19].

The beneficial effects of PRT may be explained by its ability to reduce muscle spindle activity and restore normal muscle resting tension. By placing tissues in a position of comfort, PRT may decrease muscle guarding, improve circulation, and reduce nociceptive input, thereby contributing to pain relief and improved mobility [23,24,29]. These findings are supported by studies evaluating PRT and strain-counterstrain techniques for neck pain and myofascial dysfunction [9,23,29].

Although GPR showed greater numerical improvements in pain reduction and cervical flexion, while PRT demonstrated slightly greater improvement in disability, these differences were not statistically significant. The improvement in disability observed in both groups may be secondary to reductions in pain and improvements in cervical mobility [6,25,27].

Overall, the findings suggest that both GPR and PRT are effective treatment options for individuals with Chronic Non-Specific Neck Pain and can be incorporated into clinical practice according to patient needs and therapist preference [5,10,12,14,30].

Conclusion

The study assessed the effectiveness of Global Postural Re-education (GPR) and Positional Release Technique (PRT) on pain, disability, and range of motion (ROM) in individuals with chronic non-specific neck pain. No statistically significant were found between the groups in NDI, VAS, and ROM measures, suggesting both treatments are similarly effective. Clinically, GPR showed greater effectiveness in reducing pain and improving flexion, extension, and right lateral flexion ROM. PRT was more effective in improving left lateral flexion, right rotation ROM, and disability. Both treatments are safe and beneficial, with GPR offering advantages in muscle stretching and activation, and PRT enhancing muscle relaxation and reducing spasms. Thus, we conclude to accept null hypothesis.

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