



EFFECTIVENESS OF POST ISOMETRIC RELAXATION TECHNIQUE AND POSITIONAL RELEASE TECHNIQUE ON UPPER TRAPEZIUS MUSCLE AMONG COLLEGE STUDENTS “: AN EXPERIMENTAL STUDY

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ABSTRACT:

BACKGROUND: One of the most frequent musculoskeletal problems among college students is neck pain, the goal was to see how efficient post isometric relaxation and positional release techniques were at treating pain, range of motion, and impairment in the upper trapezius muscle.

METHOD: Fifty patients were split into two groups at random. The post isometric technique program was given to group A(=25), whereas the positional release method was given to group B(=25).the cervical spine rom was assessed using the universal goniometry ,while the disability and neck discomfort were measured using the neck pain disability scales..

RESULTS: There was a significant decrease in aching and significant differences ($p=0.001$) in quantifiable variables between the groups after treatment.

CONCLUSION: Both PIR and PRT are effective in reducing pain, improving range of motion, and increasing neck functional activities, according to study, however PIR is more effective than PRT in reducing pain, improving range of motion, and increasing neck functional activities.

INTRODUCTION:

the trapezius muscle is a large superficial back muscle that appears like a trapezoid.it runs from the external protuberance of the occipital bone to the lower thoracic vertebrae and laterally to the scapula's spine. The trapezius has upper, middle, and lower fibers groups (3).the trapezius muscle is largely supplied by three blood vessels :the transverse cervical artery ,the posterior intercostal arterial branches ,transverse cervical artery dorsal scapular artery ,the posterior intercostal arterial branches.

Mechanical neck pain(MNP)is a sort of widespread neck and/or shoulder discomfort induced by mechanical factors such as maintaining neck postures ,moving the neck ,or palpating the cervical muscles(4).postural or mechanical difficulties create MNP symptoms .Poor posture ,anxiety ,sadness ,muscle tension ,and specific or occupational activities are some of the poorly understood and generally complex etiological factors(5).

Sitting ,lying supine or prone ,speaking ,rising ,walking and twisting are all activities that put strain and pressure on the cervical spine .the most prevalent causes of chronic neck pain are muscle strain and /or other tissue sprains(6).

POST ISOMETRIC RELAXATION (PIR) is a technique performed by manual therapists to treat myofascial pain syndrome patients who have tight muscles and poor joint function. In order to achieve the best potential resistance, PIR requires equal collaboration from both the patient and the therapist. Lewit and Simons noticed decreased myofascial soreness after using the PIR method. PIR's success is attributed to a variety of actions, including lengthening short or tight muscles, strengthening weak muscles, assisting the lymphatic or venous pump in improving fluid or blood drainage, and increasing the range of motion (ROM) of a restricted joint. The PIR approach involves the patient producing voluntary muscular contractions against a resistance applied by the therapist (6).

PRT (POSITIONAL RELEASE TECHNIQUE) is a method of assessing the complete body. It is also a treatment that uses sensitive areas and a comfortable position to treat the underlying issue. PRT (passive and indirect tissue resistance therapy) is a technique that employs body placement and sensitivity to discover and evaluate damage. This improves function, reduces tension, and alleviates musculoskeletal pain.

MATERIAL & METHODOLOGY

MATERIAL USED

- goniometer
- pencil
- eraser
- pen

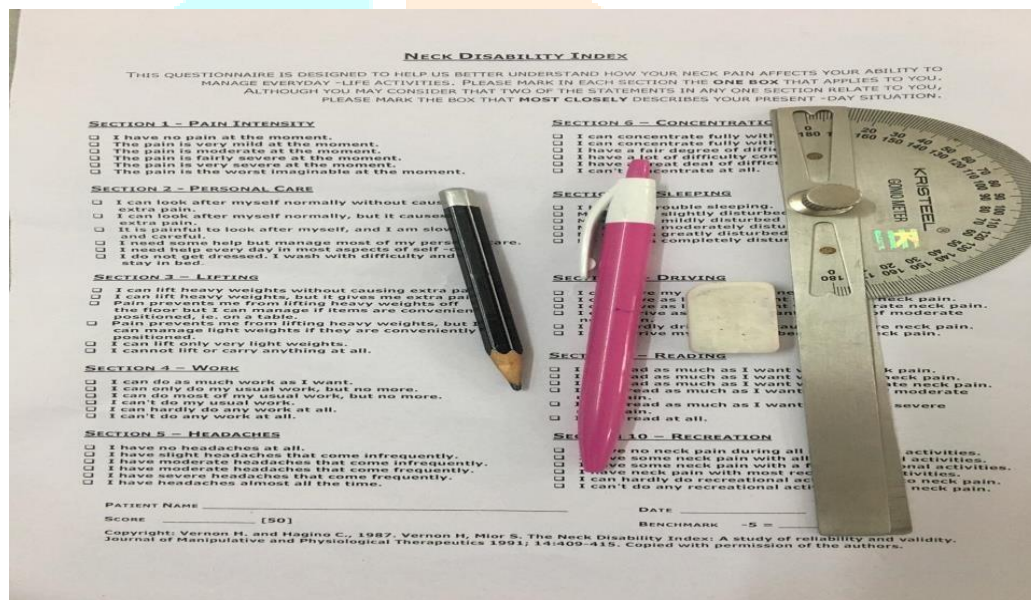


FIGURE : 1 MATERIAL USE

METHODOLOGY

- ✦ SOURCES OF DATA: 50 college going students.
- ✦ STUDY DESIGN: comparative study.
- ✦ SAMPLE SIZE: In this 50 (n=50) college going students are taken.
- ✦ STUDY POPULATION: college going students.

CRITERIA FOR SELECTION INCLUSION CRITERIA

- ✦ Who are willingly Participate.
- ✦ Patients between ages 18 to 30 years irrespective of gender with active upper

trapezius MTrPs or non – specific neck pain

(radiating or non –radiating) without any specific systematic disease.

- Ability to communicate in English.

EXCLUSION CRITERIA

- ✦ In college going students with any clinical disease that can cause neck pain or injury to the cervical spine.history of neck surgery within the last 12months,history of cervical degenerative joint disease ,and trigger point injections in the upper trapezius muscle within the last 6 months are all conditions that should be considered.

METHOD

Thirty undergraduate students were randomly assigned to one of two groups in this study. Their ages ranged from 18 to 30 , and they all had MNP as well as any orthopaedic or neurological issue in the cervical spine or shoulder , A post isometric relaxation treatment is administered to group A(=25).Positional release technique treatment is provided to group B(n=25).The goal is to reduce pain while also increasing functional range of motion .before the study began, all of the students were given a demonstration of the study's methods and processes.

Instead of passive stretching , students in group A(=25)of PARUL UNIVERSITY in waghodiya were given a post isometric relaxation technique for upper trapezius ,levator scapulae , sternocleidomastoid ,scalene ,and suboccipital muscle fibers . Before therapy,the patient is seated in a chair , and the therapist stands behind him/her ,measuring the range of motion of the cervical spine with a goniometer .To avoid building muscular tone ,therapist applied isometric resistance to the tight muscle movement and held for 7 seconds with modest muscle contraction . While the head and neck are flexed and the side bent away from side being handled , the opposite hand quickly closes the barrier. The patient was instructed to breathe in and hold his breath for 7 seconds while moving the stabilized shoulder towards the ear and the ear towards the shoulder despite resistance from both sides .The patient was then instructed to exhale and relax for three seconds .the exercise was performed three times , with each repetition ending just short of the new restriction barrier for both muscles .for four weeks, all patients were treated three times each week on alternate days (19).

Students from BAPS Hospital's Group B(=25) received positional release technique with the subject seated and the therapist standing posterior to the subject's shoulder . The therapist used a pincer grasp to palpate the painful region ,which resulted in a jump sign .With the head bent to the treatment side ,the subject's arm was taken for flexion , abduction and , external rotation . The relaxed position was maintained for approximately 90 seconds . The technique was done three times , with the technique was done three times , with the participant being slowly placed in a neutral cervical spine position between each trial . All participants were treated three times per week for four weeks and were advised to continue with their normal routines while avoiding undue stress to the neck(20).

Cervical Range Of Motion

The cervical spine's range of motion (ROM) was assessed using a Universal goniometer (Myrin:OB Rehab Co AN LIC-Company s-17183, Solna , Sweden ,T fin 08-985370).In different directions ,the range of motion was assessed before and after therapy . the goniometer was placed on the vertex to measure rotation and on the forehead to

measure flexion and extension . the universal goniometer is a dependable tool for measuring cervical range of motion (10).

NECK AND PAIN DISABILITY

Neck pain and impairment were assessed before and after treatment using the neck pain and disability scale (NPAD) It is made up of 20 items that assess the severity and behavior of pain , as well as its connections to vocational , recreational , social , functional , and emotional elements of life . patients rate each object on a 10 centimeter visual analogue scale (VAS). By dividing the total score equals 100 points , signifying the most severe neck discomfort and impairment . The lower the total score, the better the relief from neck pain and disability . the neck discomfort assessment device (NPAD) is a simple and reliable tool for assessing neck pain (11).

DATA ANALYSES

The statistical tool for social sciences (SPSS)(Version 22) for Windows was used to analyse the data .to describe general characteristics of individuals and outcome variables, descriptive statistics such as the mean and standard deviation were used the Mann-Whitney test and the Wilcoxon test were used to compare the demographic and baseline data of groups A and B .To compare all of the tested dependent variables before and after treatment within and between groups A and B. the P-value of 0.001 was considered significant . the study included FEMALE (n=50)participants .

Intra groups comparison is given in tables and graphs in group A (post isometric exercise) outcome measure of NDI and ROM like flexion, extension ,lateral flexion ,rotation were taken and there Mean value and Standard deviation of pre treatment and post treatment value .All this values are given in the table no:1 and graph no:1 .

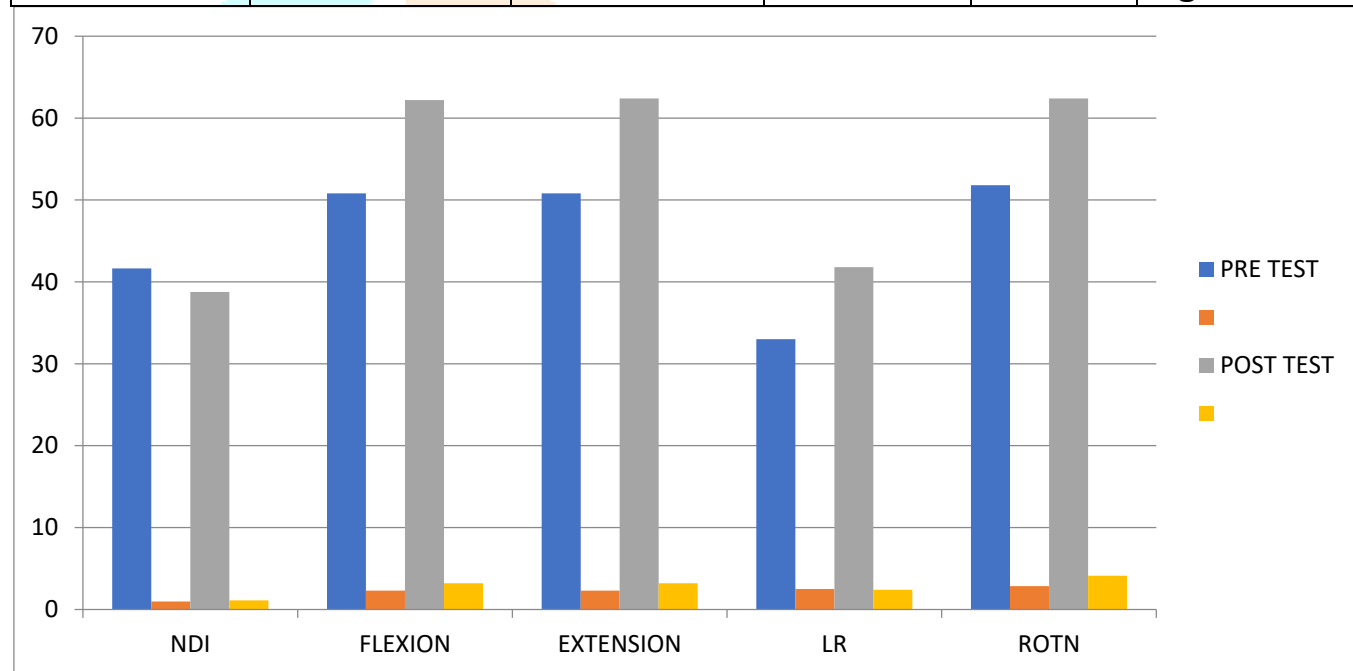
In group B (positional release technique) outcome measure of NDI and ROM like flexion, extension ,lateral flexion , rotation were taken and there Mean value and Standard deviation of pre treatment and post treatment value .All this values are given in table no:2 and graph no: 2.

INTRA GROUP COMPARISON

GROUP- A

TABLE :1 Comparison Between Group A post isometric technique

OUTCOME MEASURES	PRE TREATMENT	POST TREATMENT	W VALUE	P VALUE	REMARKS
	Mean ±SD	Mean ±SD			
NDI	42.04±1.77	37.0±1.09	-4.39	0.001	significant
FLEX	57.8±6.3	70.2±4.6	-4.42	0.001	significant
EXT	58.2±4.8	70.6±4.6	-4.49	0.001	significant
L.ROT	35.1±2.64	41.6±2.3	-4.58	0.001	significant
ROT	59.6±4.1	70.6±3.90	-4.29	0.001	significant

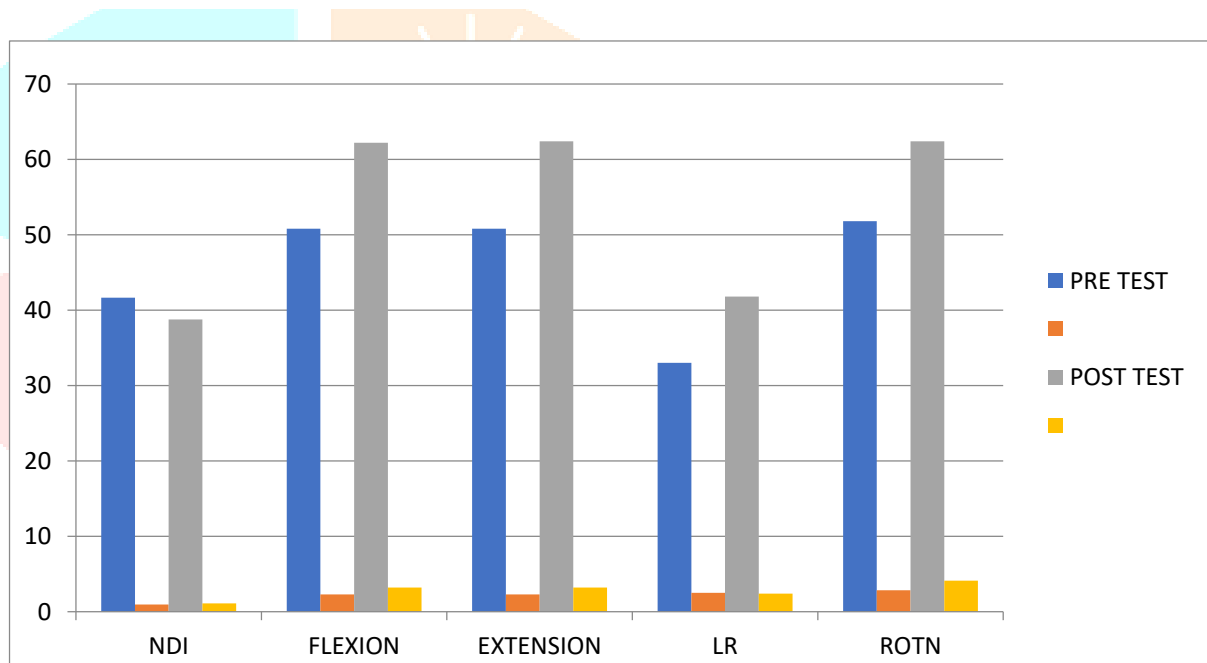


GRAPH :1 Comparison Between Group A post isometric technique

GROUP B

OUTCOME MEASURES	PRE TREATMENT	POST TREATMENT	W VALUE	P VALUE	REMARKS
	Mean±SD	Mean±SD			
NDI	41.64±0.96	38.76±1.11	-4.35	0.001	significant
FLEX	50.8±2.3	62.2±3.2	-4.55	0.001	significant
EXT	50.8±2.3	62.4±3.2	-4.52	0.001	significant
L.ROT	33.0±2.5	41.8±2.4	-4.55	0.001	significant
ROT	51.8±2.84	62.4±4.11	-4.52	0.001	significant

TABLE : 2 Comparison Between Group B Positional release technique



GRAPH :2 Comparison Between Group B positional release technique

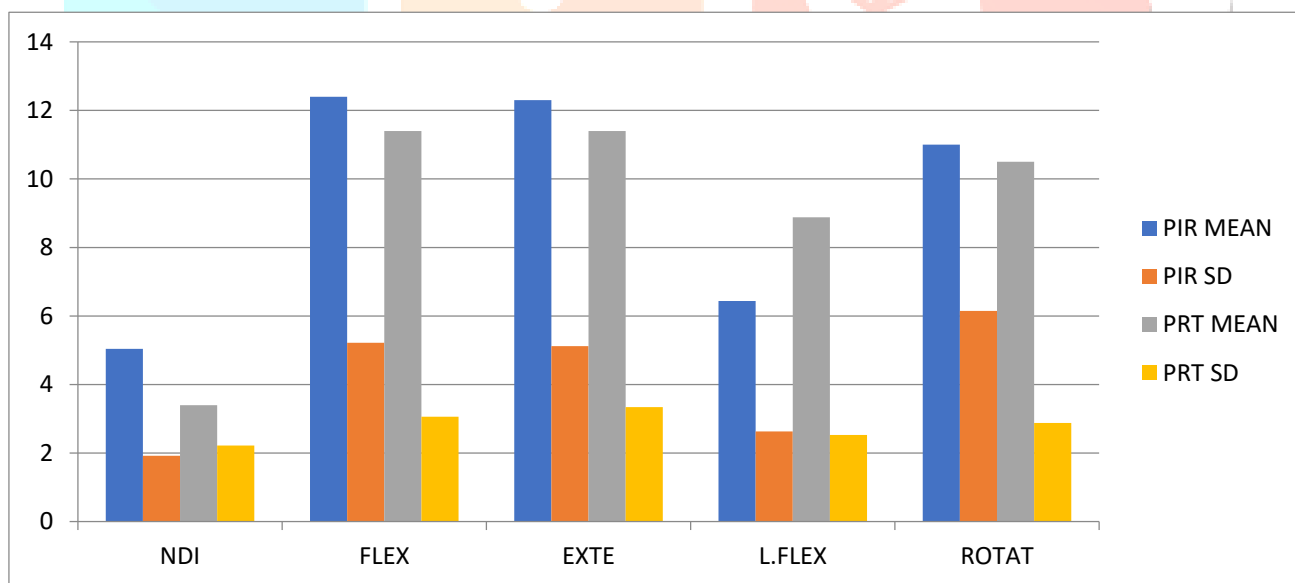
OUT COME MEASURES	PIR	PRT	VALUE	REMARKS
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	Mean±SD	Mean ±SD		
NDI	5.04±1.92	3.4±2.22	0.001	significant
FLEX	12.4±5.22	11.4±3.06	0.001	significant
EXT	12.3±5.12	11.4±3.34	0.001	significant
L.ROT	6.44±2.63	8.88±2.53	0.001	significant
ROT	11.0±6.15	10.5±2.88	0.001	significant

BETWEEN THE GROUPS

COMPARISON

TABLE: 3 Comparison of post isometric and positional release technique between group A and B



GRAPH : 3 Comparison of post isometric techniques and positional release technique between group A and B

The current study was conducted to explore the effect of PIT and PRT in combination with regular physical therapy treatment on pain and range of motion in individuals with chronic MNP. The current study found that the PRT programs effect on pain and cervical ROM function in individuals with chronic MNP . PIR and PRT are classic physical therapy programs that reduce pain and impairment while increasing cervical range of motion.

The findings of this study were consistent with those of other studies that found the PIR to be effective in reducing pain and enhancing range of motion in the neck and other parts of the body .However ,the current study's findings indicated an increase in all ranges of neck motion ,which is superior to other neck pain studies(8,23). This could be due to the fact that PIR was used on so many muscles in this investigation . This is the only study that we are aware of that looked at the effect of PIR combined with strengthening training as part of a traditional physical therapy program for individuals with chronic MNP . PIR and reciprocal inhibition are the physiological principles that MET is built on. After brief times following an isometric contraction ,PIR refers to the presumed effect of diminished tone experienced by a muscle or group of muscles .The inhibitory golgi tendon reflex ,which is induced during isometric contraction and leads to muscle reflex relaxation , may be responsible for pain relief after PIR (19). Activation of muscle and joint mechanoreceptors also causes sympathoexcitation which is elicited by somatic efferents ,as well as localized activation of periaqueductal grey matter ,which aids in pain modulation (24).

furthermore , isometric workouts may reduce pain by increasing endorphins , which occur naturally after training , and improving neuromuscular control. Isometric exercise causes intense muscle contractions , which activate muscle stretch receptors . These afferents stimulate the release of endogenous opiates as well beta endorphins from the pituitary gland ;these secretions may help to reduce pain (25).

Increased ROM after PIR could be explained by physiological mechanisms. Underlying changes in muscular extensibility , which leads to an increase in muscle length by a combination of creep and plastic change in the connective tissue . Muscle extensibility can be linked to both neurophysiological (such as viscoelastic changes in the muscle's connective tissue elements cause (26).

The inhibitory impact of the golgi tendon reflex ,which is engaged during isometric muscular contraction and leads to reflex muscle relaxation and a reduction in muscle spasm and stiffness .as a result , the fundamental explanation for the rise in ROM is the effect of autogenic inhibition (27).

CONCLUSION: Both PIR and PRT helpful in reducing discomfort , improving range of motion , and increasing neck functional activities , according to this study . However , the PIR technique group outperforms the PRT group in terms of the pain relief , range of motion improvement , and increased neck functional activity.

LIMITATIONS OF STUDY

1. Self-administered questionnaires increase the risk of response bias.
2. The data was collected from only one city.

FUTURE RECOMMENDATIONS

1. A study can be done with participants from different universities, institutes and schools.
2. A study can be done with different age groups



Biography

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