



TO COMPARE THE EFFECTIVENESS OF BOWEN'S TECHNIQUES VERSUS MUSCLE ENERGY TECHNIQUE AMONG DATA ENTRY OPERATORS WITH TRAPEZITIS

¹D MURUGAN, ²VIJAY S, ³REVATHI PANDURANGAN

¹ MPT Assistant professor, ² BPT, ³ MPT

¹ Department of Physiotherapy ,

¹ Sri Venkateshwara College of Physiotherapy, Ariyur Puducherry, India.

Abstract: The trapezius muscle injuries are one of the most common muscular load injuries among data entry operators. Bowen technique and muscle energy technique both help to reduce the pain and improve functional activities. So, the main objective of this study is to compare the effectiveness of Bowen technique and muscle energy technique among data entry operators with trapezitis. The study design was a comparative study, 24 data entry operators with trapezitis were selected. They were divided into two groups, GROUP A (n=12) Bowen technique and GROUP B (n=12) Muscle energy technique for 4 weeks. The outcome measures are NPRS and NDI were measured in pre and post-test for 4 weeks. The statistical analysis done with unpaired 't' test between the Group A and Group B analysis shown significance ($p < 0.001$), which shows that Group A must be significant than Group B, it has been concluded that Group A shows effect on reducing pain and improving the functional activities than Group B among data entry operators with trapezitis. This study concludes that the Bowen technique (Group-A) shows more significant on reducing pain and improving the functional activities in data entry operators with trapezitis when compared with Muscle energy technique (Group-B).

KEY WORD: Bowen technique, Muscle energy technique, NPRS, NDI, Trapezitis, cryotherapy.

I. INTRODUCTION

Trapezitis is an inflammatory pain arising from the trapezius muscles causing severe neck pain which is known as neck pain or stiffness around the neck and shoulder or upper back pain. This is more common among people working at a desk using a computer and also those who do physical labor or strenuous work. Trapezium pain is the classic stress pain and it is the most common muscular skeletal disorder [1]. The upper trapezius muscle is designated as a postural muscle and it is highly susceptible to overuse and also bad posture [2]. The trapezius muscle originates from the medial one-third of the superior nuchal line, spinous process of vertebrae C7 to T1 and is inserted into the posterior border of the lateral 1/3 of the clavicle, acromion process and spine of the scapula [1]. The action of the trapezius muscle is rotation, retraction, elevation and depression of the scapula [3]. The incidence of trapezitis is more in both males and females in developing and developed countries across the globe. The prevalence of trapezitis among data entry operators is about 19.5% respectively based on muscular loadings [4].

The Bowen technique is an alternative type of physical manipulation named after Australian Thomas Ambrose Bowen. It involves gently stretching the soft tissue that covers all your muscles and organs to promote pain relief [5]. This technique works on the soft connective tissue of the body. It can be used to treat musculoskeletal or related neurological problems including acute sports injuries and chronic or organic conditions. It is gentle and relaxing and does not use forceful manipulation. Bowen therapy is performed on the superficial and deep fascia. The fascia or soft tissue, which is the part of the connective tissue that envelopes, separates and influences every organ and tissue in the body [5].

Muscle Energy technique was developed in 1948 by Fred Mitchell, Sr., D.O. It is a form of manual therapy widely used in osteopathy, that uses a muscle's own energy in the form of gentle isometric contraction to release the muscle's autogenic or reciprocal inhibition and lengthen the muscle [6]. Muscle energy technique is an active technique based on the autogenic or reciprocal inhibition [7]. Muscle energy techniques describe a broad class of manual therapy techniques directed at improving musculoskeletal function or joint function, and improving pain. The NPRS measures pain severity by asking the patient to select a number (from 0 to 10) to represent how severe the pain is. Another possible customary range for NPRS is 0–10. Since the NPRS is a standard instrument in chronic pain studies, it has become important to define the level of change that best represents a clinically important improvement [8].

The neck disability index (NDI) is a self-report questionnaire used to determine how neck pain affects a patient's daily life and to assess the self-rated disability of patients with neck pain. The NDI questionnaire has 10 sections (Pain Intensity, Personal Care, Lifting, Reading, Headaches, Concentration, Work, Driving, Sleeping, Recreation) and the total scores is about 50, which is converted into percentage(%) points, 0-4 points(0-8%) no disability; 5-14 points(10-28%) mild disability; 15-24 points(30-48%) moderate disability; 25-34 points(50-64%) severe disability; 35-50 points(70-100%) complete disability[9]. In the study the outcome measurements tools are goniometer, Neck disability Index and Numerical pain rating scale (NPRS).

In 2019 study state that dentist with chronic trapezitis is reduced by Bowen technique is improve the cervical range of motion and reduction of neck disability. More significant effect of Bowen technique along with trapezius stretching, cryotherapy and conventional exercise is reduce the trapezitis.

In 2018 study state that pre and post test experimental study with upper trapezitis with muscle energy technique and myofascial release techniques. Muscle energy technique more effective in reducing pain and improving the function in the upper trapezitis patient. In this study comparative between the Bowen technique and muscle energy technique in trapezitis among data entry operator.

II. MATERIALS AND METHODOLOGY

STUDY DESIGN : Comparative study
 STUDY SETTING : Sri venkateshwaraa group of institution, Puducherry
 STUDY POPULATION : Data entry operator with trapezitis
 SAMPLE TECHNIQUE : Convenient sampling
 SAMPLE SIZE : 24 subjects who are data entry operators

STUDY DURATION : 6 months
 TREATMENT DURATION : 4 weeks
 OUTCOME MEASURES : Neck disability scale (NDI),
 Numerical pain rating scale (NPRS)

MATERIALS REQUIRED :

- Pillow
- Goniometer
- Towel
- Treatment Couch
- Ice pack
- NDI questionnaire
- Assessment chart
- Ultrasonic gel
- Vaseliners.

III. SELECTION CRITERIA

INCLUSION CRITERIA:

- Chronic trapezitis condition among data entry operators.
- Both male and female
- Age between 25 to 45 years.
- Subject with more than 15 scores in NDI
- Subject with NPRS scores 3 to 6 with painful cervical movement.

EXCLUSION CRITERIA:

- Fracture of cervical spine
- Cervical cord compression
- Spondylolisthesis of cervical spine
- Traumatic neck injury
- Vertebrobasilar insufficiency
- Recent surgery in cervical spine

IV. PROCEDURE

Subjects who fulfilled the inclusion criteria were included for the study. The benefits of the study and treatment intervention will be explained to the patient and a written informed consent was taken.

The subjects will be assessed using universal goniometer for cervical ROM, NPRS and NDI questionnaire for functional activities

Group A

Group B

- Bowen technique
- Muscle Energy Techniques
- Cryotherapy
- Cryotherapy

BOWEN TECHNIQUE (GROUP A)

PATIENT POSITION: Prone lying or sitting with neck supported using the pillow over the couch or table.

THERAPIST POSITION: Stride standing behind the subjects.

PROCEDURE:

- ❖ The subjects has to be positioned in a comfortable position.
- ❖ Place the therapist thumb on the affected side trapezius muscle.
- ❖ Hook the therapist thumb on the lateral edge of the trapezius muscle to form pressure against it.
- ❖ Create a slight pause, as the nervous system register a tension.
- ❖ As the therapist thumb begins to flatten in a medial direction, the trapezius muscle will pluck or plop or respond in some manner.
- ❖ Carry the skin and challenge the muscle first with the thumbs followed by the fingers.
- ❖ The hands are placed with an inch of space between the thumbs and fingers. So that the hands can play the muscles simultaneously.

TREATMENT TIME: 20 minutes; Alternate days per week for 4 week duration



Fig:9.1 Bowen Technique

MUSCLE ENERGY TECHNIQUES (GROUP B)

PATIENT POSITION: Supine lying or sitting.

THERAPIST POSITION: Stride standing behind the subjects.

PROCEDURES:

- In techniques, first the subjects stabilized the shoulder on the affected side with one hand, while the ear/ mastoid area of the affected side was held by the opposite hand.
- The head and neck were then bent towards the contralateral side, flexed and ipsilaterally rotated.
- The subjects then shrugged the stabilized shoulder towards the ear at a sub maximal pain free efforts.
- The isometric contraction was maintained for 7 to 10 sec and 3 second relaxation period was given and repeated 3 to 5 times per treatment sessions.
- Alternate day intervention will be given for 4 week.



Fig: 9.2 Muscle Energy Technique

1.3 CRYOTHERAPY (BOTH GROUP A & B)

PATIENT POSITION: The subject has to be seated in a chair with shoulders in a relaxed position.

THERAPIST POSITION: Stride standing behind the patient.

PROCEDURE:

- ❖ The cold pack should be wrapped using the towel.
- ❖ Apply the cold pack over the patients affected trapezius muscle for 20 minutes.
- ❖ After each Bowen session and Muscle energy technique session the cold pack should be given.



Fig: 9.3 Cryotherapy for Both Groups

v.STATISTICAL ANALYSIS

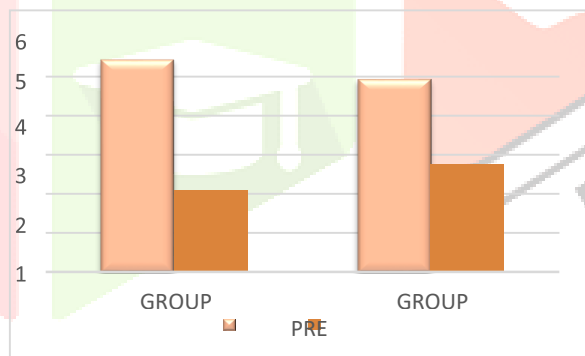
WITHIN THE GROUP ANALYSIS OF NPRS TEST

TABLE 2: showing the pre and post-test values of GROUP A (paired t-test values)

GROUP A	MEAN	SD	t – value	P - value
Pre test	5.42	6.92	t =9.624	P<0.001
Post test	2.08	8.92		

TABLE 3: showing the pre and post-test values of GROUP B (paired t-test values)

GROUP B	MEAN	SD	t - value	P – value
Pre test	4.92	10.92	t =5.171	P<0.001
Post test	2.75	12.25		



GRAPH 1: showing the pre and post-test values of GROUP A and GROUP B NPRS

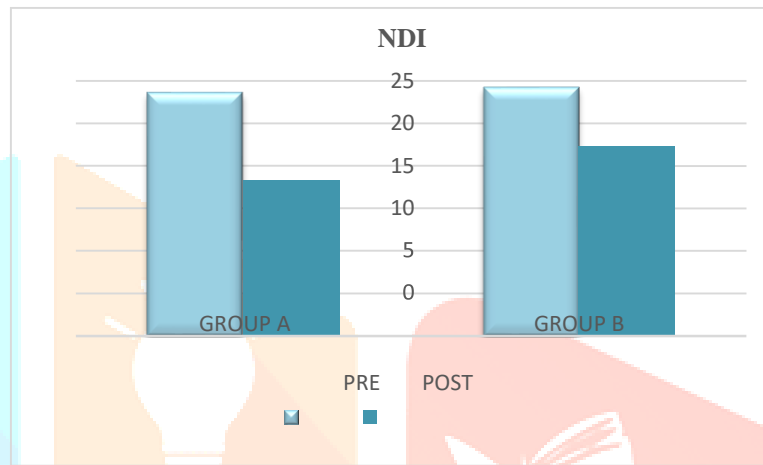
WITHIN THE GROUP ANALYSIS OF NDI TEST

TABLE 4: showing the pre and post-test values of GROUP A (paired t-test values)

GROUP A	MEAN	SD	t – value	P – value
Pre test	28.6	4.5	t =17.8	P<0.001
Post test	18.3	5.2		

TABLE 5: showing the pre and post-test values of GROUP B (paired t-test values)

GROUP B	MEAN	SD	t - value	P - value
Pre test	29.2	4.7	t =15.3	P<0.001
Post test	22.3	4.6		

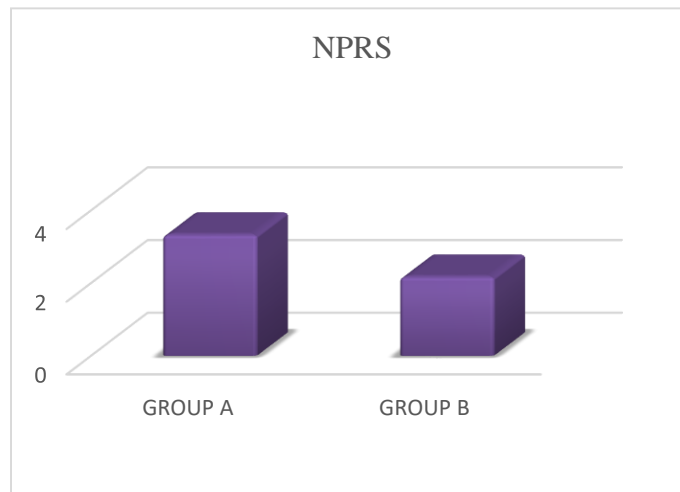


GRAPH 2: showing the pre and post-test values of GROUP A and GROUP B NDI

BETWEEN THE GROUP ANALYSIS OF NPRS TEST

TABLE 6: showing the pre and post-test values of GROUP A& B (unpaired t- test values)

	Mean	SD	t - value	p - value
GROUP A	3.33	10.67	t=2.433	p<0.001
GROUP B	2.17	19.67		

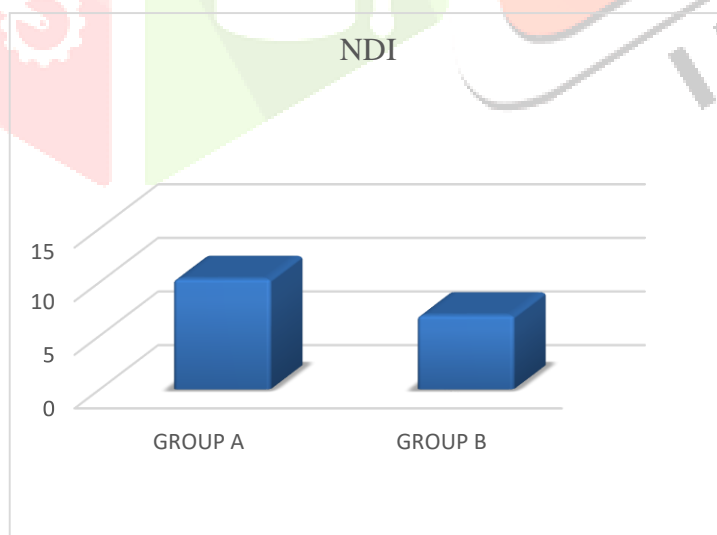


GRAPH 3: showing the post-test values of GROUP A and GROUP B NPRS

BETWEEN THE GROUP ANALYSIS OF NDI TEST

TABLE 7: showing the pre and post-test value of GROUP A&B (unpaired t-test values)

	Mean	SD	t – value	p - value
GROUP A	10.3	5.9	t=5.85	p<0.001
GROUP B	6.9	1.6		



GRAPH 4: showing the post-test values of GROUP A and GROUP B NDI

VI.RESULTS

In this comparative study 24 samples of chronic type of trapezitis among data entry were taken with age group of 25 to 45. Paired “t” test was used within the group to find out the mean and standard deviation of pre-test and post-test values of NPRS and NDI scale. In the statistical analysis:

WITHIN THE GROUP ANALYSIS:

GROUP A(BOWEN TECHNIQUE) calculated mean and SD values for the pre-test and post-test of NPRS are 6.83 ± 11.67 and 3.50 ± 7.00 and the “t” value is 8.864. The calculated mean and SD values of the pre-test and post-test of NDI are 28.6 ± 4.5 and 18.3 ± 5.2 and the “t” value is 17.8.

GROUP B(MET TECHNIQUE) calculated mean and SD values for the pre-test and post- test of NPRS are 6.33 ± 12.67 and 4.17 ± 7.67 and the “t” value is 5.520.The calculated mean and SD values of the pre-test and post-test of NDI are 29.2 ± 4.7 and 22.3 ± 4.6 and the “t” value is 15.3. Hence the statistical data shows that the paired “t” test value of NPRS and NDI are highly significant ($p < 0.001$).

BETWEEN THE GROUP ANALYSIS:

In this experimental study unpaired “t” test was used between the group to find out the mean and standard deviation of the post-test values of group A and group B of NPRS and NDI. The calculated mean and SD values of the post-test of group A and group B of NPRS are 3.33 ± 10.67 and 2.17 ± 19.67 and the “t” value is 2.433. The group A and group B mean and SD values of the NDI are 10.3 ± 2 and 6.9 ± 1.6 and the “t” value is 5.857. Hence the statistical data shows that the unpaired “t” value of NPRS and NDI are highly significant ($p < 0.001$)When compare between the group A and group B, which shows that GROUP A[BOWEN] is highly significant then GROUP B [MET].

VII.DISCUSSION

The present study was done to compare the effects of Bowen technique and Muscle energy technique on data entry operators with chronic trapezitis. Because most of the data entry operators population in their life time are getting affected due to their life style and the improper maintenance of poor posture at work place specific.

In this study there were 24 patients selected on the basis of selection criteria and are divided into two groups as GROUP A (n=12, Bowen technique) and GROUP B (n =12Muscle Energy technique). The outcome measures used to assess the pain and functional activities of the patients, the outcome were NPRS and NDI (neck disability index questionnaire). Both the groups showed reduction of the NPRS and NDI followed by the 10 treatment sessions.

In the group A Bowen technique was administered. The techniques offers a better effort to the patient by applying a small circular pattern of movements by the therapist. The mechanisms of the Bowen technique is the dynamic system of connective tissue and muscle. The effects of the Bowen techniques are, when a circular movement are applied over the affected muscle then it activates the stretch reflexes due to the sudden change in the muscle length. The joint proprioceptions are increased and there will be normalization of the joint function occurs when the Bowen moves are applied over the highly innervated ligaments and capsules by receiving the stimulus from the nervous system.

The mobilization at the level of superficial fascia is loosened the adhesion formation in the affected muscle. By stimulating the immune system Bowen moves improve the lymphatic drainage. Detoxification of the chemical receptors present in the affected part will also occur when the Bowen moves are done. Bowen move produces segmental viscerosomatic spinal reflexes for the skin, muscle and nerves.

The Bowen technique [group A] is applied for the data entry operators with chronic trapezitis it mobilizes the muscle, nerve or tendon at the superficial level fascia. To maintain a proper muscle coordination, postural alignment and structural properties. After the treatment session the adhesion formations become reduce.

Muscle Energy Technique is a manual therapy technique, which is also called as active muscular relaxation technique.it is a procedure in which controlled, voluntary isometric contractions of shortened muscles, strengthening the muscle as lymphatic drainage of fluid and increasing the range of motion. After the Muscle Energy Technique for 10 treatment session the study shows significant improvement in the flexibility and reduction in pain on trapezius muscle.

The Muscle Energy Technique [group B]is applied for the data entry operators with chronic trapezitis, it controlled, strengthening the muscle as lymphatic drainage and increase the range of motion. To maintain a proper muscles properties and reduction in the pain and functional instability.

Cryotherapy is one of the oldest methods of application of ice over the affected part. According to the Lewis-Hunting reaction, the continuous application of ice pack for more than 15 – 20 minutes will lead vasodilation of blood vessels followed by vasoconstriction. Application of cryotherapy to the affected trapezius muscle increases blood circulation, metabolic rate through the Van't Hoff law. The presence of numerous cold receptors in the skin produces the neuronal response after the application of cryotherapy. Muscle strength is also seemed to be increased. It helps to reduce the muscle spasm, pain and swelling also promote the repair of the damaged soft tissues by sending excitatory stimulus to inhibition muscles.According to Richardson and smith(1993) to make the model more effective and efficient the selection criteria for the shares in the period are: Shares with no missing values in the period, Shares with adjusted $R^2 < 0$ or F significant (p-value) > 0.05 of the first pass regression of the excess returns on the market risk premium are excluded. And Shares are grouped by alphabetic order into group of 30 individual securities (Roll and Ross, 1980). **Vijay kage et al., (2017)** – “The effectiveness of Bowen technique in improving the cervical joint ROM and reduction of neck disabilities in dentist with chronic trapezitis. Bowen technique is effective in the reduction of the muscle spasm, pain, functional outcomes and cervical range of motion in dentist. The Bowen technique seems to be more effective in reduction of the neck disabilities and improving the cervical range of motion in dentist with chronic trapezitis.

From above discussion, this study which is compared the effects of Bowen technique and muscle energy technique on data entry operators with chronic trapezitis on 6-week intervention periods. Both the technique can be used to reduce the pain and improve the functional activities. When compare to GROUP A (Bowen Technique and Cryotherapy) shows more significant than the GROUP B (Muscle Energy Technique and Cryotherapy) among data entry operators with chronic trapezitis.

VIII.CONCLUSION

This study conclude that after 4-weeks duration of treatment to reduce the neck pain (NPRS) and improve the functional activities (NDI) in Bowen Technique (GROUP A) and Muscle Energy Technique (GROUP B) among data entry operators with trapezitis. But the Bowen technique has shown more improvement than the Muscle energy technique. So, this has rejected null hypothesis.

IX.LIMITATIONS AND RECOMMENDATIONS

LIMITATIONS

- The study has been conducted on small size sample only.
- This study took shorter duration to complete.

RECOMMENDATIONS

- A Similar study may be extended with larger sample.
- The future study can be compared with various techniques like myofascial trigger.
- The Bowen Technique and muscle energy techniques can be applied to other condition.

X. REFERENCES

1. Abdul Rashad, Erum T, Seemab Mughal. Efficacy of integrated neuromuscular ischemic technique in the treatment of upper trapezius trigger points. The journal of orthopaedics trauma surgery and related research.2020.15(3).
2. Kumaresan A, Deepthi G, Anadh V. effectiveness of position release therapy in treatment of trapezitis. International journal of pharmaceutical science and health care. 2012;1(2): p, 71-81.
3. Alagesan J, Shah US. Effect of positional release therapy and taping on unilateral upper trapezius tender points. International journal of health and pharmaceutical sciences. 2012;1(2): p. 13-17.
4. Danuta roman, Joanna bugajska. Characteristics of muscular load in computer data entry workers assessed by EMG and postural angles. International journal of occupational safety and ergonomics 1996, VOL.2, NO.128-136.
5. Benazir S, Manivannan V. Effect of bowen technique versus muscle energy technique on asymptomatic subjects with hamstring tightness. International journal of sports sciences. 2018.
6. Mahajan R, Kataria C, Bansal K. Comparative effectiveness of muscle energy technique and static stretching for treatment of sub-acute mechanical neck pain. International journal of health and rehabilitation sciences, 2012.
7. Ballantyne F, Fryer G, The effect of muscle energy technique on hamstring extensibility the mechanism of altered flexibility. Journal of osteopathic medicine,2003;6(2):59-63.
8. Janine MCKay. Effect of iliotibial band syndrome (ITBS) rehabilitation in female runners: a pilot randomized study. International journal of health care,2020.
9. Sowmya M.V, The effect of isometric neck exercises versus dynamic neck exercises in chronic neck pain. International journal of health care.201
10. Waseem M, Nuhmani S, Ram CS. A comparative study of the impact of muscle energy technique and eccentric training on popliteal angle: hamstring flexibility in Indian collegiate males. Serbian journal of sports sciences. 2010; 4(1): 41-46
11. Rickards LD. The effectiveness of non-invasive treatments for active myofascial trigger point pain: A systematic review of the literature. International Journal of Osteopathic medicine 2006.
12. Aneri Jhaveri, Dr. Payal Gahlot. Comparision of effectiveness of myofascial release technique versus muscle energy technique on chronic trapezitis. An experimental study. International journal of innovative research and advanced studies.
13. Kumaresan G .Deepthi, Vaiyapuri Anandh, S. Prathap. Effectiveness of positional release therapy in treatment of Trapezitis. International journal of pharma ceutical science and health care, 2012.
14. Dr. Pooja Wakde, Dr. Deepak Anap. Effectiveness of inter-grated neuromuscular inhibitory technique in sub-acute trapezitis: A single case study. Physiotherapy journal of case reports.
15. Rvish VN, Shridhar Helen S. To compare the effectiveness of myofascial release technique with laser in patients with unilateral trapezitis. Journal of evolution of medical and dental sciences 2014.
16. Kumaresan A, Deepthi G, Valyapuri Anandh S Prathap. Effectiveness of inter- grated neuromuscular inhibitory technique (INIT) with specific strength training exercise in subjects with upper trapezius triggers points. International journal of physiotherapy.
17. Ashley. G Pritchard. The psycho physiological effects of the Bowen technique.Swinburne University, Melbourne.
18. Peeyosha Nisture, Neha Kothari. The effectiveness of Bowen technique as an adjunct to conventional physiotherapy on pain and functional outcomes in subjects with acute trapezitis - a pilot study. Romanian Journal of Physiotherapy, December 2015.