



“EFFECTIVENESS OF ACUPRESSURE PEN VERSUS TENS IN TRAPEZITIS: A COMPARITIVE STUDY”

Physiotherapy

Jeel S. Patel*

Intern, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar- 384315, Gujarat, India. *Corresponding Author

Jayesh Thakrar

Assistant Professor, Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar-384315, Gujarat, India.

ABSTRACT

BACKGROUND: Trapezitis is relatively common conditions in people who spend long hours on the computer or have bad posture. The trapezititis is a condition where the trapezius muscle goes into a painful spasm due to trapezius strain or vigorous exercise. Acupressure Pen demands the application of physical pressure on trigger points which are positioned along the meridians. Transcutaneous electrical nerve stimulation (TENS) is the use of electric current produced by a device to stimulate the nerves for therapeutic purposes. **OBJECTIVES:** The study aimed to evaluate the effectiveness of Acupressure Pen Versus TENS, keeping conservative exercise common for both groups, for reducing Trapezitis. **METHOD:** In a 4-weeks Intervention study, Total 30 Participants of the Middle Age Group Were Diagnosed with Trapezitis according to inclusive and exclusive criteria. The Subjects Were Divided Into Two Groups; Group A received the treatment with an acupressure pen for 4 weeks and Group B received treatment with TENS, keeping conservative exercise common for both groups. Pre And Post-Treatment Data was Collected and Analyzed Using SPSS 22.0. Paired T-Test Was Used To Find Out the Significance of the Treatment. **RESULT:** TENS along with Conventional Exercise Program(Group B) were effective management of subjects with Trapezitis participants, But more Significant Improvement in reducing pain (P<0.05) After Acupressure Pen and conventional exercises (Group A) found more significant. **CONCLUSION:** The study concluded that the treatment protocol reached by, Group A acupressure pen with conservative exercise is more effective in reducing trapezititis, compare to Group B TENS with conservative exercise.

KEYWORDS

Trapezititis, Acupressure pen, TENS, NPRS, NDI

1. INTRODUCTION

Trapezititis is a condition where the trapezius muscle goes into a painful spasm due to trapezius strain or vigorous exercise.⁽¹⁾

The muscle attaches to the medial third of the superior nuchal line; external occipital protuberance, nuchal ligament, and spinous processes of C7 - T12 vertebrae.⁽²⁾

About two-thirds of people experience neck pain at some point in their lives.⁽³⁾

In middle age, Prevalence is highest and women are more affected than men. Neck pain prevalence varies widely in different studies, with a mean point prevalence of 13 % (range 5.9% – 38.7 %) and a mean lifetime prevalence of 50 % (range 14.2% – 71.0 %).⁽⁴⁾

- Risk factors for Trapezitis.^(1,4)
- Personal factors
 - Age (18-45 years)
 - Vitamin Deficiency
 - Mental stress
- Occupational factors
 - Poor posture while working on the computer
 - Bed posture during Sleeping.
 - Physical activity that involves the trapezius muscle like bike riding.

Various physiotherapy protocols have been advocated in the past like rest, heat, Ultrasound, Microwave Diathermy, TENS, spray and stretch, and post-isometric relaxation in the treatment of trapezititis.⁽⁵⁾

Acupressure Pen demands the application of physical pressure on trigger points/acupoints/specific pressure points which are positioned along the meridians. Acupressure techniques have been classified into various types depending on their origin, method, and combination with other techniques.⁽⁶⁾ The pain usually is the major complaint of patients with problems of the neck and shoulder, pain effect is the aspect that defines pain and its effects. For each of these aspects, different assessment instruments exist and are discussed in terms of advantages and disadvantages.⁽⁷⁾

Transcutaneous electrical nerve stimulation (TENS) is the use of electric current produced by a device to stimulate the nerves for therapeutic purposes.

TENS is anything that delivers electricity across the intact surface of the skin to activate underlying nerves. A standard TENS device repetitively delivers biphasic pulsed currents using pulse durations of

50–250 μ s and pulse frequencies of 1–200 pulses.⁽⁸⁾

Compared acupressure Pen and TENS to be effective for Trapezitis Pain.

High-intensity strength training relying on principles of progressive overload for 20 minutes is successful in the reduction of neck and shoulder pain.^(9,10,11)

Need Of Study

According to previous research, there is only evidence of manual acupressure, TENS, US, and Exercise. So the need of the study is to compare the effectiveness of acupressure pen **Versus** TENS, keeping conservative exercise common for both groups, for reducing Trapezitis.

2. AIM AND OBJECTIVES OF THE STUDY

AIM

The study aims to evaluate the effectiveness of Acupressure Pen **Versus** TENS, keeping conservative exercise common for both groups, for reducing Trapezitis.

OBJECTIVES OF THE STUDY

- To check the effectiveness of the Acupressure Pen with conservative exercise for reducing Pain in Trapezitis.
- To check the effectiveness of TENS with conservative exercise for reducing Pain in Trapezitis.
- To elicit the difference in TENS and Acupressure Pen, keeping conservative exercise common for both groups, for reducing Pain in Trapezitis.

3. Hypothesis

Null Hypothesis

- There will be no significant effect of acupressure pen with conservative exercise on Trapezitis.
- There will be no significant effect of TENS with conservative exercise on Trapezitis.
- There will be no significant difference between acupressure pen and TENS, keeping conservative exercise common for both groups, on Trapezitis.

Alternative Hypothesis

- There will be a significant effect of acupressure pen with conservative exercise on Trapezitis.
- There will be a significant effect of TENS with conservative exercise on Trapezitis.

- There will be a significant difference between acupressure pen and TENS, keeping conservative exercise common for both groups, on Trapezitis.

4. METHODOLOGY

4.1 METHOD

Study Design- A Comparative Study

Study Setting- OPD- 1, Ortho Dept., Nootan College of Physiotherapy, Sankalchand Patel University, Visnagar.

Study Technique- Convenience sampling

Intervention Duration- 4 weeks

4.2 Criteria for Selection

Inclusion Criteria:

Age limit – Computer workers between the age group 18 – 45 years.

Both male and female

Participants with trapezitis

Acute Pain

Exclusion Criteria:

Degenerative cervical spine

Healing fractures over the neck and upper back region

Wound over the neck region

Shoulder pathology

4.3 Procedures of Data Collection

The participants experienced a detailed pre-evaluation. The pre-evaluation included an assessment which obtained information about demographic details, medical history, and personal history, pain assessment of the participants using NPRS and NDI outcome measure. The participants were then divided into two groups i.e. Group A and Group B. Group A received Acupuncture and Group B received TENS, keeping conservative exercise common for both. Treatment lasted for 4 weeks, having 4 sessions/weeks.

5. Treatment Protocol

Group A:- The intensity was as per the patient's tolerance, in the beginning, it can be 2 or 3 and was gradually increased per week. The duration of each point must be 2-3 min (including the rest and fatigue parameters) each point was having a specific location for the stimulation according to the ancient acupressure studies. With Exercise, the total duration of the treatment protocol will be 25 to 30 min (4 Sessions/Week)

TABLE 5.5.1: 4 WEEKS OF ACUPRESSURE PEN STIMULATION WITH EXERCISES PROTOCOL.

WEEK	INTENSITY	EXERCISES
Week 1	2 or 3	10 Repetition
Week 2	2 or 3	10 Repetition
Week 3	3 or 4	15 Repetition
Week 4	3 or 4	20 Repetition

(After each week intensity was increased) last highest intensity of acupressure pen was 9*

Group B:- The intensity was as per the patient's tolerance, in the beginning, it can be 35Hz or 100Hz and continuous mode was gradually increased per week. The duration of 10 min (including the rest and fatigue parameters) each point was having a specific location for the stimulation according to the Pain With Exercise, the total duration of the treatment protocol will be 35 to 40 min. (4 Sessions/Week)

TABLE 5.5.2: 4 WEEKS OF TENS WITH EXERCISES PROTOCOL.

WEEK	FREQUENCY	EXERCISES
Week 1	35-50 Hz	10 Repetition
Week 2	50-60 Hz	10 Repetition
Week 3	60-80 Hz	15 Repetition
Week 4	80-100 Hz	20 Repetition

6. RESULT

Outcome	Group A				Outcome	Group B			
	Pre-Treatment Mean SD	Post-Treatment Mean SD	t-value	p-value		Pre-Treatment Mean SD	Post-Treatment Mean SD	t-value	p-value
NPRS Score	7.13 ±0.743	3.80 ±0.775	17.838	0.00	NPRS Score	7.13 ±0.743	6.67 ±0.900	2.824	0.014
NDI	30.33 ±2.99	15.27 ±2.37	36.94	0.00	NDI	31.00 ±2.619	30.20 ±2.569	2.86	0.013

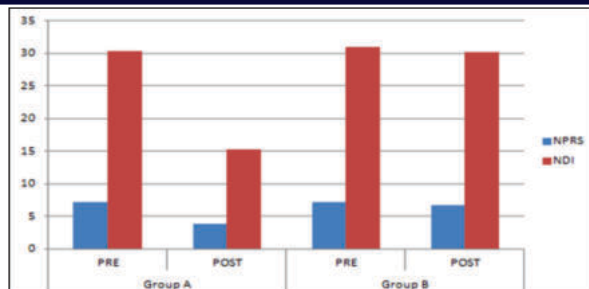


Table and Graph shows the comparison of the NPRS and NDI Score after 4 weeks. Statistically significant difference ($p < 0.05$) in pain level found in participants after 4 weeks.

Thus, the results interpret that a significant difference was found in the NPRS and NDI Score among the participants, after treatment, NPRS and NDI both Score was reduced in participants All statistical analysis was done using SPSS 22.0 software for windows. Descriptive analysis was obtained by mean & standard deviation. Intragroup comparison of pre & post-treatment for NPRS and NDI was done using paired t-test.

7. DISCUSSION

The study aims to evaluate the effectiveness of Acupressure Pen Versus TENS, keeping conservative exercise common for both, for reducing Trapezitis. 30 subjects were selected as per the inclusion and exclusion criteria and divided into 2 groups. After that demographic data, patient's examination, and investigation, patients were assessed. Group A received the treatment with an acupressure pen for 4 weeks and Group B received treatment with TENS, keeping conservative exercise common for both. The parametric test was used within-group analysis. The result of the present study to use of Acupressure Pen has a significantly greater improvement in reducing pain in Trapezitis, that was noted with NPRS and improved neck function was noted in NDI. There was a significant less improvement in group B than in Group A. Also, there was a significant improvement in the daily living activities of the patient better improvement in Group A, after the end of the treatment period.

Thus, the alternative hypothesis $[H_1]$, $[H_2]$, $[H_3]$ is accepted.

We get a significant improvement in pain reduction due to the acupressure pen working directly on pain gate theory.

According to author URJA S. VAIDYA, Roshni S. Patel- Conducted a study on the Effect of Acupressure Pen on Distance Variable in Sciatica patients. The study aimed to find out the effectiveness of the acupressure pen to improve the distance variable in sciatica patients. Acupressure pen is effective to reduce pain and improve step length and stride length in Sciatica Patients On another hand, in acupressure applying pressure with a hand at specific acupoints releases muscular tension which is used to balance the flow of the physiological energy.

The reason behind reducing the trapezitis is the effect of acupressure pen directly on the afferent pain-receptive muscles, which brings direct signals to the brain and it includes two kinds of fibers - a fast, quite thick, myelinated "Aδ" fiber that carries messages quickly with intense pain, and a small, unmyelinated, slow "C" fiber that carries the longer-term, throbbing and chronic pain. In that at midbrain level two endogenous opiates release that are endorphin, β -encephalin that they come down descending tract at spinal cord and reduce pain Second is the large-diameter Aβ fibers are non-nociceptive (do not transmit pain stimuli) and inhibit the effects of firing by Aδ and C fibers (Pre-synaptic inhibition), so that's why reduce the pain and improvement in trapezitis condition.

Limitations of the study:

- Small sample size
- Samples were selected from visnagar
- The study intervention period was 4 weeks only, which is comparatively less.

Future recommendations of the study:

- Carry out the study with a large sample size
- Same protocol used for other radiculopathies

8. CONCLUSION

The study concluded that the treatment protocol reached by, Group A

acupressure pen with conservative exercise is more effective in reducing trapezititis, compare to Group B TENS with conservative exercise.

9. Acknowledgement

First and foremost, I would like to thank my parents for their valuable support and confidence throughout my study.

I would like to thank my mentor and guide Dr. Jayesh Thakrar (MPT Ortho), Assistant Professor, at the Nootan College of Physiotherapy for the valuable guidance and advice whenever I needed.

I would also like to thank my patients for their participation, support and understanding without them it was not easy to carry out the whole research.

10. REFERENCES

1. Trapezius Pain in Indians: Causes & How to Prevent it. (2021, March 9). Mfine. <https://www.mfine.co/guides/trapezius-pain-india/>.
2. Upper Trapezius Myofascial Trigger Point in Overhead Athletes After Upper Trapezius Muscle Fatigue. (2019). *Case Medical Research*. <https://doi.org/10.31525/ct1-nct03993223>
3. Khare, D. D., & Pathak, R. (2018). Effectiveness of elastic resistance band exercises versus conventional exercises on cases of trapezititis: A comparative study. *International Journal of Orthopaedics Sciences*, 4(1c), 174–178. <https://doi.org/10.22271/ortho.2018.v4.i1c.27>
4. Senthilkumar, S., Kumar, A., & Sangeetha, S. (2019). A Study on Effectiveness of Post Isometric relaxation Technique in Trapezitis among workers. *Research Journal of Pharmacy and Technology*, 12(10), 4836. <https://doi.org/10.5958/0974-360x.2019.00837.0>
5. Mishra, D., Prakash, R. H., Mehta, J., & Dhaduk, A. (2018). Comparative Study of Active Release Technique and Myofascial Release Technique in Treatment of Patients with Upper Trapezius Spasm. *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH*. <https://doi.org/10.7860/jcdr/2018/37558.12218>
6. Young J. *Complementary Medicine for Dummies*. 1st ed. England: John Wiley & Sons; 2007.
7. Haefeli, M., & Elfering, A. (2005). Pain assessment. *European Spine Journal*, 15(S1), S17–S24. <https://doi.org/10.1007/s00586-005-1044-x>
8. Johnson, M. (2007). Transcutaneous Electrical Nerve Stimulation: Mechanisms, Clinical Application and Evidence. *Reviews in Pain*, 1(1), 7–11. <https://doi.org/10.1177/204946370700100103>
9. Nielsen, P. K., Andersen, L. L., Olsen, H. B., Rosendal, L., Sjøgaard, G., & Sjøgaard, K. (2010). Effect of physical training on pain sensitivity and trapezius muscle morphology. *Muscle & Nerve*, 41(6), 836–844. <https://doi.org/10.1002/mus.21577>
10. Hagberg, M., Harms-Ringdahl, K., Nisell, R., & Hjelm, E. W. (2000). Rehabilitation of neck-shoulder pain in women industrial workers: A randomized trial comparing isometric shoulder endurance training with isometric shoulder strength training. *Archives of Physical Medicine and Rehabilitation*, 81(8), 1051–1058. <https://doi.org/10.1053/apmr.2000.7582>
11. Zebis, M. K., Andersen, L. L., Pedersen, M. T., Mortensen, P., Andersen, C. H., Pedersen, M. M., Boysen, M., Roessler, K. K., Hannerz, H., Mortensen, O. S., & Sjøgaard, G. (2011). Implementation of neck/shoulder exercises for pain relief among Industrial Workers: A randomized controlled trial. *BMC Musculoskeletal Disorders*, 12(1). <https://doi.org/10.1186/1471-2474-12-205>