

Effects of Eldoa Technique with Conservative Treatment on Pain Threshold of Active Trigger Points in Upper Trapezius and Levator Scapulae

MISBAH JAVAID¹, HAROON MANSHA², MUHAMMAD USMAN KHALID³, MUHAMMAD HASSAN⁴, YASIR KAZMI⁵, MUHAMMAD WASEEM NASEER⁶

¹Senior lecturer, Multan College of Rehabilitation Sciences, Multan Medical & Dental College, Multan, Pakistan.

^{2,3,4}Assistant Professor, Multan College of Rehabilitation Sciences, Multan Medical & Dental College, Multan, Pakistan.

⁵Assistant Professor, Department of Physiotherapy, Shahida Islam Medical College of Rehabilitation Sciences Lodhran.

⁶PGR, General Medicine, Medical Unit, Nishtar Hospital Multan

Correspondence to Dr. Haroon Mansha, Email: haroonmansha978@gmail.com, Phone: 03074322646

ABSTRACT

Background: The muscles that sustain body posture and the neck posture both have an impact on the cervical muscle, which is also frequently injured. The upper trapezius muscle is most frequently affected by trigger points, which is a common and prevalent condition.

Aim: To assess the effectiveness of ELDOA exercises at the cervical spine and treating trigger points in the trapezius and levator scapulae.

Methodology: The Ibn-e-Siena Hospital and Research Institute in Multan conducted a quasi-study. The participants were divided into two groups using a coin flip as a sampling method with the study sample size of 26. The Goniometer, Numeric Pain Rating Scale and Neck Disability Index were used to collect data from patients between the ages of 18 and 40.

Results: An independent t-test was applied. Mean age ranged from 24.70±5.75 in the experiment group and 25.18±5.61 in the control group. The patients have radiated pain in control group was 3 (30%), trapezius trigger point 7(70%) and levator scapulae 3(30%) while in experimental group, pain radiating 6(60%), trapezius trigger point 6(60%) and levator scapulae 4(40%). The post-results data revealed that the p values for the NPRS, Algometry and NDI significant differences were 0.025, 0.025, and 0.00, respectively.

Conclusion: The results of the current investigation, the ELDOA approach considerably reduced discomfort, cervical ranges, and neck impairment brought on by trigger points.

Keyword: Neck pain, Trigger Point, Skeletal Muscle, Myofascial Pain, Active Soft Tissue Release,

INTRODUCTION

The primary cause of musculoskeletal impairment in any age people is sustain bad posture of neck. This is due to the fact that 23 million individuals worldwide, or nearly 10% of the American population, suffer from one or more chronic musculoskeletal illnesses¹. The primary workplace risk factors for musculoskeletal disorders include confounding variables like seniority, gender, smoking habits, and sports².

Trigger points are distinct, concentrated, hyperirritable regions found in a taut ring of skeletal muscle. They occasionally lead to a musculoskeletal disorder that is persistent and produce both local and referred pain³. Differentiate between trigger points that continuously and irrationally cause pain, even while at rest, those that cause pain with movement or activity, and those that cause referred pain, stiffness, and a decreased range of motion⁴.

The trigger points are classified as being either satellite or latent and active based on their clinical appearance⁵. Based on their clinical characteristics, the trigger sites are categorized as satellite or latent and active⁴.

When a trigger point is active, it is painful even when it is not in use and has a pattern of referred pain that corresponds to the client's pain complaint⁶. This referred pain, which is frequently described as radiating or spreading, manifests itself elsewhere rather than at the trigger location⁷. A vital component of a trigger point is referred pain since it distinguishes it from a tender point, which is solely accompanied by pain where it can be felt⁸.

Latent trigger points don't elicit symptoms while they're active or at rest, but they do induce localised pain sensory, motor and autonomic dysfunctions. Muscle tension and stiffness may increase as a result of latent trigger sites⁹.

The upper trapezius, scalene, sternocleidomastoid, levator scapulae and quadratus lumborum are among the muscles that support body posture and are commonly injured. These muscles are found in the pelvic girdle, neck and shoulders¹⁰. According to

several clinical studies, trigger points are common that mostly affects the upper trapezius muscle. The prevalence of the active Muscle Trigger points was determined to be 38.5% on the right upper trapezius, 29.8% on the left upper trapezius, 16.9% on the right levator scapulae, and 14.8% on the left levator scapulae in 91 patients with chronic no pain in an examination¹¹.

A link between emotional processes and posture is established by the delicate postural framework, which transmits to the spinal cord. Depending on the effectiveness of the autonomic nervous system, the hormonal structure is what causes the body to function in accordance with the facilitation of the metabolic and neurohormonal processes. Local proprioceptive stimulation facilitates the targeted area to enhance body awareness and the capacity to self-correct abnormal postures. The ability of the muscles to have eccentric contractions in the desired chains in one position and the muscles capacity to tone up improve with greater kinetic sense of the myofascial chain, more energy expenditure and better motion coordination. Its importance is associated with improved posture and the positioning of the spinal segments¹².

The current study will evaluate the efficacy of ELDOA exercises that are especially targeted at the cervical spine to treat trigger points in the trapezius and levator scapulae muscles and restore them to their natural placements. The main goal of this study is to alleviate discomfort, raise pain thresholds, and improve functional capabilities in order to treat trigger points. The ELDOA method hasn't been the subject of many studies.

In 2020, Haleema et al. published a study on the effects of ELDOA alone and ELDOA combined with core muscle training to treat individuals with prolapsed intervertebral extrusion discs. There were recruited thirty women. These women were divided into two groups the group A of these women received only ELDOA, whereas group B received both ELDOA and core muscle firmness. According to the results, individuals who received core muscle strengthening therapy in addition to ELDOA performed better than those who only had ELDOA¹³.

Rationale: The purpose of this study was to ascertain ELDOA techniques had a positive impact on cervical trigger points when compared to conservative treatment; the findings support the use

Received on 23-05-2022

Accepted on 13-09-2022

of ELDOA techniques and other trigger point relief therapy as alternatives for the therapist.

Research Gap: This study will discover a different method of treatment for the release of trigger points since previous studies have concentrated on conservative therapy.

METHODOLOGY

A quasi-study was conducted at the Ibn-e-Siena Hospital and Research Institute in Multan from August 2020 to January 2021 after ethical approval. The sample size for the study was 26 and participants were divided into two groups using a coin flip as the sampling method. Patients between the ages of 18 and 40, both male and female with active trigger points, mechanical neck pain lasting less than two months, and NPRS > 2 were required for participation in the study. Participants with any type of spinal deformity, spinal disease, traumatic past or history of prior cervical surgery were not included in the study. The frequency of treatment was 4 times a week for six weeks. Data were gathered using Numeric Pain Rating Scale, and Neck Disability Index.10 condition-specific questions about pain, personal care, lifting, reading, headaches, concentration, job, driving, sleeping and recreation make up the functional status questionnaire that the patient must complete. On a scale of 0 to 5, where 0 equals "No discomfort," and 5 equals "Extreme pain," each part is graded.

Exercise and conservative therapy were used to treat the experiment group. Position for Co, C1&C2. The lower leg is bent to help the torso stay in place. Put the bottom leg's knee in front of the upper leg's heel. The patient is resting on his or her side, with the lower arm serving as a pillow bend the top arm at 900 and extend it over the head. Maintain a vertical shoulder alignment. tongue protrude eyeball turning to the forehead axially align and lengthen the entire spine.

Lie on your back with your arm outstretched, your leg parallel to the ground, and your knee flexed toward your chest. Lift the neck off the floor via axial lengthening. Each arm should be externally rotated at shoulder height. Rotate each arm up toward the chest until they are both pointed upward from the chest. Total treatment time was between 30 and 40 minutes. Participants in the control group (conservative therapy) have only received traditional therapy, which includes a 10-minute hot pack. The thumb is pressed against the trigger point during ischemic compression therapy and the pressure is gradually increased until the patient is comfortable. The duration was 30 seconds. The patient is placed in the most comfortable position after isometric relaxation, and the upper trapezius and levator scapulae are lengthened to the point of mild resistance. The patient is instructed to contract with the bare minimum of force for 10 seconds before releasing. This procedure goes through three iterations. The session will run between thirty and forty minutes.

RESULTS

Data normality of the groups was checked out by Shapiro wilk test with p value was greater than 0.05 and apply independent t-test. Mean age of participants was 24.70±5.75 in experiment group while mean age was 25.18±5.61, in control group. The patients have radiated pain in control group was 3(30%), trapezius trigger point7(70%) and levator scapulae trigger point 3(30%) while in experimental group, pain radiating 6(60%), trapezius trigger point6(60%) and levator scapulae trigger point 4(40%). The post-results data revealed that the p values for the NPRS, Algometry and NDI significant differences were 0.025, 0.025 and 0.00, respectively

Independent T test for experimental group showed the significant P value which is less than 0.05.

Independent T test Control and Experiment Group

Variables	Control group	Experimental group	P – value
	Mean ± SD	Mean ± SD	
Pre NPRS	1.40±0.51	1.50±0.52	0.67
Post NPRS	2.60±0.51	3.00±0.00	0.02
Pre ALGOMETER	1.24±0.17	1.26±0.11	0.76
Post ALGOMETER	1.33±0.18	1.61±0.31	0.02
Pre NDI	1.40±0.51	1.30±0.48	0.66
Post NDI	2.50±0.52	3.40±0.51	0.00

Paired T- test Control and Experimental group

Variables		Pre data	Post data	P – value
		Mean ± SD	Mean±SD	
Control Group	NPRS	1.40±0.51	2.60±0.51	0.00
Experimental group		1.50±0.52	3.00±0.00	0.00
Control Group	ALGO-METER	1.24±0.17	1.33±0.18	0.06
Experimental group		1.26±0.11	1.61±0.31	0.01
Control Group	NDI	1.40±0.51	2.50±0.52	0.00
Experimental group		1.30±0.48	3.40±0.51	0.00

Paired t test showed significant p value within the group which is less than 0.05

Variables	Categories	Control group	Experimental group
		MEAN±S.D	MEAN±S.D
Age	18-40	25.18±5.61	24.70±5.75
		Frequency	Frequency
Gender	Male	3(30%)	2(20%)
	Female	7(70%)	8(80%)
Radiating pain	Yes	3(30%)	6(60%)
	No	7(70%)	4(40%)
Location of trigger points	Trapezius	7(70%)	6(60%)
	Levator scapulae	3(30%)	4(40%)
Duration of pain	1 month	3(30%)	5(50%)
	2 month	6(60%)	3(30%)
	3 month	1(10%)	2(20%)

DISCUSSION

The aim of this study was to investigate the effects of ELDOA on cervical ranges impacted by trigger points and pain, pain threshold, and pain. Analysis of pain, pain pressure threshold, range of motion (ROM), and neck impairment using the NPRS, Algometer, and NDI revealed appreciable differences between the groups.

A study was conducted on ELDOA is successful at correcting posture, which raises the patient's functional status. Treatment for cervical radiculopathy involves modified ELDOA and postures. The difference between the efficacy of ELDOA and modified ELDOA is not statistically significant¹⁴.

ELDOA and decompression exercises can help patients with disc protrusion's quality of life while also reducing their back and leg pain. However, compared to the decompression and control groups, the ELDOA exercise has demonstrated meaningful results¹⁵.

A randomized controlled study, 40 people with piriformis syndrome and age ranged from 20 to 70, in order to evaluate the effects of ELDOA on piriformis pain. The findings, of the experiment group, showed that ELDOA was helpful in reducing pain. ELDOA was effective in reducing the pain caused by trigger points¹⁶.

In a previous study, the effects of ELDOA on muscle length and the accompanying variation in ranges were also looked. Eldoa greatly improves cervical ranges, therefore our findings are consistent with ongoing research.

CONCLUSION

The current study found that the ELDOA technique significantly improved neck dysfunction, cervical ranges, and discomfort caused by trigger points.

Conflict of interest: Nothing to declare

Author's Contribution: **MJ:** Conception and design, revising it critically for intellectual content, final approval., **HM:** Acquisition of data, interpretation of data, final approval., **MUK:** Acquisition of data, analysis of data, drafting the article, final approval, **MH:** analysis and corrections, **YK & MWN:** Conceived and designed the analysis. Proof reading of the manuscript.

REFERENCE

- Roldan CJ, Huh BK. Iliocostalis thoracis-lumborum myofascial pain: Reviewing a subgroup of a prospective, randomized, blinded trial. A challenging diagnosis with clinical implications. *Pain Physician*. 2016;19(6):363-72.
- Picavet H, Schouten J. Musculoskeletal pain in the Netherlands: prevalences, consequences and risk groups, the DMC3-study. *Pain*. 2003;102(1-2):167-78.
- Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual: Lippincott Williams & Wilkins; 1983.
- Travell J. Chronic myofascial pain syndromes-Mysteries of the history. *Advances in pain research and therapy*. 1990;17:129-37.
- Gerwin RD, Shannon S, Hong C-Z, Hubbard D, Gevirtz R. Interrater reliability in myofascial trigger point examination. *Pain*. 1997;69(1-2):65-73.
- Chen CK. Myofascial pain syndrome in chronic back pain patients. *The Korean journal of pain*. 2011;24(2):100.
- Hidalgo-Lozano A, Fernández-de-las-Peñas C, Calderón-Soto C, Domingo-Camara A, Madeleine P, Arroyo-Morales M. Elite swimmers with and without unilateral shoulder pain: mechanical hyperalgesia and active/latent muscle trigger points in neck-shoulder muscles. *Scandinavian journal of medicine & science in sports*. 2013;23(1):66-73.
- Lucas KR, Polus BI, Rich PA. Latent myofascial trigger points: their effects on muscle activation and movement efficiency. *Journal of Bodywork and Movement Therapies*. 2004;8(3):160-6.
- Imrich D. Myofascial Trigger Points-E-Book: Comprehensive diagnosis and treatment: Elsevier Health Sciences; 2013.
- Hopwood MB, Abram SE. Factors associated with failure of trigger point injections. *The Clinical journal of pain*. 1994;10(3):227-34.
- Nice DA, Riddle DL, Lamb RL, Mayhew TP, Rucker K. Intertester reliability of judgments of the presence of trigger points in patients with low back pain. *Archives of physical medicine and rehabilitation*. 1992;73(10):893-8.
- Hammer WI. Functional soft-tissue examination and treatment by manual methods: Jones & Bartlett Learning; 2007.
- Haleema B, Fatima U. The effect of eldoa alone and eldoa with core muscle strengthening to treat pain in patients with pvd: a comparative interventional study. *Journal Homepage: <http://www.ijmra.us>*. 2020;10(04).
- Arif R, Azfar H, Waseem A, Nawaz S, Sajjad AG. Effects Of Modified ELDOA Technique in Patients with Cervical Radiculopathy: Eldoa Technique in Patients with Cervical Radiculopathy. *Pakistan BioMedical Journal*. 2022:144-9.
- Sajjad AG, Javed MS, Rasul A, Hussain SA, Naqvi SA. Comparison of the effects of decompression and eldoa on pain and disability in lumbar disc protrusion. *Rehman Journal of Health Sciences*. 2021;3(2):92-6.
- Shahzad M, Rafique N, Shakil-ur-Rehman S, Ali Hussain S. Effects of ELDOA and post-facilitation stretching technique on pain and functional performance in patients with piriformis syndrome: A randomized controlled trial. *Journal of Back and Musculoskeletal Rehabilitation*. 2020(Preprint):1-6