



## Original Article

## To Compare the Effectiveness of Muscle Energy Technique and Deep Neck Flexors Training on Pain, Range of Motion and Functional Disability in Patients with Mechanical Neck Pain

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## ABSTRACT

Neck is the basic site of non-traumatic musculoskeletal pain. Neck torment is the commonest musculoskeletal torment in a general population. Neck torment is available in right around 66% of all inclusive community sooner or later in their lives, and generally it's the commonness is most astounding in the middle age. Neck torment pervasiveness had an expanding pattern up to 50 years then it begins to decay. Neck torment has been discovered more in females when contrasted with guys. Up to 37% of people are experiencing tireless neck torment indications. Neck torment is a typical condition that is putting a bigger financial weight on health care system [1]. Point prevalence of neck torment is 6% - 22% and up to 33% in more seasoned populace. Its lifetime pervasiveness is from 14.2% - 71% [2]. In the majority of the countries neck related scatters are reason for some days of non-appearance from work, as low back pain [3]. Most patients give nonspecific neck torment, where indications had a postural or mechanical premise impact [4]. Musculoskeletal agony in neck is common in children and adolescents. Those have a negative impact on children's emotional and physical well-being, but the underlying etiology and risk factors of this musculoskeletal pain is still poorly understood [5]. Large epidemiologic research in the Netherlands found that 30% of male participants and 43% of female participants had neck discomfort [6]. Nearly 50% of these patients have crippling side effects additionally. 33% of these patients get a constant neck manifestations enduring over a half year while rest one third have first time neck torment and are using human services follow up [7].

**Objective:** The goal of this study was to examine the effectiveness of muscular energy method with deep neck flexors training on pain, range of motion, and functional impairment in individuals with mechanical neck pain. **Method:** This randomized controlled trial was carried out at the Mayo Hospital's OPD physiotherapy department in Lahore. In this study, 30 patients were chosen at random and divided into two groups: Group 1 was treated with deep neck flexors training, while Group 2 was treated with muscular energy method (post isometric relaxation). Every patient signed a Performa and gave their informed permission. The questioner used to collect data was based on the NDI, Visual analogue scale (VAS), and Ranges of motion (flexion, extension, rotation, and side bending at neck). **Results:** Patients in group 1 showed marked improvement as compared to group 2. Both groups showed improvement but group 1 showed statistically more improvement ( $p$  value  $< \alpha = 0.05$ ). It is concluded from the study that, patients with mechanical neck pain, when treated by deep neck flexors training showed a significant treatment outcome when analyzed on VAS, NDI, and Goniometer for ROM. **Conclusion:** When Group 1 and 2 were compared, it was seen that Group 1 showed more significant results than group 2.

## INTRODUCTION

Neck is the basic site of non-traumatic musculoskeletal pain [1]. Neck torment is the commonest musculoskeletal torment in a general population [2]. Neck torment is available in right around 66% of all-inclusive community sooner or later in their lives, and generally it's the commonness is most astounding in the middle age. Neck torment pervasiveness had an expanding pattern up to 50 years then it begins to decay. Neck torment has been discovered more in females when contrasted with guys. Up to 37% of people are experiencing tireless neck torment indications. Neck torment is a typical condition that is putting a bigger financial weight on health care system [1]. Point prevalence of neck torment is 6% - 22% and up to 33% in more seasoned populace. Its lifetime pervasiveness is from 14.2% - 71% [2]. In the majority of the countries neck

related scatters are reason for some days of non-appearance from work, as low back pain [3]. Most patients give nonspecific neck torment, where indications had a postural or mechanical premise impact [4]. Musculoskeletal agony in neck is common in children and adolescents. Those have a negative impact on children's emotional and physical well-being, but the underlying etiology and risk factors of this musculoskeletal pain is still poorly understood [5]. Large epidemiologic research in the Netherlands found that 30% of male participants and 43% of female participants had neck discomfort [6]. Nearly 50% of these patients have crippling side effects additionally. 33% of these patients get a constant neck manifestations enduring over a half year while rest one third have first time neck torment and are using human services follow up [7].

.Age over 43 years this rate expanded to 20%. Impediment of versatility is one of the basic grievances in neck patients [8]. Diminished scope of movement and of a subjective sentiment firmness may likewise go with the neck torment, that is frequently hastened by neck developments or by managed neck postures [9]. Numerous mediations are acknowledged as a standard of nurture mechanical neck torment, there is a generous confirmation with respect to the viability of non-agent intercessions is lacking [10]. MET is a therapeutic approach that involves the intentional contraction of a subject's muscle(s) in a well-regulated bearing, against a counterforce provided by the expert. MET is used to alleviate pain, stretch tight muscles and belts, lower muscular tone, improve nearby flow, strengthen the feeble musculature, and mobilise joint constraints [11]. Stretching practices are observed to be viable in treating neck torment and of muscular tightness [12]. "There are confirmations which exhibited advantageous impacts for deep neck flexors training while the less Examinations could be found on muscle energy technique. In this way, there is need to ponder both the muscle energy technique and deep neck flexors preparing scheme plan not withstanding standard care in a mechanical neck pain patient [13]. A profound cervical flexor (DCF) has a noteworthy postural capacity in supporting and rectifying the cervical lordosis. It has been discovered that specific muscles in the cervical spine have a tendency to debilitate in NP, the most widely recognized of these being the DCF [14]."

**METHODS**

"The study included 30 patients (males and females) with subacute mechanical neck discomfort. The department of physical therapy at Mayo Hospital in Lahore provided ethical approval. Each patient provided informed permission, which included information regarding the study's safety and their right to withdraw at any time. Before being randomly allocated to one of two groups, all participants were evaluated for inclusion and exclusion criteria. The inclusion criteria were age 18 to 55 years, neck discomfort lasting at least six weeks, both males and females, tightness of the upper trapezius, levator scapulae, and scalene muscles on the affected side, no extra therapeutic intervention, and willingness to participate. Inflammatory, neoplastic, and neurological disorders, as well as metabolic illness, are all exclusion criteria. Neck pain that spreads to the arms and upper limbs, neck pain accompanied by headache or face pain, recent significant cervical spine trauma or fracture, history of cervical spine surgery." "All patients had baseline measurements recorded for pain intensity on a visual analogue scale (VAS), active ROM of

cervical by goniometer, and NDI scores. There were two groups created. Deep neck flexor training was provided to one group, while muscle energy method was given to the other, and both groups were given standard treatment. DNF training was given to Group A in addition to normal therapy. The fundamental purpose of this program was to correct craniocervical flexion movement while activating the superficial cervical flexor muscles as little as possible. To keep the head in contact with the supporting surface, the craniocervical flexion motion requires a specific craniocervical movement (nodding - "yes" action). GROUP B received MET in addition to standard treatment. MET was performed on the upper trapezius, Levator scapulae, and Scalene. After a 7-10 second isometric contraction and thorough relaxation of all areas, the stretch was held for 30 seconds. The effort and counter-pressure were both adequate (20% available strength) and trouble-free. 3-5 repetitions were given. Patients were given a maximum of three weeks of treatment, with two sessions each week [15]. "Statistical analysis was done by SPSS 21 version..

**RESULTS**

Comparison of pre and post test score of pain intensity (on VAS) and range of motion (ROM) and NDI was done for both 2 groups. Paired t-test for pre and post-test comparison revealed a significant improvement (P=0.000) for pain intensity, ROM, NDI for both groups (Group 1 and Group 2). Pre and Post treatment VAS has shown that pretreatment VAS value in group A was 7.40±.828 and post treatment mean was 1.80±.775 and mean difference was 5.60. While pretreatment VAS of group B was 6.80±.862 and mean of post treatment VAS was 3.13±.743. Pre and Post treatment NDI comparison in both groups showed that pretreatment NDI score of group A was 46.40±11.861 and post treatment score was 14.07±4.079, while pretreatment group B, NDI was 55.47±10.730 and post treatment score was 31.87±7.873.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post VAS	Equal variances assumed	.163	.689	-4.81	28	.000	-1.333	.277	-1.901	-.766
	No equal variances assumed			-4.810	27.952	.000	-1.333	.277	-1.901	-.766

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
post NDI	Equal variances assumed	3.606	.068	-7.775	28	.000	-17.800	2.289	22.490	-13.110
	Equal variances not assumed			-7.775	21.011	.000	-17.800	2.289	-22.561	-13.039

**Table1:** Post Levenes Test for Equality of Variances

Group Statistics						
	study group	N	Mean	Std. Deviation	Std. Error Mean	
Post Flexion	A	15	38.80	3.895	1.006	
	B	15	30.93	4.511	1.165	
Post Extension	A	15	38.40	1.595	.412	
	B	15	30.00	2.646	.683	
Post Left Side Flexion	A	15	38.27	2.890	.746	
	B	15	33.20	4.127	1.065	
Post Right Side Flexion	A	15	38.67	2.895	.747	
	B	15	31.33	3.697	.955	
Post Left Side Rotation	A	15	63.73	4.621	1.193	
	B	15	44.47	4.838	1.249	
Post Right Side Rotation	A	15	64.27	4.026	1.040	
	B	15	46.07	4.350	1.123	

T-test for equality of means of different positions										
Post flexion	Equal variances assumed	.004	.947	5.112	28	.000	7.867	1.539	4.714	11.019
	Equal var. iance snot assumed			5.112	27.417	.000	7.867	1.539	4.711	11.022
Post extension	Equal variances assumed	2.710	.111	10.531	28	.000	8.400	.798	6.766	10.034
	Equal variances not assumed			10.531	22.986	.000	8.400	.798	6.750	10.050
Post Left Side Flexion	Equal variances assumed	5.045	.033	3.895	28	.001	5.067	1.301	2.402	7.731
	Equal variances not assumed			3.895	25.070	.001	5.067	1.301	2.388	7.745
Post Right Side Flexion	Equal variances assumed	1.164	.290	6.049	28	.000	7.333	1.212	4.850	9.817
	Equal variances not assumed			6.049	26.478	.000	7.333	1.212	4.843	9.823
Post Left Side Rotation	Equal variances assumed	.225	.639	11.153	28	.000	19.267	1.727	15.728	22.805
	Equal variances not assumed			11.153	27.941	.000	19.267	1.727	15.728	22.806
Post Right Side Rotation	Equal variances assumed	.011	.918	11.892	28	.000	18.200	1.530	15.065	21.335
	Equal variances not assumed			11.892	27.834	.000	18.200	1.530	15.064	21.336

**Table2:** T-test for equality of means of different positions

**DISCUSSION**

“One recent study found that mechanical confinement between one or more vertebrae, which can be induced by pain, fiber contracture, hard ankylosis, or muscle fit, causes ROM decrease [16-17].” The findings indicate that Group 1 significantly outperformed Group 2 in terms of performance. Both groups improved significantly in terms of range of motion, NDI, and VAS. However, group 1 improved more than group 2, indicating that deep neck flexors training is superior to muscular energy approach.” [19] “There was a bigger difference in assemble A against NDI and Ranges. One research revealed a drop in useable ability in the MET group, which can be explained by a loss of

manifestations produced by shortening of postural muscles such the upper trapezius, levator scapulae, and scalene. In the DNF preparation group, the reduction in discomfort and change in ROM might be related to a reduction in cervical impediment as a result of craniocervical flexion, which is a crucial activity of DNF. Despite the fact that MET is frequently promoted as a remedy for severe brokenness and anguish [18] there has been minimal study investigating the effects of MET on agony and delicacy). Deficit in craniocervical flexors muscle execution, on the other hand, bears all the hallmarks of being a component in some chronic neck condition. Jull and colleagues [20].”

**DISCUSSION**

The study indicated that deep cervical flexor training is more beneficial than muscular energy approach in treating mechanical neck discomfort.

**CONCLUSION**

The study indicated that deep cervical flexor training is more beneficial than muscular energy approach in treating mechanical neck discomfort.

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