

# THE EFFECT OF THE UPPER LIMB TENSION TEST IN THE MANAGEMENT OF ROM LIMITATION AND PAIN IN CERVICAL RADICULOPATHY

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## ABSTRACT

**Aim and Objectives:** To study the effect of the upper limb tension test in the management of limitation of range of motion and pain in patients with cervical radiculopathy compared with a control group.

**Intervention and Outcomes:** A total of 40 patients were treated with two types of interventions. The Control group received a conservative management protocol and the Experimental group received an experimental protocol that included mobilization using the Upper Limb Tension Test in addition to the conservative protocol. The outcomes measures were flexion, extension, right side flexion and left side flexion ranges of the cervical spine and VAS score for Pain.

**Results:** All data collected was statistically analysed on the StatPac 3.0. Pre and Post test values were taken for both cervical range of motion and pain for both the Control and Experimental groups. Paired 't' test was used for within the group comparison. Unpaired 't' test was used for between the group comparison which showed a highly significant difference in favor of the experimental group at 99.9% (P<0.001) between the ROM of Flexion, Extension, right Side Flexion and left Side Flexion of the cervical spine.

**Conclusion:** The results of the study showed that adding neural mobilization using ULLT certainly benefits patients of cervical radiculopathy as far as the cervical range of motion and pain is considered.

**KEY WORDS:** Cervical Radiculopathy, Mobilization of Nerves, ULTT, ROM of Cervical Spine, VAS.

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## INTRODUCTION

Cervical radiculopathy is a common clinical diagnosis classified as a disorder of a nerve root and most often is the result of a compressive or space occupying lesion such as a disc herniation, spondylitic spur, or cervical osteophyte [1,2,3]. Patients with cervical radiculopathy normally presents themselves for treatment with arm pain and complain of pain,

numbness, tingling and weakness in the upper extremity often resulting in significant functional limitations and disability [4].

There is a combination of various conservative managements available for the treatment of cervical radiculopathy that includes intermittent cervical traction, manipulations, and Electro therapeutic modalities like shortwave diathermy, Ultrasound therapy, TENS and neck exercises.

Mobilizing the nervous system has been used by a few researchers like Butler, Shacklock, Kornberg and Marshall. Butler says that since the area of mobilization of the nervous system is new to most medical professionals, which also includes physiotherapists, it is important that patho-anatomical terms such as scar, radiculopathy, neuropathy and double crush should be mentioned in case sheets and communications with other professionals [5].

The study is thus aimed to mobilize the nervous system by using the Upper limb tension test as a therapeutic maneuver and to see if it has any effect in the range of motion limitation and pain that is common in patients with cervical radiculopathy.

Range of motion of the cervical spine which is one of the outcome measures of this study has been studied in detail by researchers. The universal goniometer has found to be valid and reliable for the measurement of cervical spine range of motion.

Pain which is one of the main symptoms of cervical radiculopathy and one of the outcome measures of this study will be assessed using the visual analogue scale.

## METHODS

**Inclusion criteria:** All patients diagnosed with cervical radiculopathy by medically qualified doctors who visited the study setting, Age group 30-60 yrs, Patients tolerant to the procedure of ULTT, Patients having radicular pain in either one of the upper limbs.

**Exclusion criteria:** Patients with cervical instability, Central cord compression, Spinal tumors, and other spinal infections were excluded.

**Type of Study:** The study was an experimental study which involved two groups. Control group and the experimental group, each group consists of 20 patients.

**Intervention:** All the patients of both groups were treated with a conservative treatment protocol that consisted of 20 minutes of shortwave diathermy, 20 minutes of Intermittent Cervical traction and 20 minute of neck exercises. The experimental group received neural mobilization using the ULTT (Fig. 1) for

20 to 30 seconds in addition to the conservative protocol.

**Fig. 1:** Showing the neural mobilization Procedure.



**Statistical analysis:** All data collected was statistically analyzed on the StatPac 3.0. Pre and Post test values were taken for both Cervical ROM and Pain for both the Control and Experimental groups.

## RESULTS

ROM of the cervical spine for Flexion, Extension, right side flexion and left side flexion and Pain intensity using Visual Analogues Scale were measured before and after the intervention. The paired 't' test was used for within the group comparison for the control and experimental groups. The results showed a highly significant difference in favor of the experimental group at 99.9% ( $P < 0.001$ ) between the range of motion of Flexion, Extension, Side flexion to the right and side flexion to the left in the cervical spine within the group.

The unpaired 't' test was used to assess the significance between the groups and showed the following results.

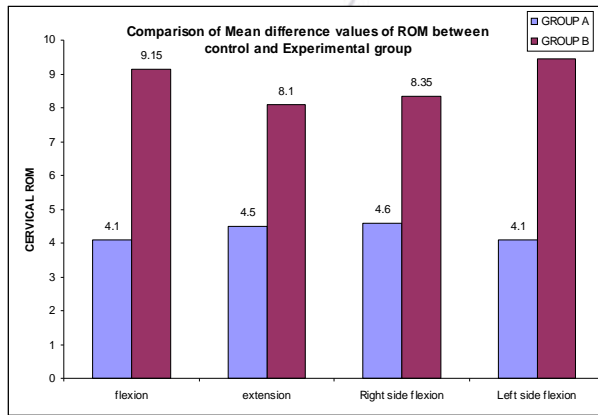
The unpaired 't' test values show that Cervical spine Flexion, Right side flexion and left side flexion have a significant difference towards the experimental group with a statistical difference of 99.9% ( $P < 0.001$ ).

However Extension of cervical spine was statistically significant in favor of the experimental group at 98% (0.01).

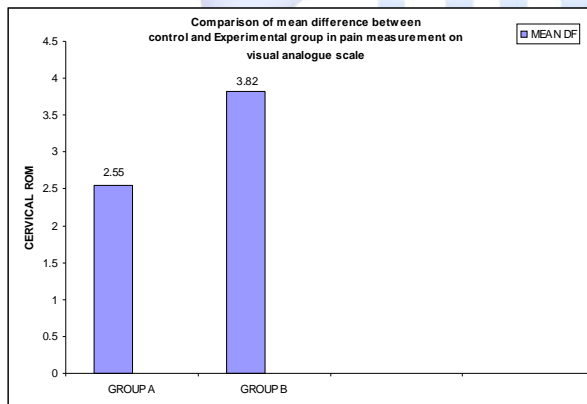
Paired 't' test values for pain measured on the visual analogue scale showed a highly significant difference in favour of both the control and the experimental groups at 99.9% ( $P < 0.001$ ).

The unpaired 't' test value for pain measured on the visual analogue scale between the control and experimental groups showed a value of 2.508 which was statistically significant at (P<0.02).

**Graph 1:** Comparison of Mean difference value of ROM between control and experimental group.



**Graph 2:** Comparison of mean difference between control and experimental group in Pain Measurement on Visual Analogue Scale.



## DISCUSSION

The Experimental group responded better than the control group to the treatment and the results are discussed below.

All the statistically calculated values mentioned in the tables above have clearly showed that the experimental protocol was more helpful in the management of cervical radiculopathy with respect to limitation of range of motion and pain.

A few researchers have done work where they have attempted to improve pain and other symptoms by mobilizing the nervous system. Butler said that as in a joint problem it is possible and clinically effective to treat pain via nervous system mobilization. Studies by Burton et al<sup>6</sup> showed that mobilization of the SLR with regard

to pain reproduction can lead to improved pain free range of movements.

In a double blinded survey conducted by Kornberg et al [7] compared the effects of 28 professional rules football players with grade I hamstring tears. 16 players received traditional treatment and 12 players received traditional treatment and nervous system mobilization.

The study revealed that the entire group that received traditional treatment missed one or more than one match and out of the group that was treated with both traditional and nervous system mobilization only one player missed one match.

This study has a lot of clinical relevance as it adds another dimension in the management of symptoms of cervical radiculopathy.

## CONCLUSION

The statistical analysis is strongly in favour of using the upper limb tension test as a method of neural mobilization in the treatment of cervical radiculopathy with respect to pain and cervical range of motion.

**Conflicts of interest:** None

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