

# Comparison of Effectiveness of Myofascial Trigger Point Release with Manual Therapy and Myofascial Release in Combination with Self-Stretching in Upper Cross Syndrome

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Trigger points, Upper crossed syndrome, Self-stretching

## Author's Contribution

<sup>1</sup>Data analysis, Discussion, Planning of research

<sup>2</sup>Conception, Manuscript writing

<sup>3</sup>Planning of research, Manuscript writing

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## ABSTRACT

**Background:** Upper crossed syndrome is a common postural dysfunctional pattern that describes the dysfunctional tone of the musculature of shoulder girdle/cervicothoracic region of the body. In upper crossed syndrome cervical flexors and rhomboid and lower trapezius become weak and pectorals and upper trapezius/elevator and sub occipital become tight. Overuse and tightness of these muscles results in trigger point (hyperirritable points/knots) formation in the belly of the muscles.

**Objective:** To compare the effectiveness of myofascial trigger point release in upper crossed syndrome versus myofascial trigger point release in combination with self-stretching treatment.

**Methodology:** A total of 40 patients with upper crossed syndrome were selected for study on the basis of inclusion criteria, randomly allocated in to two groups i.e. A and B (each n=20). Group A was treated with myofascial trigger point release alone once a week and followed for 6 weeks, while group B was given the same treatment along with self-stretching home plan. Self-stretching includes (chest stretch in sitting for pectoralis major, upper trapezius stretch and sub occipital self-stretch include hold for 10-15 seconds and release of 5-10 seconds). The pain, disability and Cervical ROM were assessed before and after treatment through Numeric Pain Rating Scale (NPRS), Neck Disability Index (NDI) and Goniometry respectively. Data was analyzed on SPSS 20.

**Results:** The results showed that patients in Group B improved pain (mean NPRS from 5.40±0.50 to 2.50±0.52) and disability (mean NDI from 36.00±4.47 to 22.20±4.67) more than Group A with pain (mean NPRS from 5.45±0.75 to 4.00±0.32) and disability (mean NDI from 31.25±6.85 to 23.20±7.40). Statistically significant results were found between the groups regarding NPRS, NDI and cervical ROM as p value was <0.05.

**Conclusion:** It is concluded that the myofascial trigger point release along with self-stretching is more effective as compared to myofascial trigger point manual release alone in upper crossed syndrome.

## Introduction

Upper crossed syndrome and its associated neck pain is considered to be the fourth most frequent cause of disability with an annual 30% increase in the rate of prevalence. According to the report of Global Burden of Disease (GBD) 2010, neck pain is ranked 21<sup>st</sup> in terms of overall burden of diseases. The point prevalence of neck

pain in the global report of GBD was 4.9% and is generally found higher in Scandinavian countries than rest of Europe and Asia.<sup>1</sup> Neck pain (NP) reported higher among females at the age of 35-49 years as compared to males. Study suggests that approximately 6-48% of adult's population have pain in one of these muscles.<sup>2</sup>

Trigger points are hyperirritable spots in a muscle. Myofascial overuse or stressed out due to trauma, the muscle develops adhesions which are known as "Trigger Points". These adhesions cause a restriction in work of muscle to perform well.<sup>3</sup> Trigger point causes muscular stiffness, tenderness and a decrease in range of motion. Almost everyone gets trigger point with no other complaint or issue.<sup>4</sup> Trigger points actually cause a break or a hurdle of blood supply problem to that area of muscle too.<sup>5</sup> Myofascial release is a hands-on technique includes stretching, compression, and sustained pressure into restricted areas of fascia in the body to eliminate pain and restore motion. Myofascial therapy goal is to stretch and loosen the fascia and to restore the motion. It is also being referred to trigger point myofascial release.<sup>6</sup> Once trigger points are released the muscle needs to be moved to its full length. Many patients feel pain-free during the 1st treatment. Soreness may be present after 2 to 3 days of treatment, but the restoration of muscle length takes time.<sup>7</sup> The purpose of this study was to compare the effectiveness of myofascial trigger point release in upper crossed syndrome versus myofascial trigger point release in combination with self-stretching treatment.

## Methodology

The ethical review committee of Riphah College of Rehabilitation Sciences Islamabad approved to conduct this study. This Randomized Controlled Trial was conducted in Islam Teaching Hospital, Sialkot, Islam Central Hospital, Sialkot, and Bilal Hospital Sialkot, Pakistan from January 2016- June 2016. The inclusion criteria were Patients of both genders with upper crossed syndrome along with trigger points between the ages of 20-40 years. The data was collected through a self-structured Performa. A total 40 patients were selected in which 18 males and 22 females were fulfilling the inclusion criteria. Patients were randomly divided into the group (A and B) 20 patients in each group. Sample size was collected from previous study and calculated by using openEpi tool<sup>13</sup> with 95% confidence interval.

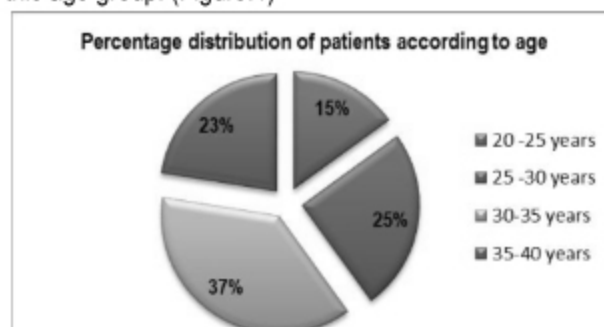
Both the groups A and B were treated with myofascial trigger point release technique which included 1 session per week and followed by 6 weeks of intervention. Patient position was prone and relaxed and a 30-50 second sustained deep pressures were applied to

the trigger point in 5-7/10 pain tolerance level of the patient on every involved muscle of the upper cross syndrome. But only Group B patients were taught for self-stretching of the upper trapezius muscle, pectoralis muscle, and levator scapulae muscle. A hold of 10-15 second stretch was performed by the patient with 10 repetitions in each session.

To measure the effect of pain on patient's functional activities Neck Disability Index (NDI) was used. It composed of ten items i-e pain, self-care, carrying, reading, headache, concentration, work, driving, sleep, and leisure. NDI has high level of reliability and validity (Crobach's alpha score was 0.89) as it is quicker to answer and easier to score<sup>14</sup>. Intensity of pain was measured by Numeric Pain Rating Scale (NPRS) a highly reliable tool (Crobach's alpha=0.88)<sup>15</sup>. NPRS scale showed 0 for no pain and 10 for extreme pain while Goniometer was used to measure ROM of the neck as its reliability was 0.98<sup>16</sup>. SPSS version 20 was used for data analysis. Paired and independent t-test were used to compare the mean differences within and between groups.

## Results

During the trial, patients were selected randomly and it was found that about 15 (37.5%) patients that is the maximum number of patients were between the ages of 30-35. This also shows the prevalence of disease among this age group. (Figure.1)



**Figure 1: Age distribution of the participants**

Within the group analysis (Table I) showed significant results but when comparing both the groups, Group B showed significant improvement in pain, disability and cervical ROM as compared to Group A. (Table II)



Table I: Shows within the Group Comparison

| Study Variables    | Groups | Pre- treatment<br>Mean± SD | Post-treatment<br>Mean± SD | Mean Difference | P value |
|--------------------|--------|----------------------------|----------------------------|-----------------|---------|
| NPRS               | A      | 5.45±0.75                  | 4.00±0.32                  | 1.45            | 0.005   |
|                    | B      | 5.40±0.50                  | 2.50±0.52                  | 2.9             | 0.001   |
| Flexion            | A      | 23.25±4.65                 | 30.75±4.06                 | 7.5             | 0.005   |
|                    | B      | 22.75±4.43                 | 34.75±4.12                 | 12              | 0.001   |
| Extension          | A      | 29.50±3.94                 | 34.25±3.72                 | 4.75            | 0.005   |
|                    | B      | 26.00±4.47                 | 37.20±4.72                 | 11.2            | 0.001   |
| Right Side Bending | A      | 20.00±4.12                 | 26.30±3.58                 | 6.3             | 0.005   |
|                    | B      | 20.00±3.97                 | 30.00±4.55                 | 10              | 0.001   |
| Left Side Bending  | A      | 19.50±3.35                 | 23.00±3.47                 | 3.5             | 0.005   |
|                    | B      | 21.00±3.83                 | 27.25±5.25                 | 6.25            | 0.001   |
| Left Rotation      | A      | 40.50±5.35                 | 52.50±6.58                 | 12              | 0.005   |
|                    | B      | 36.75±5.19                 | 54.50±6.86                 | 14              | 0.001   |
| Right Rotation     | A      | 40.00±4.86                 | 52.00±8.29                 | 12              | 0.005   |
|                    | B      | 38.25±5.19                 | 55.75±7.99                 | 17.5            | 0.001   |
| NDI                | A      | 31.25±6.85                 | 23.20±7.40                 | 8.05            | 0.005   |
|                    | B      | 36.00±4.47                 | 22.20±4.67                 | 13.8            | 0.001   |

Table II: Shows across the Group Comparison

| Study Variables     | Group | Pre- treatment<br>Mean± SD | Post-treatment<br>Mean± SD | Mean Difference | P value |
|---------------------|-------|----------------------------|----------------------------|-----------------|---------|
| NPRS                | A     | 5.45±0.75                  | 4.00±0.32                  | 1.45            | 0.001   |
|                     | B     | 5.40±0.50                  | 2.50±0.52                  | 2.9             |         |
| NDI                 | A     | 31.25±6.85                 | 23.20±7.40                 | 8.05            | 0.001   |
|                     | B     | 36.00±4.47                 | 22.20±4.67                 | 13.8            |         |
| Flexion             | A     | 23.25±4.65                 | 30.75±4.06                 | 7.5             | 0.001   |
|                     | B     | 22.75±4.43                 | 34.75±4.12                 | 12              |         |
| Extension           | A     | 29.50±3.94                 | 34.25±3.72                 | 4.75            | 0.001   |
|                     | B     | 26.00±4.47                 | 37.20±4.72                 | 11.2            |         |
| Right side bending  | A     | 20.00±4.12                 | 26.30±3.58                 | 6.3             | 0.001   |
|                     | B     | 20.00±3.97                 | 30.00±4.55                 | 10              |         |
| Left side bending   | A     | 19.50±3.35                 | 23.00±3.47                 | 3.5             | 0.001   |
|                     | B     | 21.00±3.83                 | 27.25±5.25                 | 6.25            |         |
| Right side Rotation | A     | 40.00±4.86                 | 52.00±8.29                 | 12              | 0.001   |
|                     | B     | 38.25±5.19                 | 55.75±7.99                 | 17.5            |         |
| Left Side Rotation  | A     | 40.50±5.35                 | 52.50±6.58                 | 12              | 0.001   |
|                     | B     | 36.75±5.19                 | 54.50±6.86                 | 14              |         |

## Discussion

The purpose of the study was to see the results of supposed protocol on treatment outcomes pain, disability and range of motion limitation. The main findings of this study showed that trigger point release along with self-stretching in upper crossed syndrome is more effective in treating patients with limited range of motion and pain as compared to the myofascial trigger point release alone in upper crossed syndrome. From the analysis of the current study it was found that the patients treated with myofascial trigger point release Group A improved pain but less than that of Group B in which self-stretching was done in combination with myofascial

trigger point release on NDI scale i.e. (Pre = 31.25±6.85, Post = 23.20±7.40) and on NPRS scale i.e. (Pre = 5.45±0.75, Post = 4.00±0.32).

Anderson *et al.*, in 2005 worked on the integration of myofascial trigger point release and paradoxical relaxation training treatment of chronic pelvic pain in men. The study showed that the combined treatment for trigger point release is much more effective.<sup>8</sup> In 2013, Moraska *et al.*, worked and conducted a study on the effects of pressure trigger point release (ischemic compression) on blood flow and cellular metabolism at the myofascial trigger point. The study showed that lactate may be the more relevant for detection and treatment of

abnormalities in the myofascial trigger point release.<sup>9</sup> In 2008, Blikstad conducted a placebo randomized controlled trial to find out the effect of myofascial band therapy and activator trigger point therapy on cervical lateral flexion by using cervical range of motion, numerical rating scale were used to determine neck pain, while cervical range of motion to find out the lateral flexion and pain pressure algometer were used for pressure threshold measurement. He found that the non-specific neck pain and upper trapezius points were better treated with trigger point therapy than myofascial band therapy.<sup>10</sup> Another study conducted by Adelaida Maria et al in 2011 and concluded that myofascial release is helpful in improving physical function in patients with fibromyalgia patients, but not effective in correction in posture correction.<sup>11</sup> In 2007 Jari et al conducted a study, in which he compared manual therapy with self-stretching and concluded that patients favor manual therapy because it was better option for decreasing stiffness and disability. But on the other hand it was found that regular self-stretching was more effective in reduction of pain and easy to perform this favors current study.<sup>12</sup>

## Conclusion

It is concluded that the myofascial trigger point release along with self-stretching is an efficient method as compared to myofascial trigger point manual release alone in upper crossed syndrome.

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