



P-ISSN: 2394-1685  
E-ISSN: 2394-1693  
Impact Factor (RJIIF): 5.38  
IJPESH 2024; 11(2): 91-98  
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[www.kheljournal.com](http://www.kheljournal.com)  
Received: 13-01-2024  
Accepted: 14-02-2024

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## Effect of longitudinal release technique compared with cross hand release technique of MFR on pectoralis muscle in individual having rounded shoulder

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### Abstract

**Background:** A resting shoulder position that has shifted forward from the optimal alignment of the body is referred to as having rounded shoulders. Untreated rounded shoulders, commonly referred to as "mom posture," can exacerbate general poor posture. A round shoulder is defined as an uncomfortable position that puts strain on the shoulder joint of an individual.

**Aim:** To find the effect of longitudinal release technique compared with cross hand release technique of MFR on pectoralis muscle in Individuals having rounded shoulders.

**Methodology:** Convenient sampling was done for 100 individuals. The participants were taken in the age range of 18-40 years as per inclusion criteria. Participants were randomly assigned in two groups. The group a participants were given longitudinal release technique with ultrasound and strengthening Physiotherapy and group b cross hand release technique with ultrasound and strengthening Physiotherapy. Pre-intervention assessment was taken and both groups received 40 min treatment session over a span of six weeks. Pre-intervention and post-intervention assessment was analysed by paired and unpaired t test using IN stat software. Outcome Measure: Pain was measured by VAS, Range of motion was measured by universal goniometer and, muscle power was measured by Manual muscle testing grading.

**Results:** Both groups demonstrated significant difference in pain, range of motion and Muscle power in 6 weeks of intervention when compared within group. Unpaired t test was done between the groups and the result showed that pain, flexion, internal rotation and MMT (pectoralis major) was extremely significant, whereas pectoralis minor and trapezius (Left side) were very significant and for trapezius (right side) was no extremely significant.

**Keywords:** Demonstrated, significant, difference

### Introduction

Rounded shoulder posture (RSP) can cause or result in the habitual slouched postural prevalent in daily tasks. Rounded shoulder posture has been found to be a risk factor for upper thoracic kyphosis and cervical lordosis. It is characterized by a prolonged, downwardly rotated, and anteriorly pointed scapula position. Multiple factors contribute to the rounded shoulder position. Tightness in the pectoralis minor muscle, which can happen with reduced scapular posterior tilt, retraction, and upward rotation during arm raising, is one component that might lead to a rounded shoulder position.

It is believed that bad posture is a sign of muscle imbalances around misaligned joints. When one has poor posture, one's shortened muscles are perceived as being stronger and more active, while one's extended muscles are perceived as being weaker. Changes in kinematics, surrounding muscle activity, and scapular position might result from a rounded shoulder.

### Aim of the study

To find the effect of longitudinal release technique compared with cross hand release technique of MFR on pectoralis muscle in Individuals having rounded shoulders.

### Objective of the study

To investigate the effect of longitudinal release technique, ultrasound along with strengthening of pectoralis muscle and lower trapezius muscle on pain, range of motion, structural

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impairment, individual muscle testing in Individual having rounded shoulder.

-To investigate the effect of cross hand release technique along with ultrasound and strengthening of pectoralis muscle and lower trapezius muscle on pain, range of motion, structural impairment, individual muscle testing, in Individuals having protracted shoulders

### Methodology

**Source of data:** Dr. APJ Abdul Kalam College of Physiotherapy

**Study setting:** Study was conducted in Dr. APJ Abdul Kalam College of Physiotherapy Pims Loni

**Duration of study:** 6 Months

**Study design:** Comparative study.

**Sample Size:** 100

**Study population:** Patients with Rounded Shoulder

**Sampling method:** Simple random sampling

**Equipment to be use:** Goniometer, Plumb line.

### Selection criteria

#### Inclusion criteria

- Age group 18-40
- Both male and female
- Pain >2 on VAS
- Individual with protracted shoulder
- Individual with reduced range of motion

- Individual with reduced muscle strength
- Active range of motion affected
- Those willing to participate

#### Exclusion criteria

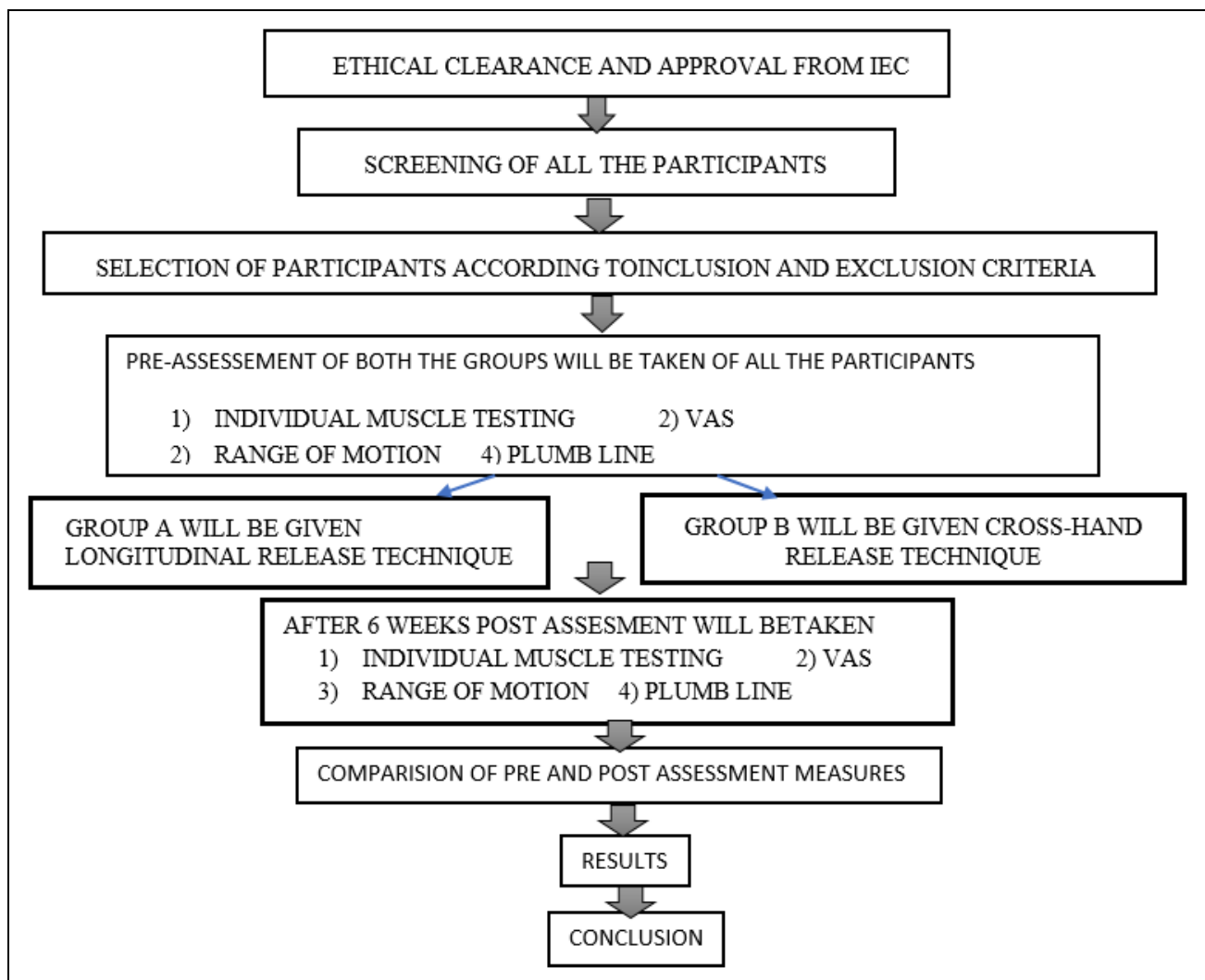
- Individual with fracture
- Individual with dislocation or infection
- Individual with suspected malignancy or tumour.

#### Outcome Measures

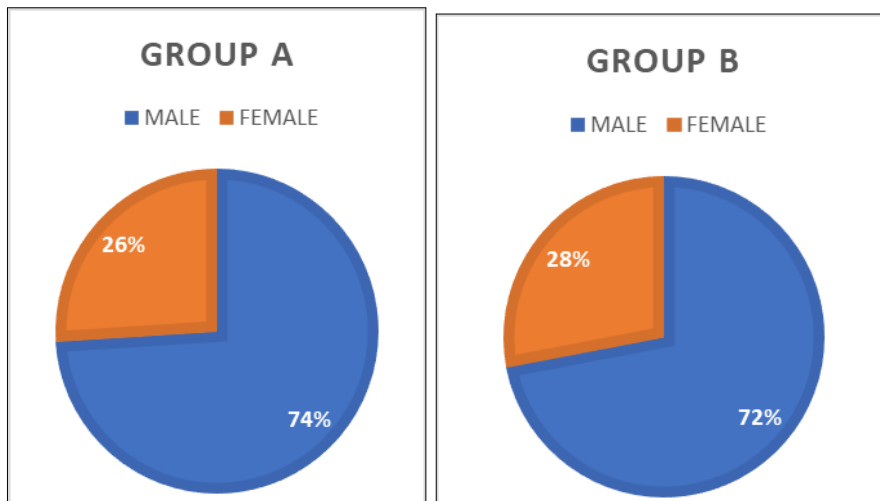
1. **Individual Muscle Testing:** To evaluate the muscle strength
2. **Visual Analogue Scale (VAS):** Used for measurement of pain.
3. **Range of Motion** will be measured by using Universal Goniometer
4. **Plumb Line:** To evaluate the postural deformity



### Flow Chart

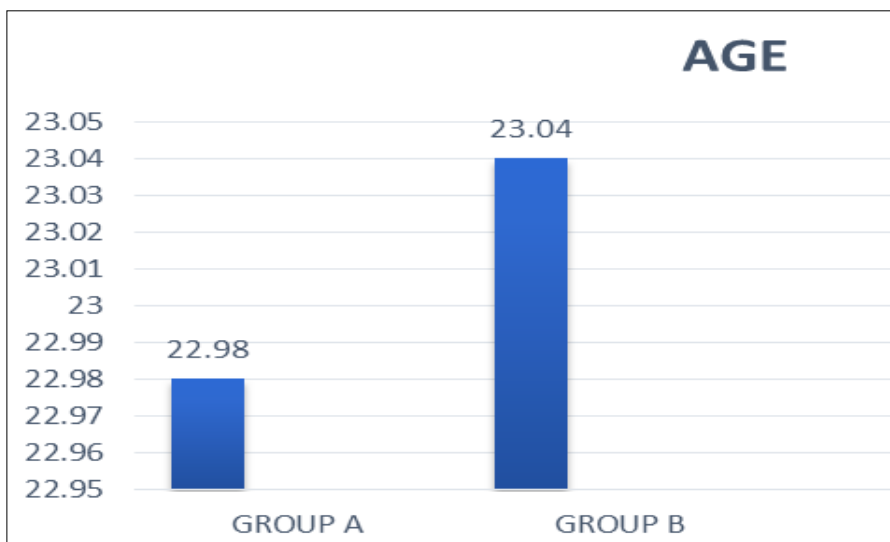


**Data Analysis and Results**



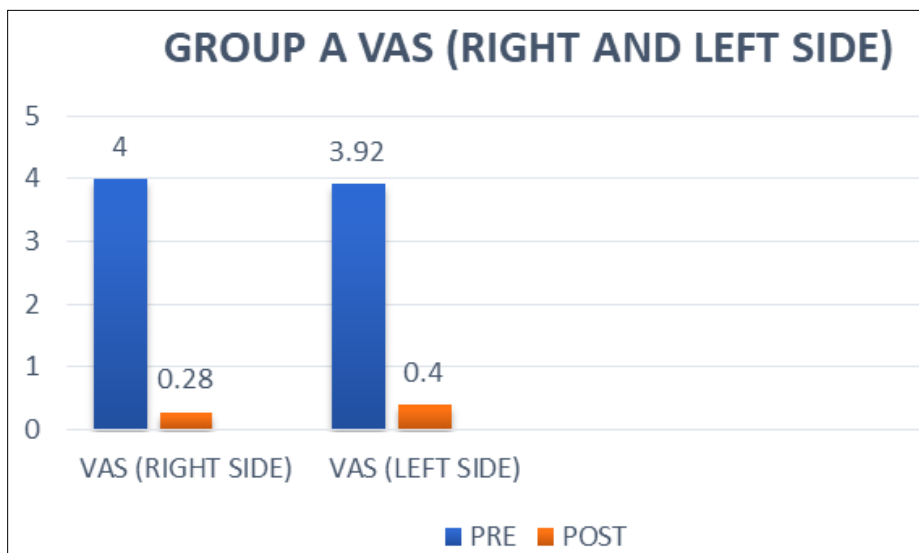
**Graph 1:** Gender distribution graph in group a and group b

**Interpretation:** Graph 1 shows that out of 100 samples there were 73 males and 27 females. Group A had 37 males and 13 female and group b had 36 males and 14 females



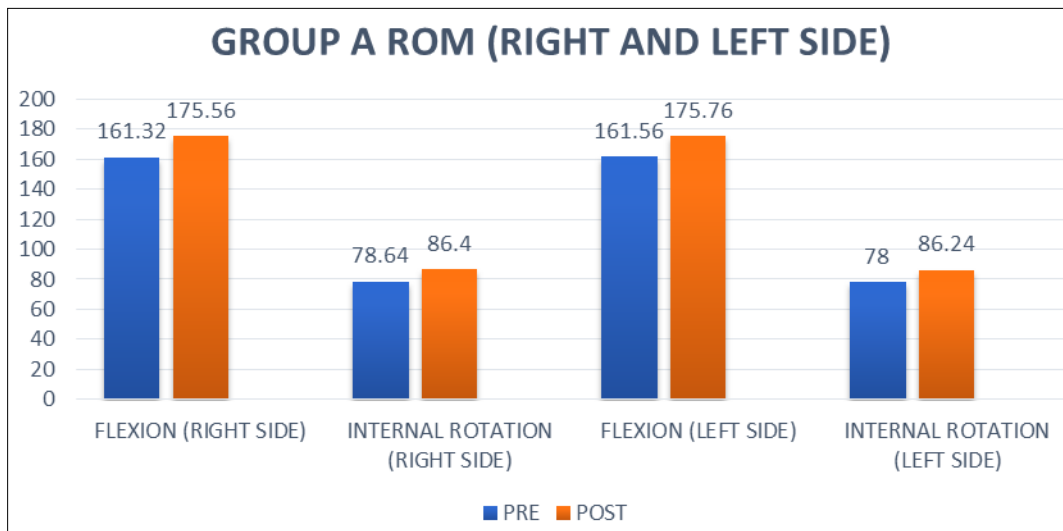
**Graph 2:** Age Distribution Graph in Group A and Group B

**Interpretation:** Graph no 2 shows that in group a there is mean age of  $22.98 \pm 4.06$  and in group b there is mean age of  $23.04 \pm 4.08$ .



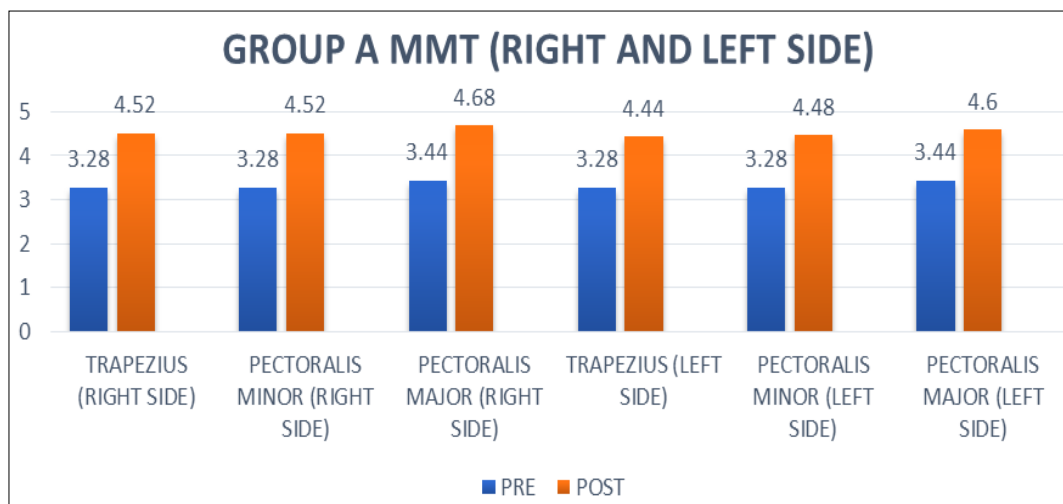
**Graph 3:** Comparison between pre and post values of vas in group a of right and left side

**Interpretation:** Graph No.3 shows there is extremely significant difference seen in VAS of right and left side (p value <0.0001) between pre and post mean values of group a.



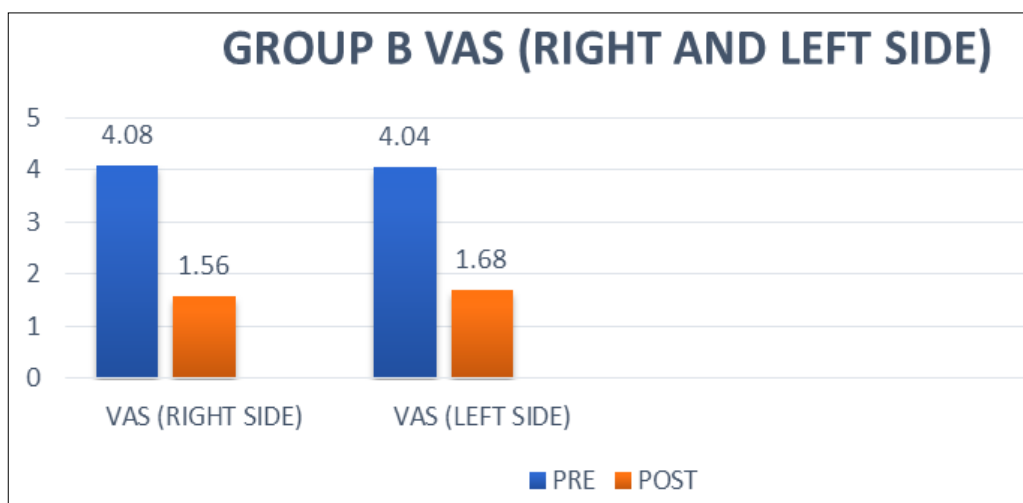
**Graph 4:** Comparison between pre and post values of flexion and internal rotation of right and left side in group a

**Interpretation:** Graph No 4 shows there is extremely significant difference seen in Flexion and Internal rotation of right and left side (p value<0.0001) between pre and post mean values of group a.



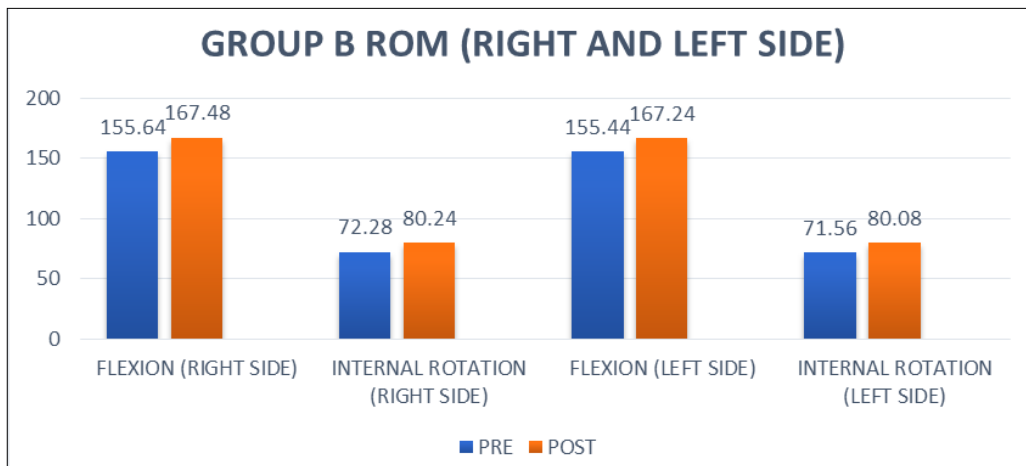
**Graph:** Comparison between pre and post values of trapezius, pectoralis minor and pectoralis major of right and left side in group a

**Interpretation:** Graph No 5 shows there is extremely significant difference seen in Trapezius, Pectoralis minor and Pectoralis major of right and left side (p value<0.0001) between pre and post mean values of Group A.



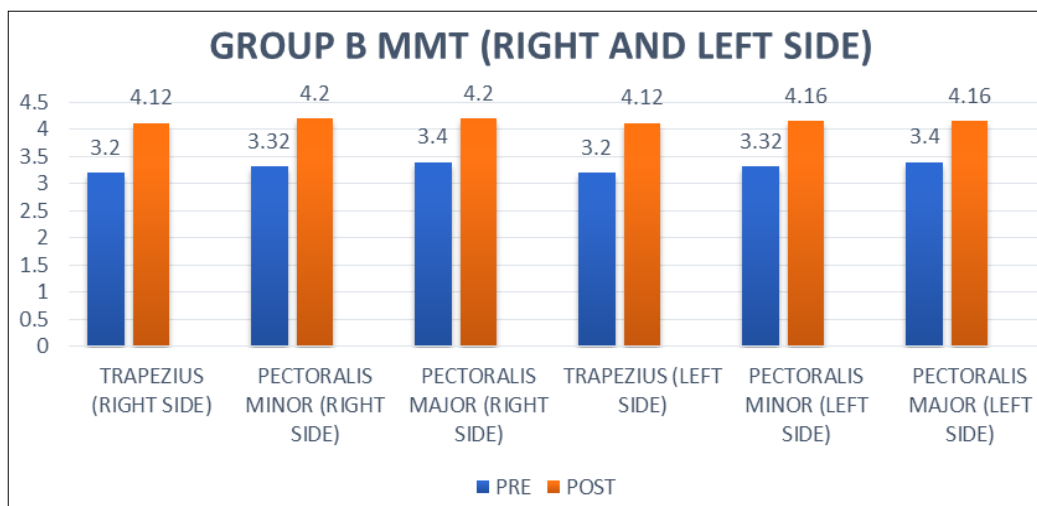
**Graph 6:** Comparison between pre and post values of vas in group b of right and left side

**Interpretation:** Graph No 6 shows there is extremely significant difference seen in VAS of right and left side (p value <0.0001) between pre and post mean values of group b.



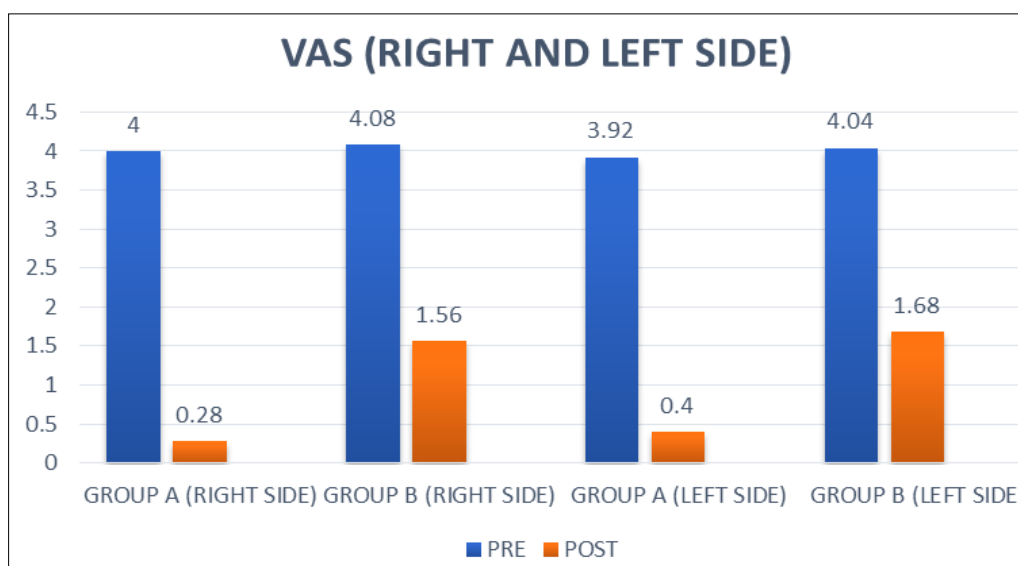
**Graph 7:** Comparison between pre and post values of flexion and internal rotation in group b

**Interpretation:** Graph No 7 shows there is extremely significant difference seen in Flexion and Internal rotation of right and left side (p value<0.0001) between pre and post mean values of group b.



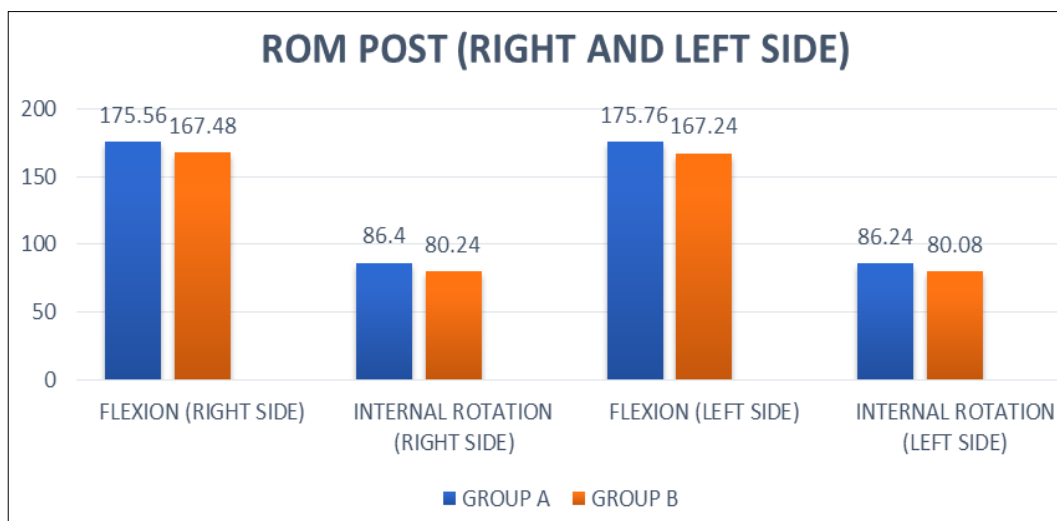
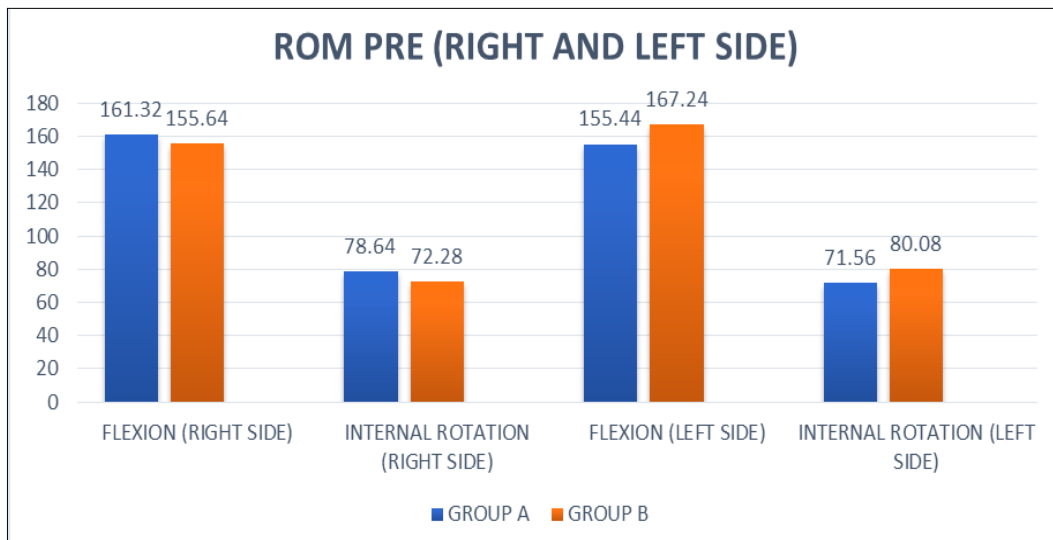
**Graph 8:** Comparison between pre and post values of trapezius, pectoralis minor and pectoralis major of right and left side in group b

**Interpretation:** Graph No.8 shows there is extremely significant difference seen in Trapezius, Pectoralis minor and Pectoralis major of right and left side p value (<0.0001) between pre and post mean values of group b.



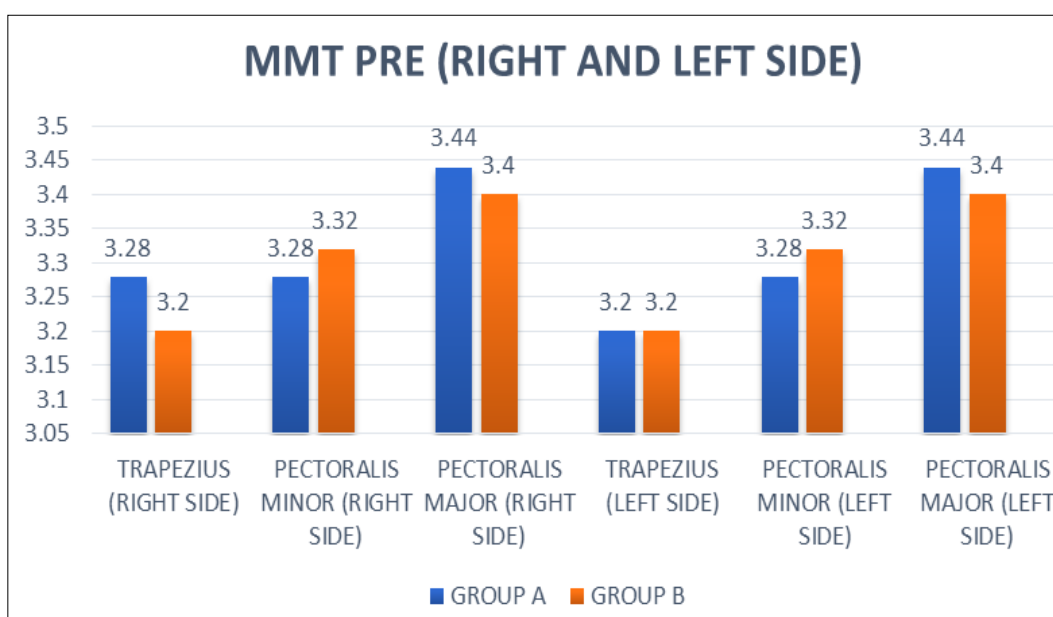
**Graph 9:** Comparison between pre and post assessment mean values of vas in group a and group b of right and left side

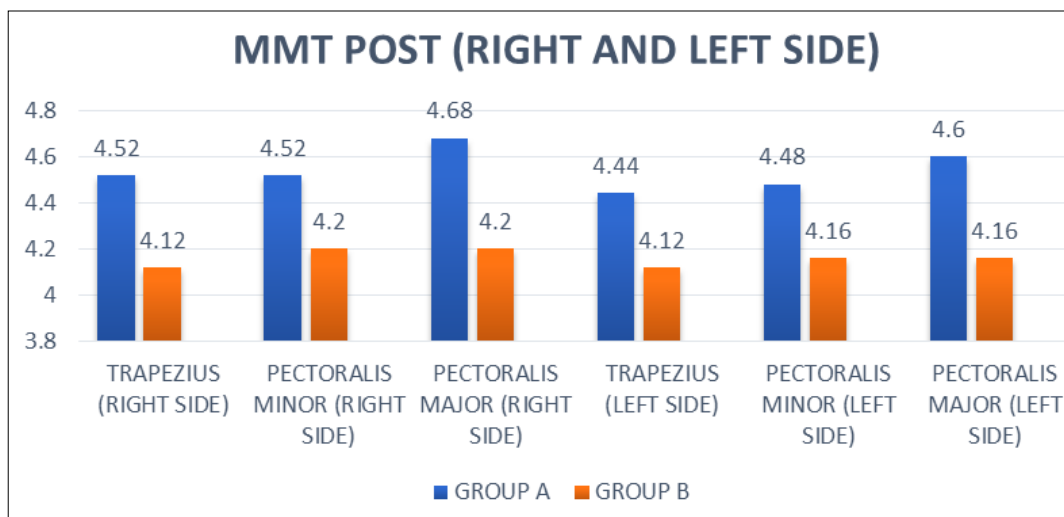
**Interpretation:** Graph no.9 shows there is extremely significant difference seen in Right and Left side VAS p value (<0.0001) between post mean values of group a and group b.



**Graph 10:** Comparison between post assessment mean values of flexion and internal rotation of right and left side in group a and group b

**Interpretation:** Graph no.10 shows there is extremely significant difference seen in flexion p value (<0.0001), this also represent there is extremely significant difference seen in internal rotation p value (<0.0001) between post mean values of group a and group b of right and left side.





**Graph 11:** Comparison between pre and post values of trapezius, pectoralis minor and pectoralis major of right and left side in group a and group b

**Interpretation:** Graph No 11 shows there is extremely significant difference seen in trapezius, pectoralis minor and pectoralis major p value ( $<0.0001$ ) between pre and post mean values of group a and group b of right and left side.

### Results

The study involved 100 participants divided equally into two groups. Group A had 37 males and 13 females, while Group B had 36 males and 14 females. The age range of participants was between 18 and 40 years.

Using GraphPad Instant software, statistical analysis was conducted. In Group A, significant improvements were observed in pain levels, range of motion (ROM), and manual muscle testing (MMT) for various muscles post-treatment. Specifically, there were notable improvements in pain levels measured by the Visual Analog Scale (VAS), with extremely significant differences observed between pre and post-treatment values for both right and left sides ( $p<0.0001$ ).

Similarly, ROM and MMT showed significant improvements post-treatment for Group A, with P-Values  $<0.0001$  indicating extremely significant differences.

Group B also showed improvements in pain levels, ROM, and MMT post-treatment, although the degree of improvement was less than that observed in group a. Significant differences were still noted between pre and post-treatment values for both groups, albeit less pronounced than in group a.

Comparisons between the two groups revealed that Group A generally demonstrated greater improvements in pain levels, ROM, and MMT compared to Group B, with extremely significant differences observed ( $p<0.0001$ ). Notably, Group A showed superior outcomes in terms of ROM flexion and internal rotation compared to group b.

Overall, the results indicate that the intervention had a significant positive effect on pain reduction, ROM, and muscle strength in both groups, with Group A exhibiting more substantial improvements compared to Group B.

### Discussions

The study conducted at Dr. APJ Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, aimed to investigate the effects of myofascial release technique on pain, range of motion (ROM), and manual muscle testing (MMT) in patients with Rounded shoulder over a span of 6 months. Rounded shoulder is associated with various symptoms like pain, restricted ROM, anxiety, reduced

muscle strength, and impairment, impacting daily life and work.

The study included 100 participants divided into Group A and Group B, each comprising 50 individuals. Both groups received treatment involving myofascial release, ultrasound, and strengthening physiotherapy for 6 weeks, with Group A receiving longitudinal release technique and Group B receiving cross hand release technique.

Results indicated significant improvements in pain levels, ROM (specifically flexion and internal rotation), and MMT in both groups post-treatment. However, Group A showed more pronounced improvements compared to Group B, as evidenced by the statistically significant differences observed in pain reduction, ROM enhancement, and muscle strength improvement.

Myofascial release technique, whether longitudinal or cross hand, has been shown to reduce restrictive adhesions and increase fascial tissue flexibility. This study corroborates previous findings, suggesting that myofascial release combined with other physiotherapy modalities can effectively alleviate symptoms associated with Rounded shoulder.

Moreover, the discussion highlighted the importance of treatment duration and technique specificity in achieving optimal outcomes.

In conclusion, the study underscores the significance of myofascial release therapy in managing Rounded shoulder, with specific techniques and adjunct therapies playing crucial roles in enhancing treatment efficacy. However, further research is warranted to explore the long-term effects and optimal treatment protocols for this condition.

### Limitations and Recommendations

- Small sample size Further study should be done for large sample group and can be compared for other parameters such as rounded shoulder and strength
- Furthermore, long term effect of this protocol can be studied.

### Conclusion

Present study concludes that six-week Myofascial release technique with ultrasound and strengthening physiotherapy is effective in reducing pain, increasing range of motion, and increasing muscle power. On comparison with cross hand release technique, longitudinal release technique showed better improvement in flexion, internal rotation and muscle

power. Whereas cross hand release technique showed improvement in pain, range of motion and muscle power, but on comparison extremely significant difference was noted for pain, internal rotation and flexion, muscle power (pectoralis major).

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