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Effect of Hold Relax Technique and Active Release Technique in Post Immobilization Shoulder Stiffness in Patients of Coastal Life

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Keywords:

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Abstract

Background: Shoulder tightness in individuals living on the coast can be caused by a variety of circumstances such as trauma, joint disorders, or overuse. Treatment options appear to include physiotherapy, medication, and, in severe situations, surgery. Shoulder stiffness after immobilisation is a major cause of functional disability following shoulder injuries. A stiff shoulder makes it difficult for patients to position their hand in space for appropriate upper-extremity use. The study's goal was to compare the hold-relax technique versus the active release technique (ART) in patients with post-immobilization shoulder stiffness. Methodology: For this study, 20 patients diagnosed with post-immobilization shoulder stiffness from the MGMCRI orthopaedic department were selected as subjects. Following the selection process, the participants were divided into two groups: group A (Hold Relax Technique) and group B (Active Release Technique) through the odd-even method. The Hold Relax Technique group was given for 3 days, 1 session per day, for a duration of 20 minutes. The active release technique was given for 3 days, 1 session per day, for a duration of 20 minutes. Both techniques were given for a period of six weeks, so in total there was 18 sessions for each technique. The study's outcome measures were pain and range of motion. To collect data for this investigation, the goniometer and the NPRS were employed as measurement equipment. The comparative investigation between groups A and B reveals a significant difference in pain efficacy, abduction, and external rotation with a P value of 0.0001. Conclusion: The active release technique, as a novel paraprofessional approach, outperformed the hold-relax technique in terms of pain, abduction range of motion, and external rotation range of motion in coastal patients with post-immobilization shoulder stiffness.

1.Introduction

Shoulder stiffness in coastal life patients can be due to an array of factors such as injury, joint problems, or overuse. Physiotherapy, medication, and, in severe cases, surgery ;all seem to be treatment options. The shoulder joint (SJ) must be immobilized as part of the postoperative care for shoulder problems brought on by degenerative disease, shoulder trauma, or surgical intervention for reconstruction. The shoulder joint (SJ) in a variety of positions to support postoperative healing, safeguard adequate anatomical integrity, avoid secondary injuries, and reduce pain [1, 2]. An arm that is connected to the body via a sling or strap system can be immobilized. People typically use shoulder immobilizers while going about their daily lives and are rarely examined by a physical therapist until the exercise cannot be done with the proper range of motion. Normal gait, which involves the shoulder girdle and upper trunk, includes reciprocal arm swing [3, 4]. It has been shown that swinging the arms while walking increases stability, enhances balance, uses less

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energy, and changes the spatiotemporal gait [5, 6]. According to research, when an upper limb is amputated or immobilized, the gait pattern is significantly impacted [8]. A shoulder joint (SJ) immobilization limits the movements of the trunk and upper extremities, which can impact gait and interfere with balance technique and movement pattern [7]. After a fracture, especially those that are close to a joint, joint stiffness from adhesion is prevalent. The causes of stiffness include intraarticular adhesion, periarticular adhesion, and intramuscular adhesion [9]. The adaptation of the soft tissue around the joint to the bony structure can cause shoulder stiffness at the glenohumeral joint. Following the fracture, immobility might lead to shoulder stiffness. In addition to the pain caused by other shoulder structure pathologies, stiffness can also be caused by the existence of diabetes, a neurological condition, etc. Supraspinatus tendonitis, subacromial bursitis, shoulder stiffness, and neck pain are complications. The shoulder may not fully recover its range of motion. An anaesthesia-related complication, an extremely rare surgical infection, a nerve injury, a failure to heal, and most commonly, shoulder stiffness. The shoulder has a great range of mobility and a maximal range of motion in the body. Its structure is shallow because it enables complete mobility while being less stable. The shoulder joint is stabilised by the ligaments and musculature that surround it. Any muscular weakening around the shoulder, as well as laxity of the joint ligament, leads to instability, which causes shoulder pain and joint subluxation. One of the most common is the hold-relax technique, which helps to enhance muscular strength and endurance, joint stability, mobility, and coordination, all of which seek to improve people's total functional abilities [10]. The hold-relax technique is simple, effective, and painless. It is used to increase the range of motion of a joint. In the post-immobilization period, the hold-relax technique is used [11]. It works by isometrically contracting the antagonist muscle against resistance, followed by concentric contraction of the agonist muscle. The active release method (ART) is a highly successful technique in which the practitioner detects adhesions in soft tissues (muscles, fascia, tendons, ligaments, and nerves) using his or her hand. The active release technique, a manual therapy for the recovery of soft tissue function that involves the removal of scar tissues that can cause pain, stiffness, muscle weakness, and abnormal sensations including mechanical dysfunction in the muscle, myofascial, and soft tissues, is its mechanism. ART is beneficial in relieving pain and enhancing range of motion in patients.

2.Methodology

It is a quasi-experimental study in which 20 patients diagnosed with post-immobilization shoulder stiffness from the orthopaedic department of MGMCRI are recruited as participants. Informed consent is obtained from the patients. The participants that we included in this study are both male and female patients, ages 40 to 60, who are in the post-immobilization period. Cervical fractures, cervical spondylolisthesis, patients with cervical radiculopathy, nerve deficits, and cervical fractures with rib fractures are excluded from this study. The pain and ROM of the shoulder (abduction and external rotation) are assessed before the treatment sessions with the use of a numerical pain rating scale and goniometer, respectively. The obtained data are recorded as pre-treatment data. Following the selection process, the participants are divided into two groups using the odd-even method: group A (Hold Relax Technique) and group B (Active Release Technique). The Hold Relax Technique group is provided for three days, one session per day for 20 minutes. The active release approach is used for three days, with one session every day lasting 20 minutes. Both techniques are given for six weeks, for a total of 18 sessions for each technique. Pain and shoulder ROM (abduction and external rotation) are measured again after the sixth week using the numerical pain rating scale and goniometer, respectively.The collected pre- and post-test data are statistically analysed.

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3.Treatment Procedure For 6 Weeks

3.1 HOLD RELAX ECHNIQUE

The patient is seated for shoulder abduction. Ask the patient to perform maximum shoulder abduction, and then 7 seconds of shoulder adduction against resistance. This is followed by 5 seconds of relaxation. The individual then actively executes shoulder abduction (within the range of motion). Repeat 5 times for a total of 10 minutes. Supine lying is the best position for shoulder external rotation. Ask the patient to do shoulder abduction at 90 degrees and greatest external rotation at the elbow. They do 7 seconds of internal rotation against an opposing isometric and 5 seconds of relaxation. Repeat five times for a total of ten minutes.

Fig 1: HOLD RELAX TECHNIQUE

3.2 ACTIVE RELEASE TECHNIQUE

If the patient is seated, put the patient's shoulder in 90 degrees of abduction. The therapist holds the patient's arm and then uses a finger to palpate the supraspinous fossa. As the therapist moves the muscle plane, instruct the patient to slowly adduct the arm. Repeat 5 times for a total of 10 minutes. Position the patient prone-lying, then position the patient's shoulder in 90 abduction allowing shoulder external rotation. The therapist holds the patient's arm and then uses a finger to palpate the infraspinous fossa. As the therapist moves the muscle plane, instruct the patient to slowly internal rotate the arm. Repeat 5 times for a total of 10 minutes..

Fig 2: ACTIVE RELEASE

4.Statistical Analysis

Descriptive statistics was used to describe continuous variables (mean, standard deviation). A paired t test was performed for the within-group analysis of pain (abduction and external rotation) and ROM (abduction and external rotation). A T-test calculator for the two dependent means was performed to compare the results of Group A and Group B for all the outcome measures. The statistical significance level was determined at 0.05.

5.Result

Based on specified selection criteria, 20 volunteers of both genders with post-immobilization shoulder stiffness aged 40 to 60 years were included in the study. In this study, pain was reduced by 4.9, by Hold-Relax Technique with P value 0.0001(table1&graph1), pain was reduced by 2.7, by Active Release Technique with P-value 0.0001(table4&graph4), abduction ROM was improved by 87.5, by Hold-Relax Technique with P-value 0.0001(table2&graph2), abduction ROM was improved by 101.5, Active Release Technique with P-value 0.0001(table5&graph5) External Rotation ROM improved with a mean difference of 53.8 by Hold-Relax Technique with P-value 0.0001 (table3&graph3), whereas Active Release Technique with P-value 0.0001 (table6&graph6) improved with a mean difference of 62. With a P-value of 0.0001, a comparison analysis of before and post data on Group A and Group B revealed a significant difference in the effectiveness of pain, abduction, and external rotation. According to the findings, Active Release Technique is far more effective than Hold-Relax Technique in treating pain, abduction ROM, and external rotation ROM in patients with post-immobilization shoulder stiffness.

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TABLE:1 ANALYSIS OF PAIN AMONG GROUP A

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	6.9	0.87	-4.79	<0.0001
POST	10	4.9	0.99		

TABLE:2 ANALYSIS OF ROM-ABD AMONG GROUP A

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	41.5	4.74	18.88	<0.0001
POST	10	87.5	6.07		

TABLE:3 ANALYSIS OF ROM-ER AMONG GROUP A

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	18.5	3.37	19.96	<0.0001
POST	10	53.8	4.46		

TABLE:4 ANALYSIS OF PAIN AMONG GROUP B

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	6.8	0.78	-10.61	<0.0001
POST	10	2.7	0.94		

TABLE:5 ANALYSIS OF ROM-ABD AMONG GROUP B

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	43.5	4.74	22.39	<0.0001

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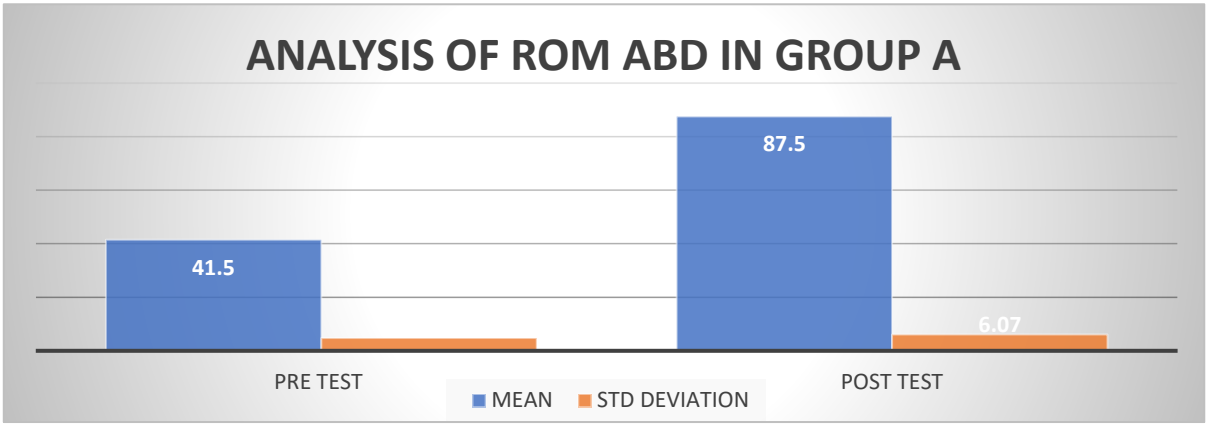
POST	10	101.5	6.68		

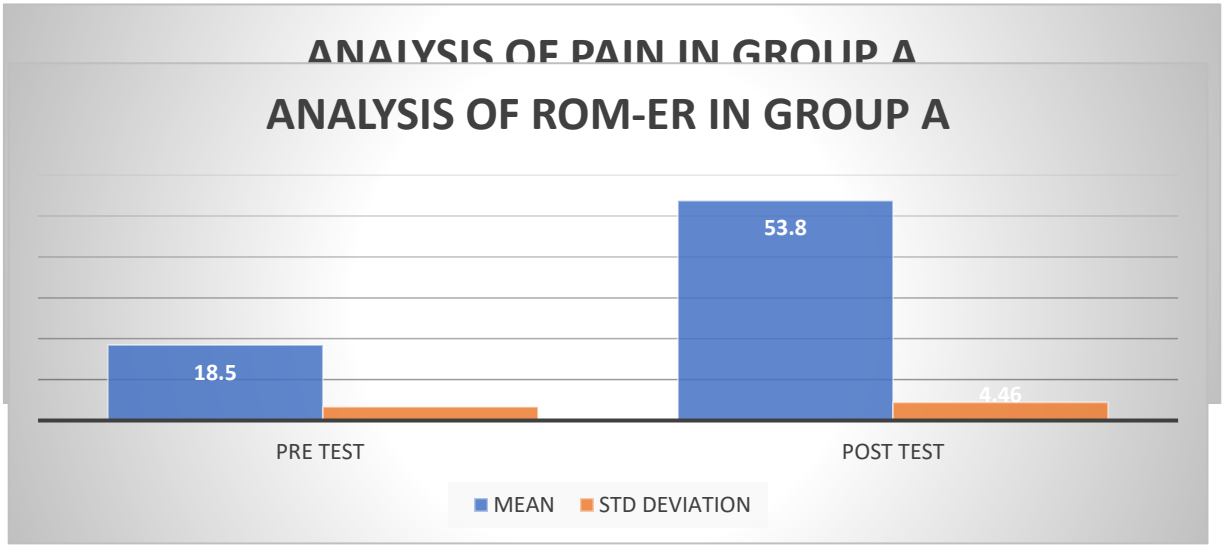
TABLE:6 ANALYSIS OF ROM-ER AMONG GROUP B

GROUPS	NO.OF. PARTICIPANT	MEAN	SD	T-VALUE	P-VALUE
PRE	10	18.5	2.41	36.18	<0.0001
POST	10	62	2.94		

GRAPH:1 GRAPHICAL ANALYSIS OF PRE & POST TEST PAIN MEAN & SD GROUP A GRAPH:2



GRAPHICAL ANALYSIS OF PRE & POST TEST ROM-ABD MEAN & SD GROUP A



GRAPH:3 GRAPHICAL ANALYSIS OF PRE & POST TEST ROM-ER MEAN & SD GROUP A

GRAPH:4 GRAPHICAL ANALYSIS OF PRE & POST TEST PAIN MEAN & SD GROUP B

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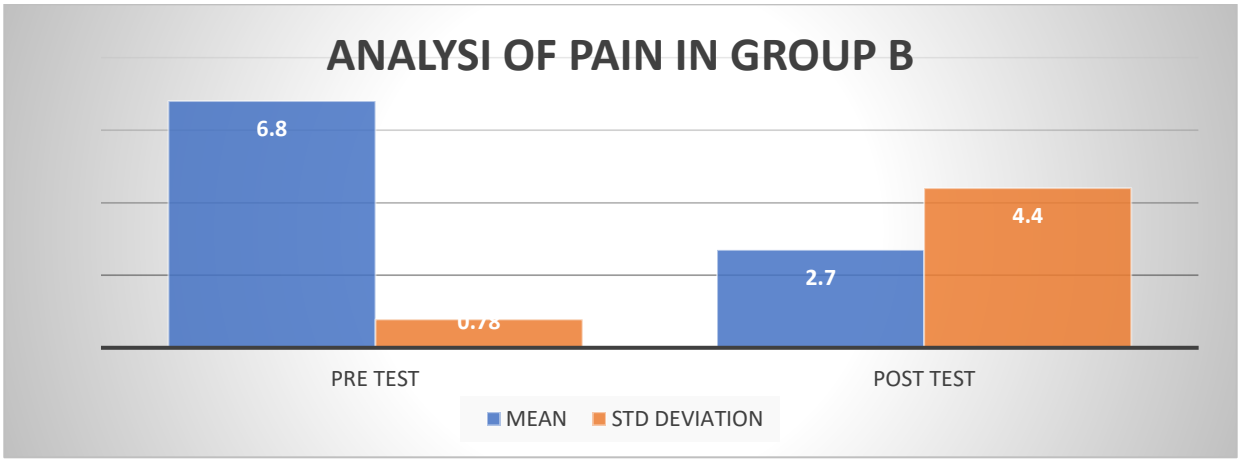
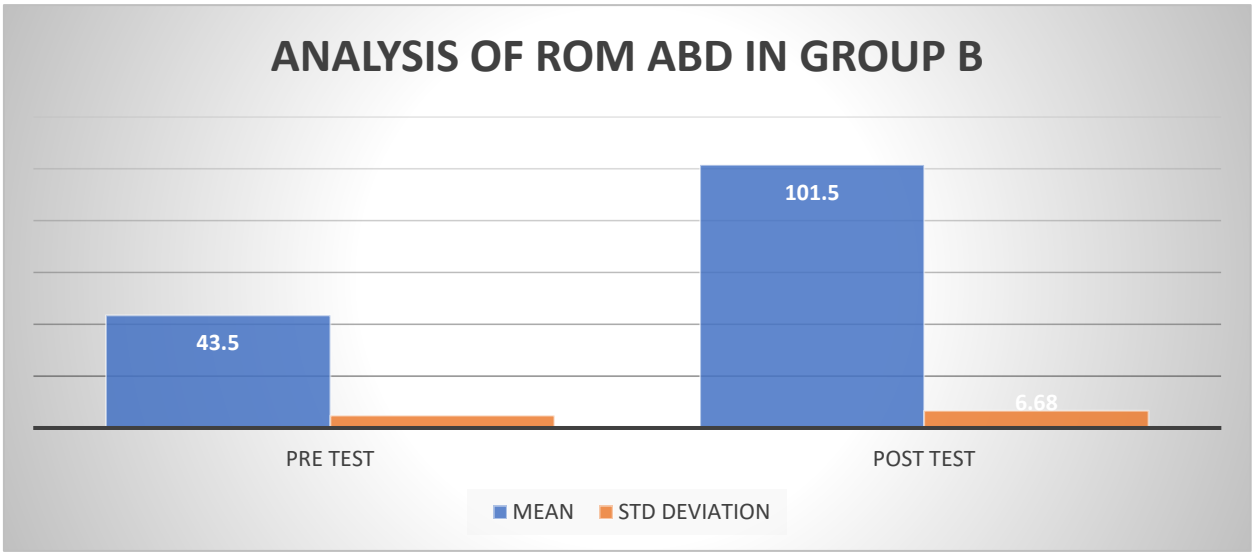


GRAPH:5 GRAPHICAL ANALYSIS OF PRE & POST TEST ROM-ABD MEAN & SD GROUP B



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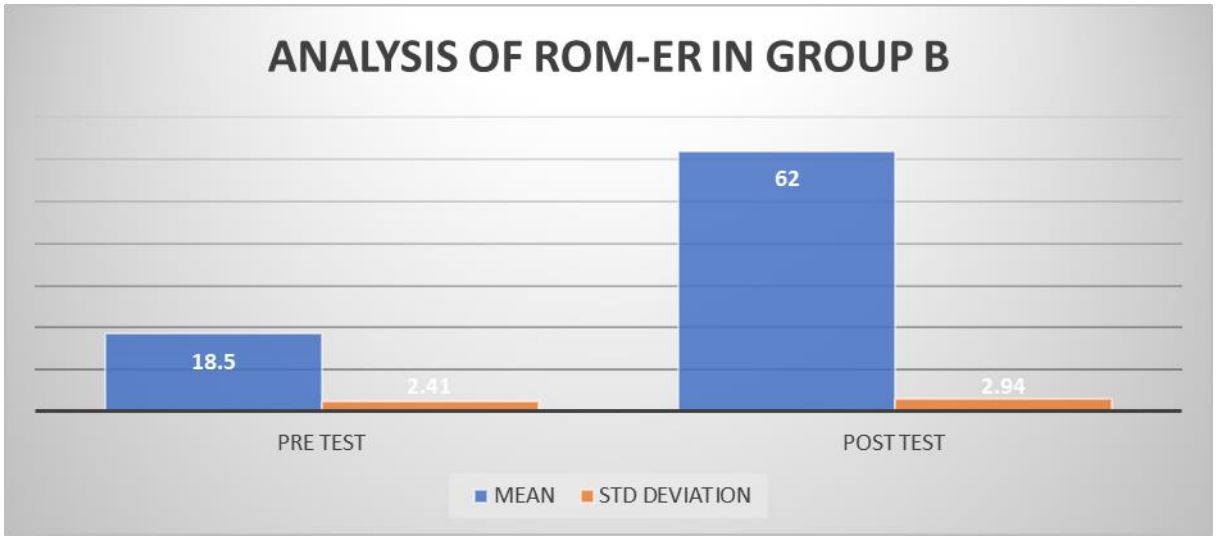

GRAPH:6 GRAPHICAL ANALYSIS OF PRE & POST TEST ROM-ER MEAN & SD GROUP B

6.Discussion

The study indicates that the active release technique is more effective than the hold-relax technique in reducing pain and improving range of motion in post-immobilization shoulder stiffness. There is a significant difference between the hold-relax technique and the active release technique. That pain reduced shows in mean difference was 2.7 and p of 0.0001 in Group B(Active release technique), than mean difference was 4.9 p of 0.0001 in Group A(Hold relax technique). The abduction improve shows mean difference was 101.5 and P of 0.0001 in Group B(Active release technique) than mean difference was 87.5 and p of 0.0001 in Group A(Hold relax technique). The external rotation improve shows mean difference was 62 and P of 0.0001 in Group B(Active release technique) than mean difference was 53.8 and p of 0.0001 in Group A(Hold relax technique).

The active release technique was found to be an effective remedy for lateral epicondylalgia, with the ability to boost functional activities and pain-free grip strength. In an experiment with the intervention of active release technique and MET, participants with adhesive capsulitis reported reduced pain, increased ROM, and shoulder function. Subjects who received ART in addition to conventional therapy showed greater improvement. Conventional therapy alone has resulted in less improvement in pain reduction and functional activities. A research using ART revealed significant improvements in shoulder range of motion. It demonstrates that this approach has a greater impact on shoulder joint function. Patients with capsulitis may benefit from ART to enhance their range of motion in the shoulder joint. [13].

The first data gathered from the therapeutic pilot research reveal that the active release approach may be an efficient conservative therapeutic strategy for individuals with carpal tunnel syndrome, according to the study. As a result, ART could be used to treat low back pain. People with chronic low back pain were given ART to help them feel better. According to the findings, the active release approach effectively reduces pain and dysfunction in patients suffering from chronic low back pain. The active release technique is also thought to be more helpful than myofascial release in improving pelvic tilt and rotation. This could be a promising non-pharmacological and non-surgical therapeutic option for chronic low back pain. [14-18].

7.Conclusion

Shoulder stiffness in coastal life patients can be due to an array of factors such as injury, joint problems, or overuse. Physiotherapy, medication, and, in severe cases, surgery ;all seem to be treatment options. Based on the obtained results, we can conclude that active release technique as an unique paraprofessional method is more effective in reducing pain and improving the shoulder abduction & external rotation than Hold Relax

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Technique in patients with post immobilization shoulder stiffness.

8.CONFLICT OF INTEREST: none.

9.AUTHOR CONTRIBUTIONS

Text preparation, Data collection by Sarangan K K. Communication, Design suggestion, concept and overall supervision by Shanmgananth E.

10.Source Of Funding

No source of funding

IHEC approval – Yes

11.References

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