



# ACUTE EFFECT OF SCAPULAR PROPRIOCEPTIVE NEUROMUSCULAR FACILITATIONS TECHNIQUE VERSUS CLASSIC SHOULDER EXERCISES IN ADHESIVE CAPSULITIS

<sup>1</sup>VAGHELA AJAYDEEPSINH MAHESHBHAI, <sup>2</sup>SHIVAM ACHARYA, <sup>3</sup>ARVIND  
CHAUHAN

<sup>1</sup>STUDENT, <sup>2</sup>ASSISTANT PROFESSOR, <sup>3</sup>PRINCIPAL AND PROFESSOR

<sup>1</sup>SWARNIM STARTUP & INNOVATION UNIVERSITY,

<sup>2</sup>SWARNIM STARTUP & INNOVATION UNIVERSITY,

<sup>3</sup>SWARNIM STARTUP & INNOVATION UNIVERSITY

## ABSTRACT

### BACKGROUND:

Frozen Shoulder Is An Idiopathic Diseases Characterized By Fibrosis, Decrease Volume Of The Glenoid Capsule, And Progressive Pain With Loss Of ROM.

### SCAPULAR PNF TECHNQES :

PNF Is A Treatment Concept With Four Theoretical Mechanisms, Referred To As Autogenic Inhibition, Reciprocal Inhibition, Stress Relaxation, And The Gate Control Theory, That Enhance ROM And Muscle Activation. PNF Has An Positive Effect On Pain, Muscle Strength.

### CLASSIC SHOULDER EXERCIES :

#### ➤ **Strengthening exercises :**

- Codman Pendulum exercises.
- Wand ( stick ) exercises.
- Pulley exercises.

- Finger walk.
- Resisted Exercise With Theraband
  
- **OBJECTIVES:**
- To Determine The Acute Effect Of Scapular PNF Techniques With Tens In Patients With Adhesive Capsulitis.
- To Determine The Acute Effect Of Classic Shoulder Exercises With Tens In Patients With Frozen Shoulder.
- To Compare The Acute Effect Between The Scapular PNF Techniques With Tens And Classic Shoulder Exercises With Tens In Patients With Adhesive Capsulitis.

### **METHODOLOGY:**

30 Patients are Allocate To 2 Groups Scapular PNF Exercise And Tens, Classic Exercise And Tens. The Intervention Were Apply In A Single Session. The Visual Analog Scale(Vas), Lateral Scapular Slide Test, Range Of Motion And Simple Shoulder Test Were Evaluate Before And After The Intervention. All The Participants Of The Study Were Be Given Treatment According To The Group For 4 Weeks.

Subjects – 30 Subjects

Groups – 2 Groups

Sampling Method – Randomized Sampling Method

	Group 1	Group 2
Treatment Method	Scapular PNF With TENS	Classic Shoulder Exercise With TENS
Subjects	15	15

Duration: 4x/W/4 Weeks 4x/W/4 Weeks

### **Inclusion Criteria:**

- Having A Painfull Stiff Shoulder For At Least 3 Months, And Diagnosed As Frozen Shoulder.

- Having Limited Rom Of Shoulder Joint( Rom Losses Of 25% Or Greater Compared With The Non Involved Shoulder In At Least 2 Of The Following Shoulder Motion; Glenohumeral Flexion, Abduction.

**Exclusion Criteria:**

- Diabetes Mellitus
- A History Of Surgery On The Particular Shoulder
- A Pain Full Stiff Shoulder After A Severe Trauma
- Fracture Of The Shoulder Complex
- Rheumatoid Arthritis
- Rotator Cuff Rupture
- Tendon Calcification

**Analysis:**

- Between group analysis of obtained data were be done by using Unpaired T- test.
- Within the same group analysis ( pre and post) of obtain data were be done by using paired T-test.

**RESULT & CONCLUSIONS:**

During The Course Of The Study It Has Been Concluded That Scapular PNF Techniques And Classic Shoulder Exercises Both Are Improved Pain, Scapular Dyskinesis And Functional Impairment The Patients With Adhesive Capsulitis. There Is Significant Increase In Both Scapular PNF Techniques And Classic Shoulder Exercises After 4-Week Treatment Duration In Both Groups. But Group Receiving Scapular PNF Techniques Showed More Power Full Improvement In Pain, Scapular Dyskinesis And Functional Improvement.

**INTRODUCTION**

**INTRODUCTION**

Adhesive capsulitis, Describes The common Shoulder condition Characterized By Painful And Limited Active And Passive Range of Motion(Rom). Individuals With Primary Adhesive capsulitis Are Commonly

Between 40 and 65 Years And The Incidence Appears Higher In Females Than Males.(1)

- The Term Adhesive capsulitis Were BE Used, Because It Encompasses Both Primary Adhesive Capsulitis And Secondary Adhesive Capsulitis Related to Systemic Diseases And Extrinsic or Intrinsic Factors, Excluding Cerebral Vascular Accident, Proximal humeral #, And Causative Rotator Cuff or Labral Pathology.(1)



**(FIG 1: ADHESIVE CAPSULITIS)**

Adhesive capsulitis IS Estimated To Affected 2% Of The General Population, With A Cumulative Incidence Between Of 2.4 Per 1000 Person-Years. It Is Rare Before The Age Of 40,With A Peak Incidence Between 40 and 60 And Is Unusual In Patient Over 70 Years (Except Secondary Traumatic Adhesive Capsulitis) And In Manual Workers. It Affects Women Slightly More Often Than Men. The Economic Impact Of The Condition Is Underscored By Its Predilection For Adults Of Working Age(8.2% For Men And 10.1% For Women).(2)

Diabetes Mellitus Is The Common Condition Most Commonly Associated With Adhesive Capsulitis. The Combined Prevalence Of A Diabetic Predisposition And Adhesive Capsulitis Is Estimated To Be As High As 71.5% Diabetics Have A 10% to 20% Lifetime Risk Of Developing A Adhesive Capsulitis, With A 4% Point Prevalence, And A Two To Four Times Greater Risk Than The General Population.(2)

The Glenohumeral joint Is An Incongruous, Ball & Socket Triaxial Joint With A Lax Joint Capsule. Its Supported By The Tendons Of The Rotator Cuff And The Glenohumeral (Superior, Middle, Inferior) And Coracohumeral Ligaments.(3)

## ANATOMY OF SHOULDER JOINT



PRESENTER :DR.B.VAMSHIKIRAN

**(FIG 2: NORMAL SHOULDER ANATOMY)**

The Coracohumeral Ligament Originated From The Base And Lateral Border Of The Coracoid Process And Runs Transversely To The Grater Tuberosity. Its Anterior Border Is Distrincts Medially And Merges Laterally. Whereas Its Posterior Border Is Indistinct. it's a Primary Restraint To The Long Head Of Biceps Tendon.(4)

### **Causes:**

The Causes are mainly idiopathic and are due to fibrosis following chronic inflammation. This could be due to:

#### **1)Primary shoulder**

#### **2)Secondary Non-shoulder**

1 Primary shoulder cause problems directly related to shoulder joint which can give rise to adhesive capsulitis :  
tendinitis of rotator cuff

bicipitaltendinitis

# and dislocation around the shoulder

2 Secondary Non shoulder causes problems not related to shoulder joint like

Diabetes

Hyperthyroidism

Reflex sympathetic dystrophy

Frozen hand syndrome

Complication of Collis's fracture can all leads to adhesive capsulitis.

The reason could be prolonged immobilization of the shoulder joint due to reffered pain, Etc.(5)

### **Classification:**

The Classification System By Including Disease Such As Diabetes Mellitus, Myocardial Infraction Or Various Neurological Disorder Under Secondary Frozen Shoulder Classification Scheme Where, **Primary**

**Adhesivecapsulitis**And Idiopathic Adhesive capsulitis Are Considered Identical And Non AssociatedWith A Systemic Condition Or History Of Injury.

**1. Secondary Adhesive capsulitis** Was Defined By 3 Subcategories Extrinsic Secondary Adhesive capsulitis Includes Patients Whose Pathology Is Not Directly Related To The Shoulder, And Intrinsic Secondary Adhesive capsulitis Describes Patients With A Known Pathology Of The Glenohumeral Joint Soft Tissues Or Structures. Specific Causes Of Secondary Adhesive capsulitis May Influence Prognosis. For Instance, Individuals With Secondary Adhesive capsulitis Related To Insulin-Dependent Diabetes Are More Likely To Have A More Protracted And Difficult Clinical Course.(6)

### **Stage Of Adhesive Capsulitis**

#### **Stage 1**

- Duration Of Symptoms: 0 To 3 Months.
- Pain With Active And Passive Rom.
- Pathologic Changes: Hypertrophic, HypervascularSynovitis, Rare Inflammatory Cell
- Infiltrates, Normal Underlying Capsule.

#### **Stage 2: Freezing stage**

- Duration Of Symptoms: 3 To 9 Months
- Chronic Pain With Active And Passive Rom
- Significant Limitation Of Forward Flexion, Abduction, Internal Rotation, External Rotation
- Pathologic changes: hypertrophic, hypervascularsynovitis with perivascular and subsynovialscar ,fibroplasias and scar formation in the underlying capsule.

#### **Stage 3: Frozen Stage**

- Duration Of Symptoms: 9 To 15 Months.
- Minimal Pain Except At End Rom.
- Significant Limitation Of Rom With Rigid End Feel.
- Pathologic Changes: “Burned-Out” SynovitisWithout Significant Hypertrophy Or Hypervascularity. Underlying Capsule Shows Dense Scar Formation.

#### **Stage 4: Thawing Phase**

- Duration Of Symptoms: 15 To 24 Months.
- Minimal Pain.
- Progressive Improvement In Rom.(1)

### **Common Structural and Functional Impairments**

- Night Pain And Disturbed Sleep During Acute Flares.
- Pain On Motion And Often At Rest During Acute Flares.
- Mobility: Decreased Joint Play And ROM, Usually Limiting External Rotation And Abduction With Some Limitation Of Internal Rotation And Elevation In Flexion.
- Posture: Possible Faulty Postural Compensations With Protracted And Anteriorly Tilted Scapula, Rounded Shoulders, And Elevated And Protected Shoulder.
- Decreased Arm Swing During Gait.

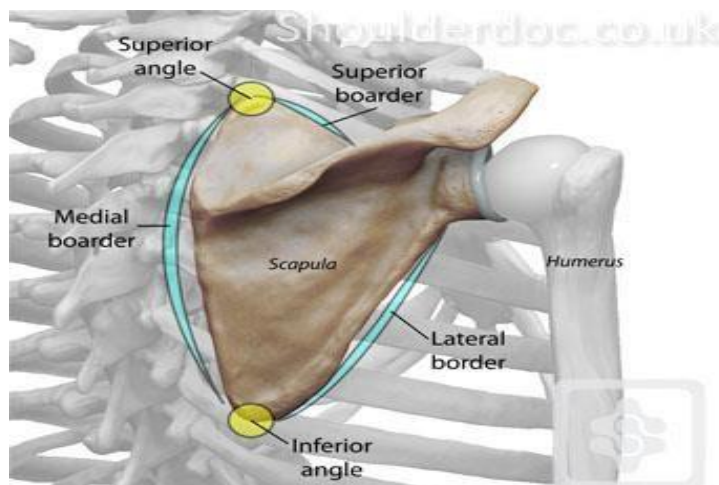
- Muscle Performance: General Muscle Weakness And Poor Endurance In the Glenohumeral Muscles With Overuse Of The Scapular Muscles Leading To Pain In The Trapezius, LevatorScapulae, And Posterior Cervical Muscles.
- Substitution For Limited Glenohumeral Motion With Increased Scapular Motion, Especially Elevation.(3)

### Common Activity Limitation And Participation Restriction

- Instability To Reach Overhead, Behind Head, Out To The Side, And Behind Back; Thus, Having Difficulty Dressing (Putting On A Jacket Or Coat Or In The Case Of Women, Fastening Undergarments Behind Their Back), Reaching Hand Into Back Pocket Of Pants (To Retrieve Wallet), Reaching Out A Car Window (To Use An ATM Machine), Self-Grooming (Combing hair, Brushing Teeth, Washing Face), And Bringing Eating Utensils To The Mouth.
- Difficulty Lifting Weighted Objects, Such As Dishes Into A Cupboard.
- Limited Ability To Sustain Repetitive Activities.

### **Scapular Dyskinesis:**

- The Scapula Is The Large Triangular-Shaped Bone At The Back Of Your Shoulder Frequency Known As The Shoulder Blade. Its Only Attachment To The Rest Of The Skeleton Is Through The Collarbone At The Acromioclavicular Joint. Therefore, The Bone Is Primarily Held In Place By The Attached And Surrounding Muscles. Many Muscle Use The Large Area Of The Scapula For Attachment and They Enable The Vast Range Of Shoulder Motion.(7)
- At The Order Edge Of The Scapula A Shallow Socket Form And Is Where The Humeral Heads Sits Forming The Shoulder Joint. Proper Positioning And Movement Of The Scapula Is Critical For Full And Normal Shoulder Range Of Motion.(7)
- We Use The Acronym **SICK( Scapular Malposition, Inferior Medial Border Prominence, Coracoid Pain And Malposition, And Dyskinesis Of Scapular Movement)** To Refer to An Injury Resulting From Overuse And Fatigue Of The Muscle That Stabilize And Provide Motion For The Scapula.(7)



**FIG 3: SICK SCAPULA**

**Risk Factors**

- Intense, Repetitive Overhead Activity (Throwing, Tennis, Volleyball)
- Overuse Fatigue.
- Injury To Other Structure Of The Shoulder.
- Direct Trauma
- Muscle Strain
- Tense Pectoralis Major Possibly Resulting From Unbalanced Weight Training(7)

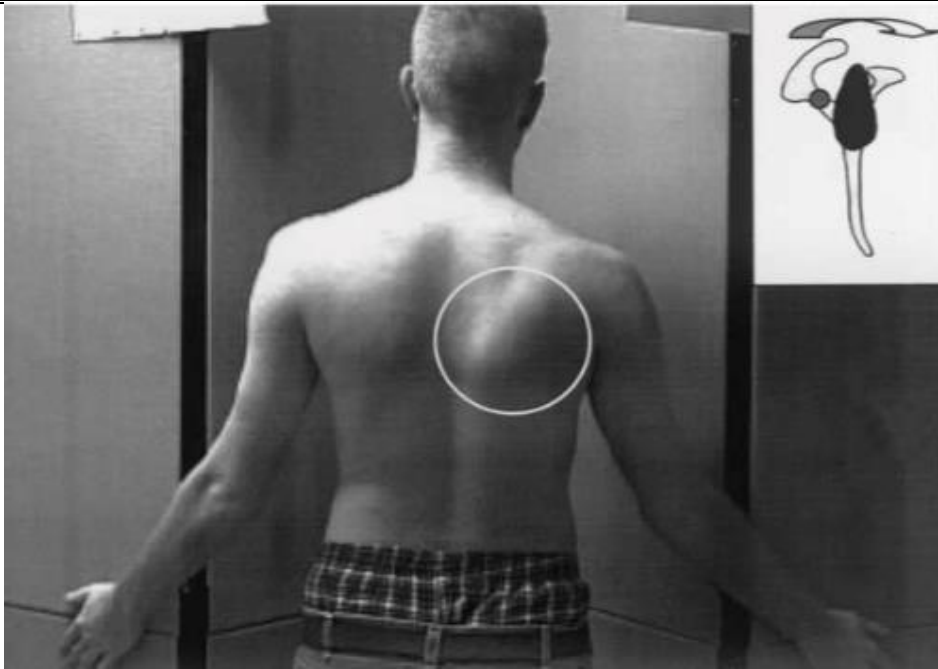
**Signs And Symptoms**

- Affected Shoulder Appears Dropped Or Lower Than Unaffected Shoulder
- Medial Scapular Protrusion
- Noticeable Hitches And Jumps In Scapular Motion During Arm Movements.
- Scapular Pain
- Pain At The Front, Back, Or Top Of The Shoulder.
- Pain On The Outside Of Your Upper Arm.(7)

**Scapular Dyskinesis Classification System(8,9)**

- **Type 1: Inferior Border**
- At Rest, The Inferior Medial Scapular Border May Be Prominent Dorsally. During Arm Motion. The Inferior Angle Tilts Dorsally And The Acromion Tilts Ventrally over The Top Of The Thorax.
- The axis Other Rotation Is In The Horizontal Plane.

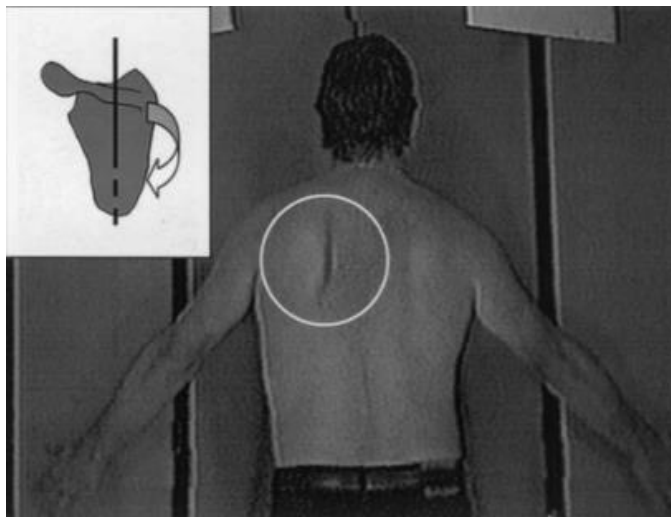




**FIG 4: INFERIOR BORDER SCAPULA DYSKINESIS**

### **TYPE 2: MEDIAL BORDER**

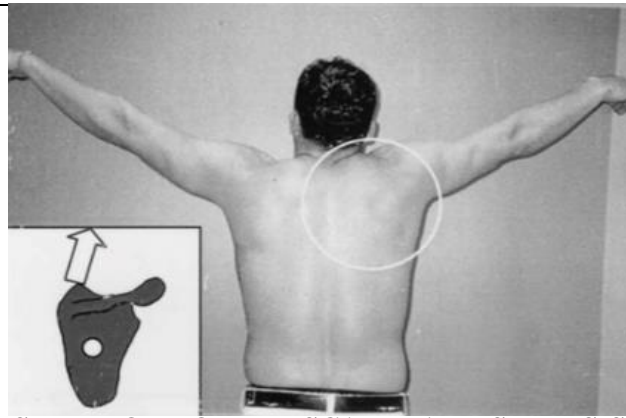
- At Rest, The Entire Medial Border May Be Prominent Dorsally. During Arm Motion, The Medial Scapular Border Tilts Dorsally Off The Thorax. The Axis Of The Rotation Is Vertical In The Frontal Plane.



**FIG 5: MEDIAL BORDER OF SCAPULAR DYSKINESIS**

### **TYPE 3 : Superior Border**

- At Rest, The Superior Border Of The Scapula May Be Elevated And The Scapula Can Also Be Anteriorly Displaced. During Arm Motion, A Shoulder Shrug Initiates Movement Without Significant Winging OF The Scapula Occurring. The Axis Of This Motion Occurs In The Sagittal Plane.



**FIG 6: SUPERIOR BORDER SCAPULA DYSKINESIS**

**Type 4 : Symmetric Scapulohumeral**

- At Rest, The Position Of Both Scapula Are Relatively Symmetrical, Taking Into Account That The Dominant Arm May Be Slightly Lower. During Arm Motion, The Scapulae Rotate Symmetrically Upward Such That The Inferior Angles Translate Laterally Away From The Midline.



**FIG 7: SYMMETRIC SCAPULOHUMERAL**

The Studies Cited Have Shown That Various Forms Of Exercise Are Effective In Reducing The Motion Restriction And Pain Of Patients With Adhesive Capsulitis. Physical Therapists, As Specialists Dealing With Exercise And Movement Dysfunction, Play A Major Role In Restoring Function To These Persons. After Performing The Necessary Tests To Confirm The Diagnosis Of Adhesive Capsulitis Ascertain The Current Status Of The Condition, And Identify Causative Factors, A Physical Therapist Is Prepared To Design A Treatment Program. Each Individual Case Were Dictate Whether Physical Therapy Is To Be Used Alone Or In Conjunction With Other Medical Or Surgical Treatment.

A Combination Of Exercise And Physical Modalities Helps Accomplish This Objective. Activate And Active-Assistive Exercises Such As Pedulum, Wand , And Physiologic ROM Should Be Performed For At Least One Half-Hour Three Times A Day. Passive Exercise Has Multiple Benefits. Gentle Passive Movement, Short Of Pain And The Pathological limit Of Motion, Reduces Pain. Often, Reflex Muscle Spasm Prevents A Patient From Performing Active Exercise, Whereas A Therapist Can Passively Guide The Limb Further Into The Range Without Eliciting Spasm Or A Stretch Reflex. Also , Because Many Patients Are Reluctant Psychologically To Perform Regular, Appropriate Active Exercise, Passive Exercise Becomes The Treatment Of Choice(10).

Evaluation Of The Position Of The Scapula Is Very Important In The Pathologies Of The Shoulder Because These Pathologies Are Responsible For The Second And Third most Common Causes Of Musculoskeletal Pain. Abnormal Changes In The Position Of The Scapula At Different Angles Of The Shoulder Indicate A Disturbance Of The Scapulohumeral Rhythm(11,12).

Even Though Scapular Alterations Have Been Assessed In Patients With Frozen Shoulder, Treatment Programs Were Focused On Pain Relief And Improvement In ROM. Scapular Exercises Were Not Included In The Programs

**SCAPULAR PNF TECHNIQUES :**

PNF Is A Treatment Concept With Four Theoretical Mechanisms, Referred To As Autogenic Inhibition, Reciprocal Inhibition, Stress Relaxation, And The Gate Control Theory, That Enhance ROM And Muscle Activation.(14,15)

PNF Has Been Reported To Be Effective In Relieving Pain And Improving Functional Abilities. PNF Methods, Particularly Those Involving Reciprocal Activation Of The Agonist And Antagonist To The Desired Motion, Provide The Greatest potential For Muscle Functioning.(16,17)

Among Therapeutic Approaches, Joint Mobilization Using PNA Has A Positive Effect On Pain, Muscle Strength, And ROM. Proper Function Of The Upper Extremities Requires Both Motion And Stability Of The Scapula.(19,20)

The Scapula Patterns Defined In PNF Are Activated Within The Upper Extremity Patterns And Scapular Motion Together(21). The Effects Of The Shoulder Have Been Investigated In Some Studies(22-29). However, No Previous Study Has Investigated The Effects Of Scapular PNF Exercises In AC Rehabilitation.

**CLASSIC SHOULDER EXERCISES :**➤ **Strengthening exercises :**

- Codman Pendulum exercises.
- Wand ( stick ) exercises.
- Pulley exercises.
- Finger walk.
- Resisted Exercises With Theraband(30).
- Therefore, The **Aim Of This Study** Was To Compare The Acute Effects Of Scapular PNF Techniques And Classic Shoulder Exercises With TENS On Pain, Scapular Dyskinesia, Shoulder ROM, And Functionality In Patients With AC.
- In This Study, Pain, Scapular Dyskinesia And Shoulder Function Were Measured Using Visual Analogue Scale(VAS), Lateral Scapular Slide Test (LSST) And Simple Shoulder Test.

**REVIEW OF LITERATURE**

1. **Positional stretching of the coracohumeral ligament on a patient with adhesive capsulitis** Jose Orlando Ruiz Et Al(2009) Performed A Study On Positional Stretching Of Coracohumeral Ligament On A Patient With Adhesive Capsulitis And Concluded That the Coracohumeral Ligament Stretching Is An Effective Therapeutic Strategy To Help Reduce Loss Of Joint Mobility And Function.(31)
2. **Adhesive shoulder capsulitis : Does the timing of manipulation influence outcome ?** Olivia Flannery Et Al (2007) Conducted A Study On The Adhesive Shoulder Capsulitis. In Their Study They Mentioned That Duplay Was The First To Describe A Painful, Stiffening Condition Of The Shoulder, Which He Termed **Peri** – Arthritis Scapula Humeralis And Codman In 1934 Named The Condition **Adhesive Capsulitis** Concluded That It Was Characterized By Slow Onset, Pain Near The Insertion Of The Deltoid, Instability To Sleep On The Affected Side, Painful And Restricted Elevation And Term **Adhesive Capsulitis** Was Introduced By Neviaser In 1945, Based Upon His Finding Of Synovial Changes In The Gleno - Humeral joint.(32)
3. **The Pathology Of Frozen Shoulder** G.C.R. Hand Et Al (2007) Studies The Pathology Of Adhesive capsulitis. Twenty Two Subjects, Diagnosed As Primary Adhesive capsulitis Was Included In Their Study Biopsies Were Taken From This Site And Histological And Immunocyto -chemical Analysis Was Performed To Identify The Type Of Cell Present. The Tissue Was Characterized By The Presence Of Fibroblast, Proliferating, Fibroblast And Chronic Inflammatory Response With Fibroblastic Proliferation Which May Be Immune Modulated(33).

4. **J.Mobilization Techniques In Subjects With Frozen Shoulder Syndrome: Randomized Multiple-Treatment Trial. PhysTher 2007 Oct;87(10):1307-15. Epub 2007 Aug 7.Jing – Ian Yang (2007)** Did A Randomized Multiple Treatment Trial Of Mobilization Technique In Subject With Adhesive capsulitis Syndrome And The Results Concluded End Range Mobilization And Movement With Mobilization Are More Effective, Than Mid Range Mobilization In Increasing Mobility And Functional Ability In Patients With Adhesive capsulitis.(34)
5. **Adhesive Capsulitis : Does The Timing Of Manipulation Infulence Outcome. AetaOrthop. Belg, 2007,73,21-25.Oliva Flannery, HanamMullett Et Al(2007)** Performed A Study On Adhesive Shoulder capsulitis. In Their Study Used VAS For The Assessment Of Pain In The Shoulder In Subjects Suffering from Adhesive capsulitis And They Concluded That VAS Was Significant To Assess Pain In The Affected Shoulder(35).
6. **Non Operative Management Of Idiopathic Adhesive Capsulitis Journal Of Shoulder And Elbow Surgery 2006.569-573.Wereiam N> Levine Et Al (2006)** Performed A Study On Non Operative Management Of Idiopathic Adhesive capsulitis. In Their study They Said That This Condition Was First Describe By Duplay In 1872 And Named As **FROZEN SHOULDER** In 1934 And Is Characterized By Pain And Restriction Of Both Active and Passive ROM. They Concluded That the Pathology Is Anatomy Was First Describe For Frozen shoulder.(36)
7. **Frozen Shoulder Richard Dias Et Al (2005)** Performed A Study On The Clinical Review Of Frozen Shoulder. They Studied The Incidence, Clinical Presentation, Diagnosis And Treatment Modalities In Adhesive capsulitis. Regarding The Incidence They Concluded That The Onset Of This Condition Before The Age Of 40 Is Very Uncommon. The Peak Age Is 56 Yrs And The Condition Occurs Slightly More Often In Women Than Men. In 6-17% Of Patients, The Other Shoulder Becomes Affected. The Non Dominant Shoulder Is Slightly More Likely To Be Affected.(37)
8. **Acromiohumeral distance in a seated position in persons with impingement syndrome Hebert LJ Et Al(2003)** Had Done A Prospective Cohort Study To Identify The Bestindicators Of The Current Disability Of Patients With Shoulder Impingement Syndrome(Sis)And The Strongest Predictors Of 3 Months SIS-Related Disability. The SPADI Score ALBaseline And The Presence Of Sis On The Dominant Side,Among Other Variables Predicted86% The Variance Of The SPADI At 3 Months And Concluded That Variables That BestExplain The Current Disability Level And Predictors Of Short-Term Leval Of DisabityShould Be Considered In SIS Treatment Planning As Well As For Establishing Prognosis.(38)
9. **Influence of Comorbidity on Self-Assessment Instrument Scores of Patients with Idiopathic Adhesive Capsulitis Jennifer Moriatis Wolf And Andrew Green(2002)** Did A Study To Determine The”Influence Of Co- Morbidity On Self - Assessment Instruments Scots Of Patients With Adhesive Capsulitis. Phase 2 Adhesive Capsulitis Were Prospectively Evaluated With The Use Of VAS And They Found That The Score On VAS Can Be Applied To The Evaluation Of The Patient And May Help To Identify Patients Who Potentially Require A Longer Treatment Course Or Those Outcome WereBe Less Satisfactory.(39)
10. **End-range mobilization techniques in adhesive capsulitis of the shoulder joint: A multiple-subject case report VermeulenHM Et Al (2000)** Did A Study On Effectiveness Of End Range Mobilization Technique In Adhesive Capsulitis Of Shoulder Joint In 45 Subjects And The Results Concluded End Range Mobilization Technique To Be Beneficial In Improving Joint Mobility.(40)
11. **Idiopathic adhesive capsulitis. A prospective functional outcome study of nonoperative treatment Griggs Et Al (2000)**Reported That Following A Physical Therapy Program Consisting Of Passive Stretching Exercises (Forward Elevation, External Rotation, Horizontal Adduction And Internal Rotation ) At A Mean Follow - Up Of 22 Months, Patients Demonstated A Reduction In Pain Score From 1-57 To 1 -16 In Range From One To Five Points Improvements in Active Range Of Motion, And 64 Patients (20%) Reported A Satisfactory Outcome.(42)
12. **Reliability of goniometric measurements Boone DC, Azen SP Et Al(1987)** Conducted A Study To Determine The Intra - Tester And Inter-Tester Variability And Reliability Of Goniometric Measurement Taken By Four Physical Therapists On Upper And Lower Extremity Motions. Their Findings Indicated The Necessity For Using The Same Lester When Effects Of Treatment Are Evaluated.(43)

**NEED OF STUDY*****NEED OF STUDY*****NEED OF STUDY**

- There Are Lots Of Study Available Which Suggest The Treatment Of Adhesive Capsulitis Which Includes Scapular PNF Techniques , Classic Shoulder Exercises, Strengthening Exercises , Mobilization Techniques Etc. But There Are Lack Of Evidence Which Compare The Acute Effect Of Scapular PNF Techniques And Classic Shoulder Exercises With TENS In The Effectiveness Between These Treatment Groups For Adhesive Capsulitis Patients.

**OBJECTIVES OF THE STUDY*****OBJECTIVES OF THE STUDY*****OBJECTIVE OF THE STUDY**

To Determine The Acute Effect Of Scapular PNF Techniques With Tens In Patients With Adhesive Capsulitis.

To Determine The Acute Effect Of Classic Shoulder Exercises With Tens In Patients With Frozen Shoulder.

To Compare The Acute Effect Between The Scapular PNF Techniques With Tens And Classic Shoulder Exercises With Tens IN Patients With Adhesive Capsulitis.

**HYPOTHESIS*****HYPOTHESES*****HYPOTHESIS**

- **Null Hypothesis :**

There Is No Significant Difference In Effect Of Scapular PNF Techniques And Classic Shoulder Exercises With Tens In The Patients With Adhesive Capsulitis.

- **Alternate hypothesis :**

There Is Significant Difference In Effect Of Scapular PNF Techniques And Classic Shoulder Exercises With Tens In The Patients With Adhesive Capsulitis.

## **METHODOLOGY**

### **METHODOLOGY**

Participants Were Allocate To Treatment Groups Using Sealed, Opaque Envelopes. The Envelopes Contained Stickers Denoting 1 Or 2. Subjects Who Picked 1 Were Included In The Groups 1 ( scapular PNF techniques) And The Subjects Who Picked 2 Were Included In Group 2 ( classic shoulder Exercises). Following This, Demographic Information were Conducting. Duration Of Symptoms And Side Affected Noted And Initial Evaluation Of Pain Profile Was Done Using Visual Analogue Scale (VAS).

Functional Performance Were Assessing Using The simple shoulder test scale (SST), And Lateral Scapular Slide Test (LSST).

Group 1 : Subjects Received scapular PNF techniques.

Group 2 : Subjects Received classic shoulder Exercises.

### **PROCEDURE:**

The Purpose And The Procedure Of The Study were Explain In Details To The Patients Who Satisfied The Inclusion Criteria Both The Treatment Groups Completed With Written Informed Consent Form. Patients were Allocate To Treatment Groups Using Sealed, Opaque Envelopes. The Envelopes Contained Stickers Denoting 1 Or 2. Then Both Treatment Groups Of Each Patients Completed 2 times (Pre & Post) VAS, SST, LSST.

The Patients were Collect Along With The Routine Evaluation With Emphasis On; Pain Scores Using VAS Where A Horizontal Line ( 10cm Long) Was Drawn On A Paper And Patients Were Ask To Mark A Ponton The Line That Beat Defined The Present PAIN Level, Where – 0 Indicated No Pain And – 10 Indicated Severe Pain, Functional Performance were Assessed Using SST Scale. Outcome Measure Were Taken On Day 1 And After Completion Of Treatment Protocol I.E. After 4 Weeks.

### **SUBJECTS AND METHODS**

This Study were Design As Randomized Control Trial. Thirty Subjects ( Females, Males ) Shoulder Exercises Groups And TENS (N=15), Simple Randomization And A Random-Number Table Were Used As The Method Of Sequence Generation For Patients. Same Therapist Evaluated All The Patients, While Another Therapist Applied The Intervention Methods The Therapist Who Applied The Interventions Was Experienced In Ac Treatment And Also Had A PNF Certificate.

All Patients Received An Explanation About The Purpose And Test Procedures Involved In The Study Before Enrollment. Each Patient Was Informed About The Study And Gave Written Informed Consent To Patient

#### **GROUP 1 :**

##### ➤ **SCAPULAR PNF TECHNIQUES :**

In the PNF groups, scapular PNF was applied by a therapist in two diagonals, anterior elevation and posterior depression and posterior elevation and anterior depression with 20 repetitions. Patients lay on the unaffected side while the therapists stood in the line of desired motion. Firstly, the therapist gave preparatory instructions. In the beginning of the

Pattern, the therapist pulled the scapula to the elongated position and then gave instructions for the desired movement. Rhythmic initiation and repeated contractions facilitation techniques were applied in all patterns. These techniques are the best matched matched scapular facilitation techniques of the PNF agonistic techniques.

**GROUP 2 :**

In the **classic Shoulder exercise group**, TENS were applied using the same procedure as describe above. After the TENS, strengthening exercises with Theraband and dumbbells were assigned to the patients. One set of want , finger walk , pulley and Codman pendulum exercises scapular elevation adduction (posture ), and scapular stabilization exercises were also performed with 20 repetitions for each exercise.

were Recrute For This Study Form The Near by Clinics In Kalol.

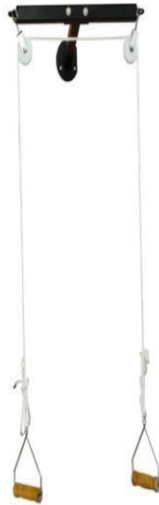
Subjects Werebe Randomly Allocated To Two Groups :SCAPULAR PNF TECH. And TENS (N=15), Classic

**Materials & Tools Used:**

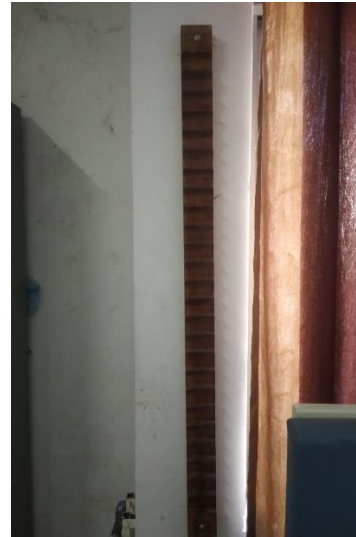
1. Inform Consent Form.
2. Pen ,Pencil ,Eraser ,Sharpener ,Stapler
3. Pillow , Plinth ,High Stool
4. Pulley.
5. Measure Tape.
6. Dumbbells.
7. Theraband.
8. Finger walk
9. TENS.
10. Goniometer



**TENS**



**PULLY**



**FINGER WALK**



**GONIOMETER**

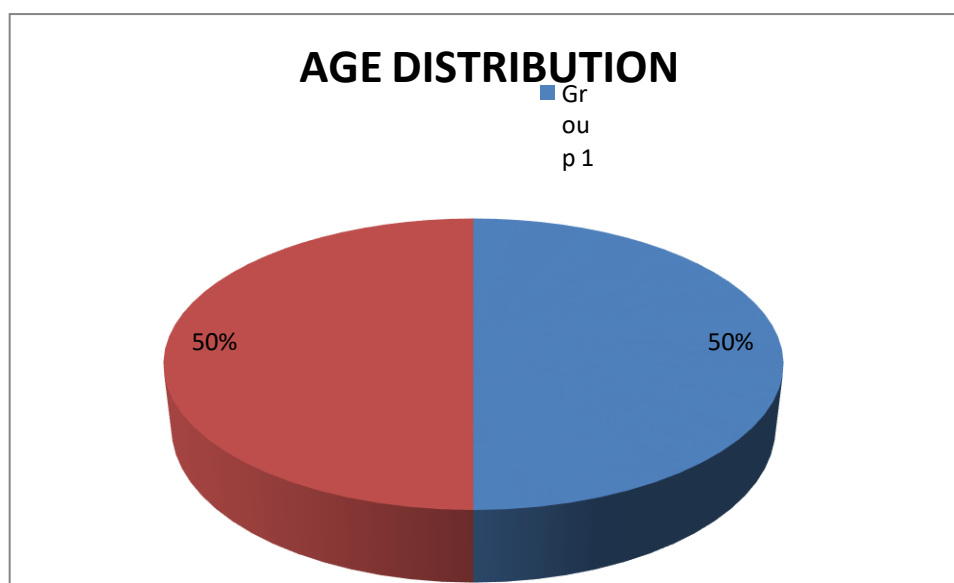


**MEASURETAPE**

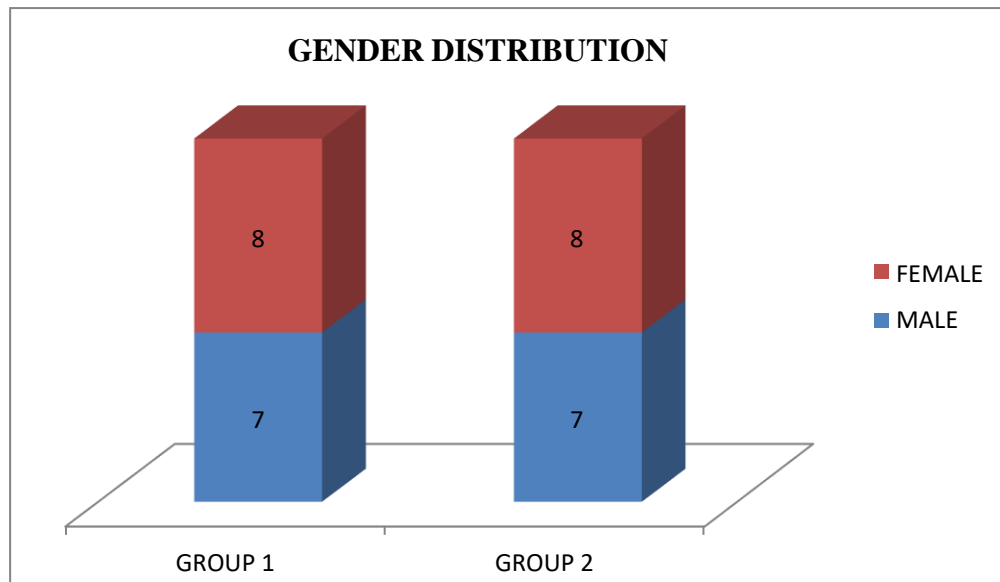


**RESULT****RESULT****Table 1: Age Distribution Of Both Groups**

	<b>NO OF PATIENT</b>	<b>MEAN AGE</b>	<b>SD</b>
<b>GROUP 1</b>	15	52.06667	5.612062
<b>GROUP 2</b>	15	51.2	4.443294

**(FIG 8: AGE DISTRIBUTION OF BOH GROUPS)****Table 2: Gender Distribution In Both Groups**

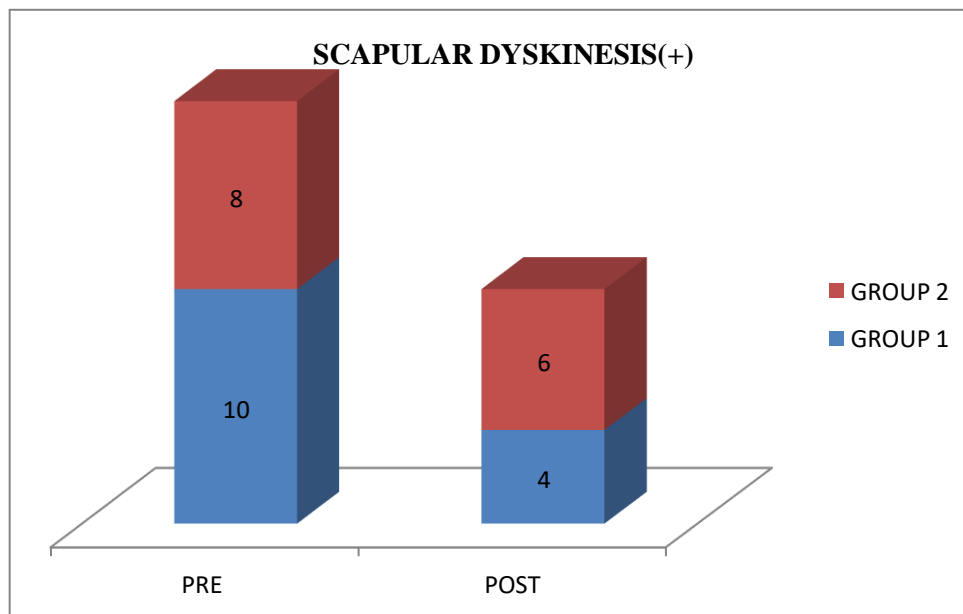
<b>GENDER</b>	<b>MALE</b>	<b>FEMALE</b>	<b>TOTAL</b>
<b>GROUP 1</b>	7	8	15
<b>GROUP 2</b>	7	8	15



(FIG 9: GENDER DISTRIBUTION IN BOTH GROUPS)

Table 3: Comparison Of Pre And Post Scapular Dyskinesis (+) In Both Groups

	PRE	POST
GROUP 1	10	4
GROUP 2	8	6

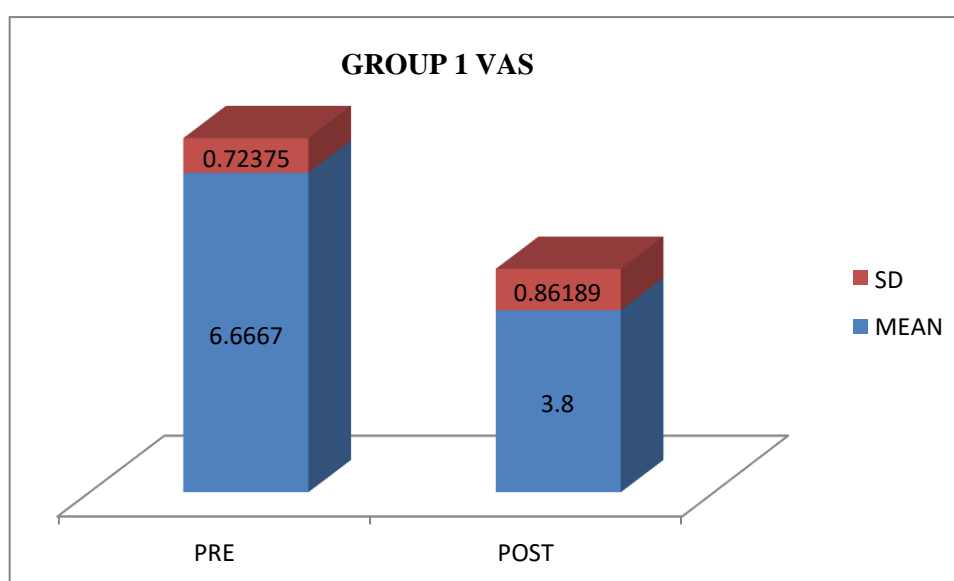


(FIG 10: COMPARISION OF PRE AND POST SCAPULAR DYSKINESIS IN BOTH GROPUPS)

**Table 4: Comparison Of Pre And Post VAS In Group 1**

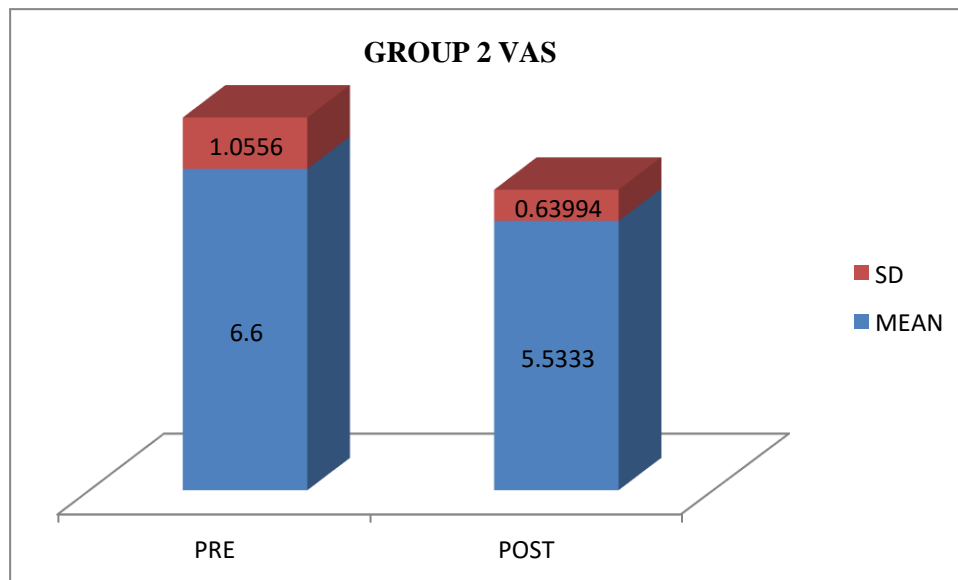
GROUP 1 VAS					
TIME	MEAN	SD	DF	t-value	p-value
PRE	6.66667	0.72375	14	14.938	0.0001
POST	3.80000	0.86189			

Here Paired Test Was Used For Analysis And P- Value< 0.0001 Between Pre And Post, Hence, It Shows Highly Significant Difference.

**(FIG 11: COMPARISON OF PRE AND POST VAS IN GROUP 1)****Table 5: Comparison Of Pre And Post VAS In Group 2**

GROUP 2 VAS					
TIME	MEAN	SD	DF	t-value	p-value
PRE	6.6000	1.05560	14	4.298	0.0001
POST	5.5333	0.63994			

Here Paired Test Was Used For Analysis And P- Value< 0.0001 Between Pre And Post, Hence, It Shows Highly Significant Difference.

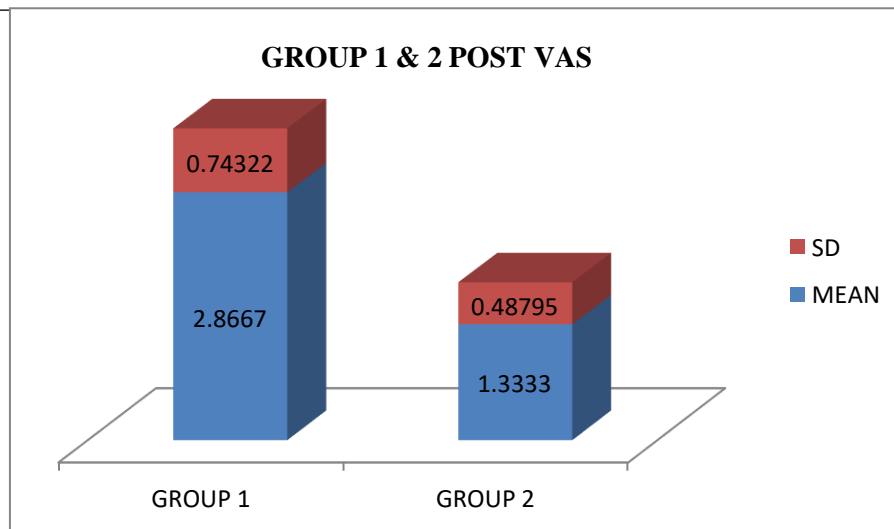


**(FIG 12: COMPARISON OF PRE AND POST VAS IN GROUP 2)**

**Table 6: Comparison Of Difference Between Post VAS Group 1 And Group 2**

POST VAS GROUP 1 & 2					
	MEAN	SD	DF	t-value	p-value
<b>GROUP 1</b>	<b>2.8667</b>	<b>0.74322</b>	<b>28</b>	<b>6.679</b>	<b>0.0001</b>
<b>GROUP 2</b>	<b>1.3333</b>	<b>0.48795</b>			

Here Independence t-Test Was Used For Analysis And P- Value < 0.0001 Between Group 1 And Group2. Hence, It Shows Highly Significant Difference.

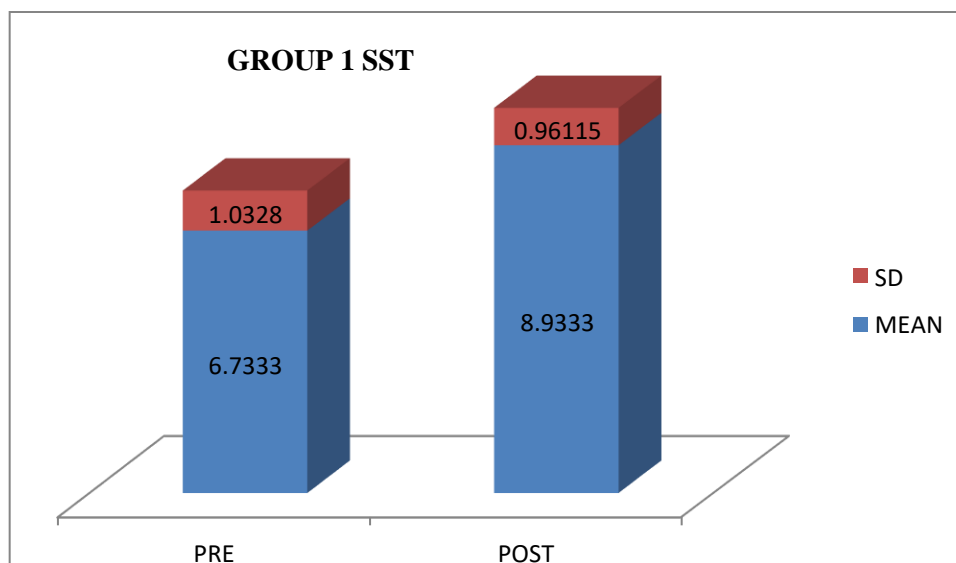


**(FIG 13: COMPARISON OF DIFFERENCE BETWEEN POST VAS IN GROUP 1 AND 2)**

**Table 7: Comparison Of Pre And Post SST In Group 1**

GROUP 1 SST					
TIME	MEAN	SD	DF	t-value	p-value
PRE	6.7333	1.03280	14	12.602	0.0001
POST	8.9333	0.96115			

Here Paired Test Was Used For Analysis And P- Value < 0.0001 Between Pre And Post, Hence, It Shows Highly Significant Difference.

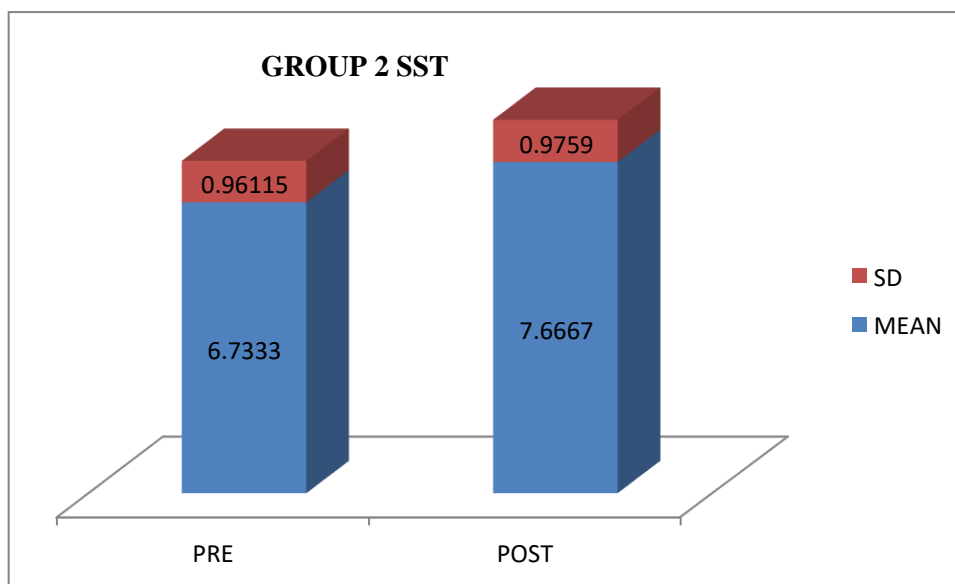


(FIG 14: COMPARISION OF PRE AND POST SST IN GROUP 1)

**Table 8: Comparison Of Pre And Post SST In Group 2**

GROUP 2 SST					
TIME	MEAN	SD	DF	t-value	p-value
PRE	6.7333	0.96115	14	4.090	0.0001
POST	7.6667	0.9759			

Here Paired Test Was Used For Analysis And P- Value< 0.0001 Between Pre And Post, Hence, It Shows Highly Significant Difference.



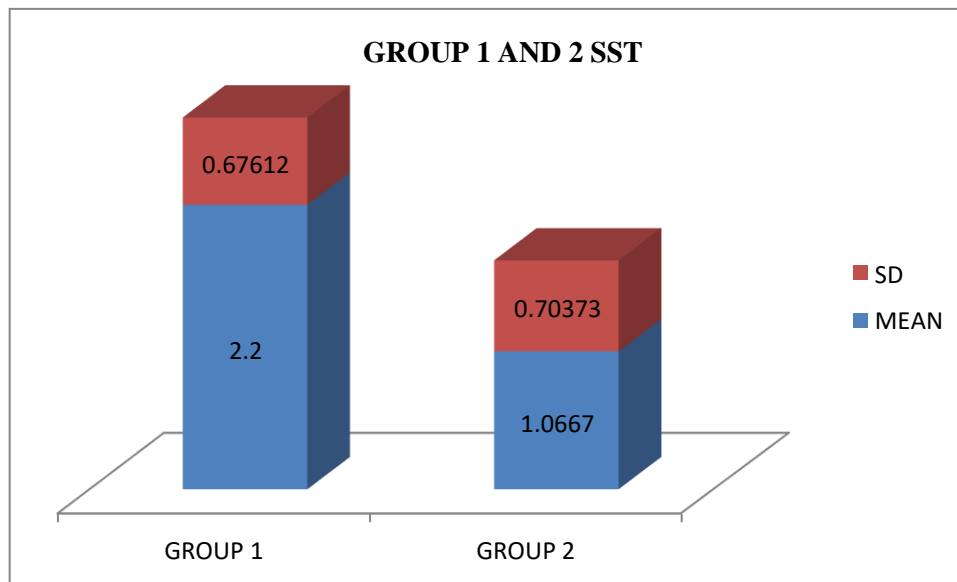
(FIG 15: COMPARISION OF PRE AND POST SST IN GROUP 2)

**Table 9: Comparison Of Difference Between Post SST Group 1 And Group 2**

POST SST GROUP 1 & 2					
	MEAN	SD	DF	t-value	p-value
GROUP 1	2.2000	0.67612	28	4.498	0.0001
GROUP 2	1.0667	0.70373			

Here Independence t-Test Was Used For Analysis And P- Value< 0.0001 Between Group 1 And Group2. Hence, It

Shows Highly Significant Difference



(FIG 16: COMPARISION OF DIFFERENCE BETWEEN POST SST IN GROUP 1 AND GROUP 2)

## *DISCUSSION*

### *DISCUSSION*

## DISCUSSION

Adhesive Capsulitis Is Characterized By Painful Stiffness Of Shoulder That May Persist For Several Years. It Is A Common Disorder; With An Estimated Annual Incidence Of 3% To 5% In The General Population (Bridgman 1972, Pal Et Al 1986). Advocated Treatments Include Rest And Analgesics, Corticosteroid Injections, Acupuncture, Physical Therapy, Manipulation Under Anesthesia, And Arthroscopic Or Open Surgery. There Is No General Acceptance Of One Standard Treatment.

Adhesive Capsulitis Is A Contracture Of The Capsule And Depending On How Severe The Contracture Is (For It Varies In Intensity From Patient To Patient) The Treatment Is Decided. The First Objective In The Treatment Of Patients With Adhesive Capsulitis Is Pain Relief. This Is Essential, For It Permits Patients To More Readily Participate In An Exercise Program Aimed At Restoring Motion And Recovering Function.

The Primary Mode Of Treatment For Adhesive Capsulitis Is Prevention. Avoiding Prolonged Immobilization Of The Shoulder After Trauma Or When Shoulder Pain Develops Is Key. The Overall Goal Of Treatment Is To Relieve Pain, Restore Motion, And To Restore Function. Although Adhesive Capsulitis Is Generally Considered To Be A Self- Limiting Condition That Can Be Treated With Physical Therapy, The Best Treatment Has Been The Subject Of Extensive Investigation. A Variety Of Different Treatments Have Been Recommended.

## **CONCLUSION AND SUMMARY**

### CONCLUSION & SUMMARY

### **CONCLUSION**

The Study Rejects The Null Hypothesis – There Is No Significant Effect Of Scapular PNF Techniques And For Improving Pain, Scapular Dyskinesis And Functional Impairments The Patients With Adhesive Capsulitis And Accept The Experimental Hypothesis – There Is **Highly Significant Effect Of Scapular PNF Technique** And For Improving Pain, Scapular Dyskinesis And Functional Impairments The Patients With Adhesive Capsulitis .

During The Course Of The Study It Has Been Concluded That Scapular PNF Techniques And Classic Shoulder Exercises Both Are Improved Pain, Scapular Dyskinesis And Functional Impairments The Patients With Adhesive Capsulitis. There Is Significant Increase In Both Scapular PNF Techniques And Classic Shoulder Exercises After 4-Week Treatment Duration In Both Groups. But Group 1 Receiving **Scapular PNF Techniques Showed More Power Full Improvement In Pain, Scapular Dyskinesis And Functional Improvement.**

### **LIMITATIONS**

### **LIMITATIONS**

### **Limitations**

- Sample Size Was Limited.
- There Is No Control Group.
- No Follow Up

### **Futurerecommendation**

- The Same Study Can Be Done With Large Group.
- The Same Study Can Be Done With A Longer Follow- Up.
- The Same Study Can Be Done With Control Group.



## **REFERENCES**

### **REFERENCES**

1. Martin J.Kelley,Pt, Dpt; Frozen Shoulder. Physical therapy Volume 39/Number 2/ February 2009.
2. M.Robinson.Kt. M Scah; Frozen Shoulder. The Bone And Joints. 4 January 2012
3. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise (sixth edition) Jaypee Brothers Medical Publisher(P) Ltd.2012
4. Jason E Hsu, Md; Current Review Of Adhesive capsulitis. Shoulder Elbow Surgery/American Shoulder And Elbow Surgery. Dec 2010
5. John Ebnezar , Essential Orthopedics For Physiotherapist , Jaypee Brothers, 2<sup>nd</sup> Edition, Chapter 19; Regional Condition Page No 271.
6. J. Maheshwari, Essential Orthopedics, Jaypee Brothers, 4<sup>th</sup> Edition, Chapter 36; Affection Of The Soft Tissues.
7. The American Acedamy Of Orthopedic Surgeon & Arthroscopy : The journal Of Arthroscopic & Related Surgery , Vol 19, No 6(July- August),2003 Pp 641-661
8. KiblerWb, Mcmullen j; ScapularDyskinesis And Its Relation To Shoulder Pain. J Am AcadOrthopSurg 2003; 11:142-151
9. KiblerWb, UhlTI, Jackson Jw, Brooks Pv, Zeller B,Mcmullen J; Qualitative clinical Evaluation Of Scapular Dysfunction; A Reliability Study. J shoulder Elbow Surg 2002;11;516-27.
10. Carolyn T. Wadsworth; Frozen Shoulder. Physical Therapy, Vol 66/ Number 12, Dec 1986
11. Taspinar F, Aksoy Cc, TaspinarB,Et Al; Comparison Of patients With Different Pathologies In Terms Of Shoulder Protraction And Scapular Asymmetry. J PhysTherSci, 2013,25; 1033-1038
12. Choi Sh, Lee Bh: Clinical Usefulness Of Shoulder Stability Exercises For Middle- Aged Women. J PhysTher Sci,2013,25: 1243-1246
13. Hindle Kb, WhitecombTj, Briggs Wo, Et Al; Proprioceptive Neuromuscular Facilitation; Its Mechanism And Effect On ROM and Muscular Function. J Hum Kinct, 201, 31: 105-113.
14. Etnyre Br, Abraham LD: H-Reflex Changes During Static Stretching and Two Varitions of Proprioceptive Neuromuscular Facilitation Techniques. EletroencephalogrClinNeurophysiol, 1986, 63: 174-179.
15. Alaca N, Atalay A, Guven Z: Comparison Of the Long-Term Effectiveness of Progressive Neuromuscular Facilitation And Continuous Passive Motion Therapics After Total Knee Arthroplasty. J PhysThersci, 2015, 27:3377-3380.
16. Lee Jh, Park Sj, Na Ss: The Effect of Proprioceptive Neuromuscular Facilitation Therapy On Pain And Function. J PhysTherSci, 2013, 25:713-716. J.Phys. T 1226 Her. Sci. Vol. 28, No. 4, 2016.
17. Cengiz A: Emg And Peak Force Responses To Pnf Stretching And The Relationship Between Stretching- Induced Force Deficits And Bilateral Deficits. J PhysTherSci, 2015, 27:631-634.

18. Alder Ss, Beckers D, Buck M: PnfIn Practice. Germany:Springer,2008.
19. Park Se, Wang Js: Effect Of Joint Mobilization Using KeomtAndPnf On A Patient With Clbp And A Lumber Transitional Vertebr: A case Study. J PhysTherSci, 2015, 27:1629-1632.
20. Paine Rm, Voight M: The Role Of The Scapula. J Orthop Sports PhysTher, 1993,18:386-391
21. Jaruga M, Manikowski W, Romanowski L, Et Al.:Pre And Postoperative Principal Of Rehabilitation In Arthroscopic Treatment Of Painfull Shoulder. OrtopTraumatolRehabil, 2003,5:469-474.
22. DeciccoPv, Fisher Mm: The Effects Of Prorioceptive Neuromuscular Facilitation Stretching On Shoulder Range Of Motion In Overhand Arthelets. J Sports Med Phys Fitness, 2005,45:183-187
23. Weon-Sik L, Hyung-Soo S, In-Sup K, Et Al.: The Effects Of Scapular Pattern And Hold – Relax Technique Of Pnf On The Rom And Vas In Frozen Shoulder Patients. J Korean SocPhysTher, 2002, 14:15-26.
24. Shimura k, Kasai T: Effects Of Proprioceptive Neuromuscular Facilitation On The Initiation Of Voluntary Movement And Motor Evoked Potential In Upper Limb Muscles. Hum Mov Sci,2002,21:101-113.
25. GodgesJj, Mattson-Bell M, Thorpe D, Al.: The Immediate Effects Of Soft Tissue Mobilization With Proprioceptive Neuromuscular Facilitation On Glenohumeral External Rotation And Overhead Reach. J Orthop Sports PhysTher, 2003, 33:713-718.
26. Lentell G, Hetherington T, Eagam J, Et Al.: The Use Of Thermal Agents To Influence The Effectiveness Of A Low-Load Prolonged Stretch. J Orthop Sports PhysTher, 1992,16:200-207.
27. Kim Jj, Lee Sy, Ha K: The Effects Of Exercise Using Pnf In Patients With A Supraspinatus Muscle Tear. J PhysTherSci, 2015, 27:2443-2446.
28. Al DajahSb: Soft Tissue Mobilization AndPnf Improve Range Of Motion And Minimize Pain Level In Shoulder Impingement. J PhysTherSci, 2014, 26:1803-1805.
29. Park K, Seo K: The Effects On The Pain Index And Lumbar Flexibility Of Obese Patients With Low Back Pain After Pnf Scapular And Pnf Pelvic Patterns. J PhysTherSci, 2014, 26:1571-1574.
30. Carolyn Kisner, Lynn Allen Colby. Therapeutic Exercise(Sixth Edition) Jaypee Brothers Medical Publishers (P) Ltd. 2012
31. Jose Orlando Ruiz, Pt, Dpt, MbaPosihonal Stretching Of The Coraeohumcral Ligament On Pati1len1 Wuh Adhesive Capsulitis: A Case Repon J Man ManclipTuer. 2009; 17(1)-59- 63.
32. OlivaFlannery ,Hannam Mu lett James Colville: Adhesive Capsulitis : Does The Timing Of Manipulation Influence Outcome. ActaOrthop. Belg, 2007,73,21-25.
33. G.C R Hand . N.A. Athanasou, T. Matthews, Henry Smith And AJ Cars: The Pathology Of Frozen Shoulder ; Journal Of Bone And Joint Surgery – British Voloum, Vol 89-B. 2007. Issue 7. 928-932.
34. Yang JI, Chang Cw, Chen Sy, Wang Sf, Lin J.Mobilization Techniques In Subjects With Frozen Shoulder Syndrome: Randomized Multiple-Treatment Trial. PhysTher 2007 Oct;87(10):1307-15. Epub 2007 Aug 7.

35. Oliva Flannery, HannamMullettJamesd Colville: Adhesive Capsulitis : Does The Timing Of Manipulation Infulence Outcome. AetaOrthop. Belg, 2007,73,21-25.
36. William N. Levine. Christine P. K Ashyap, Scan F. Bak, ChristoperS.Ahmad, Theodore A. Blaine Llouis U. Bigliani; Non Operative Management Of Idiopathic Adhesive Capsulitis Journal Of Shoulder And Elbow Surgery 2006.569-573.
37. . Henricus M Vermeulen, Piet M Rozing, Wim R Obermann, Sakia Le Cessie And 'Thea Pm Viet Vlieland. Comparison Of High-Grade And Low-Grade Mobilization Techniques InThe Management Of Adhesive Capsulitis Of The Shoulder: Randomized Controlled Trial,Physical Therapy March 2006 Vol,86 No. 3 355-368.
38. Richard Dins Steven Cuts ; Samir Mnssound: Frozen Shoulder: Clinical Review: Mbi:2005:331:1453-6
39. Hebert Lj, Moffet H, Dionne Ce, Mc Fadyen Bi. Duform M, Lirette R, Shoulder Impingement J Shoulder Elbow Surgery. 2005 Jul-Aug:14(4):380-4.
40. Jennifer Moriatis Wolf And Andrew Green Influence Of Co-Morbidity On Self Assessment Instrument Scores Of Patients With Idiopathic Adhesive Capsulitis: The Journal Of Bone And Joint Surgery (American) 2002,84:1167-1173.
41. Sean M. Griggs, Anthony Ahn And Andrew Green. Idiopathic Adhesive Capsulitis, A Perspective Functional Outcome Study Of Non-Operative Treatment. The Journal Of Bone & Joint Surgery 2000: 82-A:1398-1407.
42. Boone Dc, AzenSp, Lin Cm, Spence C, Baron C And Leen L. Reliability Of Goniometric Measurement. Phys Ther. 1987:(214):160-4

**ANNEXURE A****સંમતીપત્રક :**

વ્યક્તિ નામ :

જાતી - સ્ત્રી / પુરુષ ઉંમર \_\_\_\_\_

:

વ્યક્તિ ના સંસ્કૃતિ નામ :

\_\_\_\_\_

હું છું

કદારસુંશોધનપરોજકે ટ

ત, લનાત્મક અભ્યાસ

હું પાસાતમામપરીક્ષણો ના આ મહાઅનેકોઈ આડઅસરવગરછકે સમજાવી કરવા માંગું આવી છે.

મારા વ્યવસ્થાત્મક ક્ષમતા અને આરોગ્ય કારણી હાથ ધરવા માટે જે વ્યવસ્થાપરક્ષણો વશ વગતવાર સમજાવેલ સથતી વગર કશા માંગું આવી છે. હું આ વેશક

હું અભ્યાસ માંગું સહયોગ સ્વેચ્છા છું જે સમજવા અને તે હું અસર થઈ રહી.

મારા તરફથી કોઈકાળ જો અથવા કાનૂની અધિકાર વગર કોઈકારણ આપ્યા વગર, હું કોઈપણ સમયે પાછી ખેંચી મૂકી શકું.

હું અભ્યાસ દ્વારા મેળવી માહિતી સુંશોધન પેપર પ્રકાશન માટે ઉ મજાવે એન હું પાસા મારી ઓળખ તત્તીય પક્ષ પયોગ કરી શકાય છે જે સ પરજૂ અ

થવા પ્રકાશીત કોઈ પણ માહિતી જાહેર કરવા માટે આ વશેનું કોઈ અમજ છે.

હસ્તાક્ષર ( અથવા અંગૂઠાની છાપ )

વ્યક્તિ ની \_\_\_\_\_

કાયદાકીય રીતે સ્વીકાયેલ તની ધી : \_\_\_\_\_ સાક્ષીની સહી : \_\_\_\_\_

તપાસનારની સહી : \_\_\_\_\_

સાક્ષીનું નામ : \_\_\_\_\_ તારીખ : \_\_\_\_\_

## PATIENT INFORMATION FORM

What Cause Your Shoulder To Hurts?

Please Rate Your Pain on The Following Scale (circle one)

None	Slight	After Unusual activity
Moderate	Marked	Complete Disability

Do you Have Shoulder Pain At Night? YES/NO

Do You Take Pain Medicine? YES/NO

Name: \_\_\_\_\_

How Much Per Day? \_\_\_\_\_

Does Your Shoulder Feel Stiff? YES/NO

Does Your Shoulder Feel Loose Or Unstable? (if any) \_\_\_\_\_ What

Is The Hardest Thing That You Do At Work Or Home?

Please Rate Your Ability To Perform The Following Tasks Your Affected Shoulder.

Rating Scale	4=normal
	3=mild compromise
	2=difficulty
	1=only with aid
	0=unable

A \_\_\_\_\_ Use back pocket

H \_\_\_\_\_ Dress your self

B \_\_\_\_\_ Perineal care

I \_\_\_\_\_ Sleep on affected side C

\_\_\_\_\_ Wash opposite axilla

J\_\_\_\_\_ Pulling

D\_\_\_\_\_ Eat with utensil

K\_\_\_\_\_ Use hand overhead

E\_\_\_\_\_ Comb hair

L\_\_\_\_\_ ThrowingF

\_\_\_\_\_ Use hand with arm at  
Shoulder level

M\_\_\_\_\_ Lifting

N\_\_\_\_\_ Do usual work

G\_\_\_\_\_ Cary 10-15 lbs with arm  
At side

O\_\_\_\_\_ Do usual sport

**Study Title: Acute effect of scapular proprioceptive neuromuscular facilitations technique versus classic shoulder exercises in adhesive capsulitis**

I Mr/Mrs \_\_\_\_\_ Exercise My Free Power Of Choice; Here By Give My Consent To Include My Self As A Subject. In The Study And To Publish The Data Obtain. I Have Been Diagnosed As Having Adhesive Capsulitis. I Have Been Informed To My Satisfaction By The Attending Physiotherapist. The Purpose And Method Of The Study As Any Time During The Course Of The Study Without Giving Reason To Do So I Agree To Adhere To The Physiotherapist's Instruction And Co-operate Fully With Those Conducting The Study And Inform Them If My Condition Deteriorates Or If I Experience Any Unwanted Symptoms.

**Patient's Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Sign:** \_\_\_\_\_

**Physiotherapist Name:** \_\_\_\_\_

**Sign:** \_\_\_\_\_

## ANNEXURE C

### DATA COLLECTION SHEET

GROUP:

DATE: \_\_\_\_\_

NAME OF PATIENT: \_\_\_\_\_

OPD No: \_\_\_\_\_

Age: \_\_\_\_\_

Sex: \_\_\_\_\_

BMI: \_\_\_\_\_

Weight: \_\_\_\_\_ Kg

Height: \_\_\_\_\_ cms

Address & Contact No:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Affected Side: \_\_\_\_\_

Signature of the Investigator

AjaydeepsinhVaghela



**ANNEXURE D**

**ASSESSMENT SHEET**

**DEMOGRAPHIC DATE:**

NAME:

AGE:

GENDER:

OCCUPATION:

ADDRESS:

REFERRED BY:

CONTACT NO:

HAND DOMINENCY:

**CHIEF COMPLAIN:**

**HISTORY:**

HISTORY OF PRESENT ILLNESS:

PAST HISTORY:

PERSONAL HISTORY:

SOCIO-ECONOMIC STATUS:

MEDICAL HISTORY:

**ON OBSERVATION:**

POSTURE:

DEFORMITY.

SWELLING:

EXTERNAL AIDS;

TROPICAL CHANGES:

**ON PALPITAION:**

TRIGGER POINT:

TENDERNESS:

SPASM:

WARMTH:

SENSATION:

SOFT TISSUE PALPITAION:

BONY PALPITAION;  
ACCESSORY  
MOVEMENT:0

**ON EXAMINATION:**

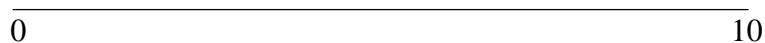
ROM:  
MMT:  
GIRTH MEASUREMENT:

**PAIN ASSESSMENT:**

TYPE OF PAIN:  
SITE OF PAIN:  
AGGRAVATING FACTOR:  
RELIEVING FACTOR:

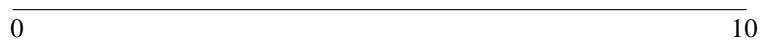
- **Pain assessment by VAS(cms)**

a. Pre treatment VAS



Score

b. Post treatment VAS



Score

- **Scapular dyskinesis using a measure tape:**

**Scapular dykineis**

PRE :

POST;

**ANNEXURE E**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Simple Shoulder Test**

Answer each question by circling "Yes" or "No"

If you do not normally do the activity, try to imagine if you could. Would your shoulder restrict you. If the activity causes no pain, or rarely produces pain, then answer "Yes". If your shoulder hurts sometimes, often or always when you do the netivity, answer "No"

- |  |     |    |
|--|-----|----|
| 1.Is your shoulder comfortable with your arm at rest by your side?   | Yes | No |
| 2.Does your shoulder allow you to sleep comfortably?   | Yes | No |
| 3.Can you reach the small of your back to tuck in your shirt?  | Yes | No |
| 4.Can you place your hand behind your head with the elbow straight out to the side?                          | Yes | No |
| 5.Can you place a coin on a shelf at the level of your Shoulder Without bonding your albow?                  | Yes | No |
| 6.Can you lift one pound (full pint container) to the level at your shoulder without bending your elbow?     | Yes | No |
| 7.Can you lift eight pound (full gallon container) to the level of your shoulder without bending your elbow? | Yes | No |
| 8.Can you carry twenty pounds at your side with the affected extremity?                                      | Yes | No |
| 9.Do you think yon can toss a softball under- hand twenty yards with the affected extremity?                 | Yes | No |
| 10.Do you think you can toss a softball over hand twenty yards with the affected extremity?                  | Yes | No |

- 11.Can you wash the back of your opposite shoulder with the affected extremity? Yes No
- 12.Would your shoulder allow you to work full-time at your regular job? Yes No

### ANNEXURE F MASTER CHART

GROUP 1								
SR NO:	AGE	GENDER	VAS		SST		VAS DIFFERENT	SST DIFFERNT
			PRE	POST	PRE	POST		
1	45	F	6	4	6	9	2	3
2	47	M	7	5	6	7	2	1
3	50	F	6	3	7	9	3	2
4	46	F	7	4	8	9	3	1
5	60	M	6	3	8	10	3	2
6	57	M	7	4	5	8	3	3
7	60	F	8	4	6	9	4	3
8	47	F	7	5	7	9	2	2
9	57	M	6	4	8	10	2	2
10	46	F	6	3	7	9	3	2
11	55	M	7	4	5	7	3	2
12	47	M	8	4	6	9	4	3
13	59	F	7	5	8	10	2	2
14	51	F	6	2	7	10	4	3
15	54	M	6	3	7	9	3	2

GROUP 2								
SR NO:	AGE	GENDER	VAS		SST		VAS DIFFERENT	SST DIFFERNT
			PRE	POST	PRE	POST		
1	48	F	7	6	7	9	1	2
2	51	M	7	5	5	7	2	2
3	50	F	4	5	7	8	1	1
4	49	F	8	6	8	9	2	1
5	54	M	6	5	7	8	1	1
6	56	F	6	5	8	8	1	0
7	47	M	7	6	6	7	1	1
8	50	F	8	6	6	8	2	2
9	59	M	8	6	7	7	2	0
10	56	F	6	5	7	8	1	1
11	54	F	7	5	7	9	2	2
12	56	M	6	5	8	8	1	0
13	47	F	6	5	5	6	1	1
14	43	M	6	7	7	6	1	1
15	48	M	7	6	6	7	1	1