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A COMPARATIVE STUDY TO FIND OUT THE EFFECTIVENESS OF CYRIAX SOFT TISSUE RELEASE AND MYOFASCIAL RELEASE TECHNIQUE ON SUBJECTS WITH ADHESIVE CAPSULITIS

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ABSTRACT

Aim of the study: The Aim of the study is to compare the effect of Cyriax soft tissue release and Myofascial release technique in improving ROM and shoulder function in patients with Adhesive capsulitis. **Method:** 30 subjects were included in this study.The subject was assigned into two groups by simple random sampling, one group treated with Cyriax soft tissue release technique(Group A**)** and another group receives Myofascial release technique(Group B). The duration of treatment was 3 weeks (9 sessions) in both groups. Primary outcome measures included SPADI and ROM. **Results:** Overall subjects improved in both groups over 3 weeks. Statistically significant improvement was found in both Cyriax soft tissue release technique and Myofascial release technique in terms of ROM and shoulder function. Additionally, in between the groups Myofascial release technique showed statistically significant improvement in ROM and shoulder function than the Cyriax soft tissue release technique group. **Conclusion:** Myofascial release technique is effective than cyriax soft tissue release technique in improving ROM and shoulder function in subjects with Adhesive Capsulitis. Although both form of treatment is considerably beneficial in subject with Adhesive Capsulitis.

INTRODUCTION

Adhesive capsulitis is an insidious painful condition with gradual restriction of all planes of movement in the shoulder. Adhesive capsulitis can described as either primary (idiopathic) and secondary. Primary adhesive capsulitis results from a chronic inflammatory response with fibroblastic proliferation, which may actually be an abnormal response from the immune system and is characterized by fibrosis of the capsule resulting with progressive, painful loss of active and passive shoulder motion and causes of secondary adhesive capsulitis are of systemic, extrinsic, intrinsic in nature.

Systemic cause includes diabetes mellitus, thyroid dysfunction and hypoadrenalism. Extrinsic causes include cardiopulmonary conditions, cervical spine disease, stroke, parkinsons disease and humerus fracture. Possible intrinsic factors are rotator cuff pathologies, biceps tendinitis and acromioclavicular joint arthritis. The cumulative incidence of adhesive casulitis has been reported as 2.4 per 1000 people per year. It occurs in the general population is 2-5% and to 20% in people with diabetes. This condition most frequently affects persons aged 40-60 years and generally affects the women than in men and is somewhat more common in the non dominant arm.

In 1987 Neviaser described four stages in the disease process. Stage 1 (inflammatory): The patient complains of pain with active and passive range of motion. The pain is described as an ache at rest and sharp with motion and is usually worse at night. Range of motion is still well maintained. These symptoms are usually present for less than 10 weeks. Stage 2 (freezing): as the symptoms progress, pain becomes worse and range of motion become more restricted. This phase lasts between 3 to 9 months and is characterized by acute synovitis oof the glenohumeral joint. Stage 3 (frozen or stiffness): During this stage use of the arm may be limited. The frozen stage lasts anywhere 4 to12 months. The capsular pattern is reduced external shoulder rotation followed by shoulder flexion and external rotation. Stage 4 (recovery or thawing): This stage begins when range of motion begins to improve and this stage lasts from 12 to 42 months and is defined by gradual return of shoulder

mobility.

Many protocols have been advocated for the treatment of adhesive capsulitis, included heat or ice application, ultrasound therapy, interferential therapy, transecutaneous electrical nerve stimulation, active and passive range of motion (ROM) exercise, proprioceptive neuromuscular facilitation techniques, mobilization techniques.

In spite of various approaches there is still lack of evidence about treatment that speedup recovery in patients with adhesive capsulitis. Hence researchers have been looking for new approaches that are first and foremost, suitable for enhancing pain, disability and range of motion. Specifically, cyriax soft tissue release myofascial release has been receiving attention in recent years especially for reducing pain and stiffness.

Cyriax soft tissue release
Cyriax consisting deep transverse friction is also known as deep friction massage, popularized by James Cyriax. Deep transverse friction is a specific type of connective tissue massage applied precisely to the soft tissue structure such as tendon, muscle bellies, musculotendinous junction, ligament and joint capsules.

Transverse massage is applied by the finger directly to the lesion and transverse to the direction of the fibers. The beneficial effects of deep friction massage include traumatic hyperemia, increased blood flow to the tissue, elimination of adhesion; stimulate phagocytosis and fiber orientation in regenerating connective tissue and also mechanoreceptor.

Myofascial release
Myofascial release is a very effective, gentle and safe hands on method of soft tissue mobilization, developed by John Barnes that involves applying gentle sustained pressure to the subcutaneous and myofascial connective tissue.

The goal of myofascial release is to release fascia restriction and restore its tissue. This technique is used to ease pressure in the fibrous bands of the connective tissue, or fascia. Gentle and sustained stretching of myofascial release is believed to free adhesions and softens and lengthen the fascia.

By freeing up that may be impending blood vessels or nerves, myofascial release is also said to enhance the body innate restorative powers by improving circulation and nervous system transmission. This overload sustained stretch gradually, over time, allow the myofascial tissue to elongate and relax, thus allowing increased ROM, flexibility, decrease pain.

AIM OF THE STUDY

To study the effect of Cyriax Soft Tissue Release and Myofascial Release technique on subjects with Adhesive Capsulitis.

NEED OF THE STUDY

There are several physical therapy methods of treatments are available for Adhesive Capsulitis. But no research has been conducted to analyze the effect of Cyriax Soft Tissue Release compared with Myofascial Release Technique in subjects with Adhesive Capsulitis. So this study aims at finding which among the two regimen mentioned above is preferable in reducing pain and disability in subjects with Adhesive Capsulitis.

OBJECTIVES OF THE STUDY

To evaluate the effectiveness of Cyriax Soft Tissue Release on pain, disability and range of motion in subjects with Adhesive Capsulitis.

To evaluate the effectiveness of Myofascial Release on pain, disability and range of motion in subjects with Adhesive Capsulitis.

To compare the effectiveness of Cyriax Soft Tissue Release and Myofascial Release on pain, disability and range of motion in subjects with Adhesive Capsulitis.

HYPOTHESIS

Null - Hypothesis
There will not be any significant difference between Cyriax Soft Tissue Release and Myofascial Release on pain, disability and range of motion in subjects with Adhesive Capsulitis.

Alternate - Hypothesis
There will be significant difference between Cyriax Soft Tissue Release and Myofascial Release on pain, disability and range of motion in subjects with Adhesive Capsulitis.

OPERATIONAL DEFINITIONS

Adhesive Capsulitis
A thickening and contraction of the capsule which becomes adherent to the humeral head is defined as Adhesive Capsulitis.
Codman& Nevasier

Cyriax soft tissue release
Deep Transverse Friction is a specific type of connective tissue massage applied precisely to the soft tissue structure such as tendon, muscle bellies, musculotendinous, ligaments, joint capsules.
Cyriax and Russell.

Myofascial release
Myofascial release is a very effective, gentle and safe hand on method of soft tissue mobilization.
John Barners.

Goniometer
A goniometer is an instrument that either measures an angle or allows an object to be rotated to a precise angular position.
Gemma Frisius.

Shoulder Pain And Disability Index
The Shoulder Pain And Disability Index (SPADI) was developed to measure current shoulder pain and disability in an outpatient setting.
Williams.

REVIEW OF LITERATURE

Arora et al (2011)
Conducted a study also states that deep tendon friction give relief of pain and help in effective connective tissue repair by stimulating phagocytosis and regenerating connective tissue and also prevent adhesion formation and ruptures unwanted adhesions. The improvement in pain scores and range of motion (ROM) observed Deep Tendon Friction (DTF) group could be due to post massage analgesic effect, modulation of non-nociceptive impulses at spinal cord level and inhibition of mechanoreceptors by rhythmical movements over the affected area, just closing the gate for afferents. Friction also leads to increase destruction of pain provoking metabolites (Levis‟s substance) whose presence in high concentration provokes ischemia and pain. Another reason for pain relief after prolonged deep friction to a localized area could be lasting peripheral nerve disturbance with local anesthetic effects. The range of motion improvement could be due to reduction in pain.

Choie and Jung et al (2015)
The study states that thoraco lumbar fascia release was effective in reducing shoulder pain and the degree of shoulder pain and the degree of shoulder pain as indicated by Shoulder Pain And Disability (SPADI) measured after the intervention significantly differed from that before the intervention. Myofascial Release facilitates mechanical and neural responses there by enabling a hearing physiological adaptation of the fascia through the interface system.

Kanase and Shanmugam et al (2012)
The study also supports the result that myofascial release and deep tendon friction along with conventional treatment the conventional approach showed extremely significant results in pain reduction and range of motion improvement because: Joint motion / mobilization techniques help to relieve pain due to its neurophysiological effect on the joint and also help to maintain extensibility of the articular and periarticular structures due to its biomechanical effect which is focused directly on the tension of periarticular tissue to prevent complications resulting from immobilization and trauma.

Nevisar et al (1945)
Described both the terminologies adhesive capsulitis and frozen shoulder are generally thought to be same. It is commonly affecting the age between 40 and 60 year. The non dominant arm is more likely to be involved, although about 12% of people are affected bilaterally.

Susan Jacksons et al (2000)
Conducted a study on frozen shoulder subjects were myofascial release and trigger point therapy was given along with conventional physiotherapy treatment which concluded that following a soft tissue massage there was improvement in range of motion, reduction in pain and improvement in function in subjects with second stage frozen shoulder. These showed similar results to the present study where treatments to the trigger points and increase Range Of Motion.

Shalaka Deshmukh, Shivani Chaudhhari et al (1999)
Conducted a study on frozen shoulder population where they used gross myofascial release technique(arm pull) was applied along with conventional physiotherapy treatment in frozen shoulder population which showed its better effects in outcome measures like Visual Analogue Scale (VAS), Shoulder Pain Disability Index (SPADI) score, and Range Of Motion (ROM).The results of this study are in accordance with findings of an present study where combination of focused Myofascial release and gross Myofascial release showed improvement in all the outcomes like pain pressure threshold, Shoulder Pain Disability Index (SPADI) scale and Apley scratch test.

Einar Kristian Tveita et al (1997)
Has proved that reduction in Range Of Motion (ROM) has an impact on the function in subjects with frozen shoulder. On the basis of above findings the present study also demonstrates significant improvement in functional activity level using Shoulder Pain Disability Index (SPADI) scale. As per the author the pain is said to have a correlation with the functional activity.

Joy C MacDermid et al (2006)
Conducted a study to determine aspects of cross sectional and longitudinal validity of Shoulder Pain Disability Index (SPADI). Community volunteers (n=129) who self- identified as having shoulder pain were enrolled. This included examination of pain reported during active and passive shoulder motion as reported Visual Analogue Scale. Patients completed the Shoulder Pain And Disability Index (SPADI), Copping Strategies Questionnaire (CSQ) and the Sickness Impact Profile (SIP) at a baseline assessment and again 3 and 6 months later. Correlations, $r>0.60$, were observed between the Shoulder Pain Disability Index (SPADI) and Visual Analogue Scale (VAS) pain scale during active and passive movement. The two constructed validity hypotheses were both supported ($p<0.01$). This study concluded that Shoulder Pain Disability Index (SPADI) is a valid measure to assess pain and disability in community based patients reporting shoulder pain due to musculo skeletal pathology.

Fusan Uysal and Konzanoglu, Guler – Uysal – (2004)
In this present study (cyriax manipulation group) showed that there was statistically significant improvement in mean of abduction ROM, when analyzed from pre intervention to post intervention Which was accordance with the study done by Fusan Uysal and Konzanoglu and they reported that application of cyriax approach of deep friction massage and mobilization exercise, three times a week, to patients with frozen shoulder, will decrease pain and increase Range Of Motion (ROM) after two week. On comparing with their result it is supported that Range Of Motion (ROM) increases and pain reduces after cyriax manipulation.

Paul Avan Den Doddler and David L Robert et al(2003)
Conducted a single blind study to investigate the effect of soft tissue mobilization on Range Of Motion (ROM), reported pain and reported function in patients with shoulder pain. Twenty nine patients referred to physiotherapy for shoulder pain were randomly assigned to a treatment group that received six treatments of Soft Tissue Massage (STM) around shoulder (n-15) and control group that received no treatment while on the waiting list for two weeks (n-14). Measurements were taken both before and after the experimental period by a blinded assessor. Active range of motion was measured for flexion, abduction and hand-behind-back movements. Pain was assessed with the Short Form McGill pain Questionnaire (SFMPQ) and functional ability was assessed with the patient Specific Functional Disability Measure(PSFDM). We concluded that soft tissue massage around shoulder is effective in improving range of motion, pain and function in patients with shoulder pain.

Susan Jackson et al (2003)
Conducted a study on frozen shoulder treatment of the myofascial release at Auburn Hospital and concord repatriation General Hospital in Sydney, Australia; over second stage of frozen shoulder patients (n=29) with help of Mofascial realese and Trigger point therapy and concluded that following a, soft tissue massage improved Range Of Motion, reduced pain and improved function in people with shoulder pain.

S-Niel-Asheret et al (1993)
Conducted a study on frozen shoulder syndrome: a novel manipulative approach at the London frozen shoulder clinic (private); over second stage of frozen shoulder patients(n=100) with help of soft tissue treatment (mofascial realese) concluded that this technique may have a significant role in improved Range Of Motion, reduced pain the management of frozen shoulder syndrome.

Mac Dermid JC, Chesworth Bert M, Patterson Stuart, Roth JH, (1999)
This study examined criterion and construct validity of Passive Range Of Motion (PROM) and pain variables recorded on a mitlant-style movement diagram. Passive lateral rotation of the shoulder was assessed in 34 patients with a variety of shoulder pathologies. Two experienced manipulation physiotherapists performed the testing in a randomized block design. The physiotherapist blinded to all clinical information and ROM measures. The criterion comparators were a blinded goniometric measure of Passive Range Of Motion (PROM) and pain score from Shoulder Pain And Disability Index (SPADI). Correlation coefficients between PROM recorded on the movement diagram and goniometry were high (r=0.79 to 0.94).

Ebru Turan Dolunay (June 2005)
Conducted a study to investigate the effect of transverse friction massage on the patients with impingement syndrome. 30 patients with II phase impingement syndrome were divided in 2 groups through a random method, and on 15 patients in the trial group, cold application, TENS, transverse friction massage and exercise program and 15 patients in control group, physical therapy and rehabilitation program, except deep transverse friction massage were implemented. The therapy was applied for a total of 3 month 3 days a week. In this study (Cyriax manipulation group) there was statistically significant change in mean of total Shoulder Pain And Disability Index (SPADI) score when analyzed from pre score to post score. Both total pain and total disability score improve significantly from pre to post. We concluded that application of transvers friction massage in patients with impingement syndrome will improve pain, Range Of Motion (ROM) and activity of Daily living.

Paul et al (2004), Bot et al (2004), Roy et al (2009), Angst et al (2008), Schmitt et al (2004),
The Shoulder Pain And Disability Index (SPADI) demonstrates good construct validity, correlating well with other region specific shoulder questionnaires. It has been shown to be responsive to change over time, in a variety of patient populations and is able to discriminate adequately between patients with improving and deteriorating conditions. The minimal clinically important difference has been reported to be 8 points; this represents the smallest detectable change that is important to the patient. When the Shoulder Pain And Disability Index (SPADI) is used more than once on the same subject, the minimal detectable change is 18 points.

DESIGN AND METHODOLOGY

Study Design	- Quasi Experimental
Study Type	- Comparative
Study setting	- Out Patient Department in Adhiparasakthi College of Physiotherapy and In Patients of Adhiparasakthi Hospital (Multi Super Specialty).
Target population	- Patients with Adhesive Capsulitis.
Sample size	- Total number of subjects – 30,

Group A - 15 Members (Cyriax soft tissue Release).
Group B - 15 Members (Myofascial Release).
Sample method - Simple Random Sampling.
Duration of the study - 3 weeks.

METHODOLOGY

30 patients with Adhesive Capsulitis were evaluated after orthopedic evaluations. The study was explained to the patient and an oral consent to the participate in the study was obtained. The patients were examined for inclusion and exclusion criteria. The patients were randomly divided into two groups (A&B).

Group A patients were treated with Cyriax soft tissue release and Group B patients were treated with Myofascial release. A subjective assessment of shoulder function was done by SPADI scale. An objective assessment of shoulder abduction and external rotation ROM measurement was taken by goniometer. IFT and shoulder mobility exercise was given as a conventional therapy for both the group.

Shoulder mobility exercise consists of codmans pendular exercise, wand exercise, finger ladder, wheel exercise, rotator cuff strengthening these exercise are given as a home programmed exercise.

SAMPLE CRITERIA

Inclusion criteria

- Age between 40-60 years.
- Shoulder pain minimum 3 months duration.
- Limited ROM of shoulder joint.
- Patients having Diabetes.
- Both genders.
- Second stage of frozen shoulder.

Exclusion criteria

- History of surgery on the particular shoulder.
- Rheumatoid Arthritis.
- Painful stiff shoulder after severe trauma.
- Fracture of the shoulder complex.
- Rotator cuff rupture.
- Intra articular steroid injection.
- First and third stage of frozen shoulder.
- Criteria are other than inclusion criteria.

VARIABLES OF TE STUDY

Independent variable - Cyriax Soft Tissue Release and Myofascial Release.

Dependent variable

- Shoulder Pain And Disability Index(SPADI),
- Goniometer.

MATERIALS USED

- IFT device and accessories
- Gel
- Goniometer
- SPADI index
- Couch
- Pillows
- Powder

OUTCOME MEASURES GONIOMETER

Goniometer is an instrument which measures the available range of motion at a joint. It consists of stationary arm, movable arm and a fulcrum.

Procedure

- Position joint in zero position and stabilize the proximal joint component.
- Move joint to end range of motion.
- Determine end feel at point where measurement will be taken.
- Identify and palpate bony landmarks.
- Align goniometer with bony landmarks while holding joint at end of range.
- Read the goniometer and record the measurement.

SHOULDER PAIN AND DISABILITY INDEX (SPADI)

The SPADI is a self administered questionnaire that consists of two dimensions, one for pain and the other for functional activities. The pain dimension consists of five questions regarding the severity of an individual‟s pain. Functional activities are assessed with eight questions designed to measure the degree of difficulty an individual has with various activities of daily living that require upper extremity use. The SPADI takes 5-10 minutes for a patient to complete and is the only reliable and valid region specific for the shoulder.

Procedure

To answer the questions, patients place a mark on a 10cm VAS for each question. Verbal anchors for the pain dimension are „no pain at all‟ and „worst pain imaginable‟ andthose for the functional activities are „no difficulty" and „so difficult it required help". The scores from both dimensions are averaged to derive a total score.

TREATMENT PROCEDURE

Group A- Cyriax manipulation

Supraspinatus

Patient position - Patient bends his/her elbow to the right angle and put the forearm behind his/her back, well into the patient‟s side. Then the patient leans back in the half lying position. Fixing the arm in adduction and medial rotation.

Procedure - The therapist stands facing the patients shoulder and places the tip of his index finger on the tendon flexing it at the IP joint but keeping it extended at the proximal IP joint reinforcing with the middle finger. The finger is made to transverse the tendon from side to side by alternating flexing and extending the wrist with thumb used as a fulcrum.

Infraspinatus

Patient position- Patient in side lying position.

Procedure- Therapist stands behind the patients shoulder and places his finger on the front of the patients shoulder. The therapist feels for the tendon with the thumb which should be flexed to obtain a good pressure. Alternate abduction and adduction of the thumb is performed to draw it to and fro across the tendon.

Subscapularis
Patient position- patient adopts the half lying position on the couch and holds the arms dose to the body and bends the elbow putting the hand on his/her thigh.
Procedure- Patients lays supine on the couch, the end of couch which is slightly raised. Therapist one hand holds the patients abducted arm, the therapist other hand on the subscapularis muscle. The therapist feel for the tendon with the thumb which should be obtain a good pressure. No jerk is given.

GROUP B- MYOFASCIAL RELEASE
Pectoralis major
Patient position- Supine lying with shoulder is slightly abduction. The therapist stands at a 45 degree angle to the patient.
Procedure - The therapist grasps the pectoralis major firmly between thumb and finger and gently lifted and taken away from the thorax and the movement can be directed towards caudal-cephalated and medial-lateral.

Supraspinatus
Patient position - Patient in sitting position, his/her shoulder abduction and elbow flexion.
Procedure - The therapist stand beside the patient‟s treating arm. Therapist one hand on the supraspinatus muscle of the affected shoulder and other hand should hold the patients elbow in order to produce abduction and adduction. Therapist finger apply gentle pressure while doing abduction and adduction of the shoulder by other hand.

Infraspinatus
Patient position - Patient in sitting position, his/her shoulder abduction and elbow flexion.

Procedure - The therapist stand beside the patient‟s treating arm. Therapist one hand on the infraspinatus muscle of the affected shoulder and other hand should hold the patients elbow in order to produce horizontal abduction and adduction. Therapist finger apply gentle pressure while doing horizontal abduction and horizontal adduction of the shoulder by other hand.

Duration: The duration of the treatment session is for 15 minutes per session, 3 days a week for 3 weeks total of 9 sessions for each group.

Interferential Therapy (IFT) and shoulder mobility exercise was given as a conventional therapy for both the groups.

RELIABILITYAND VALIDITY
GONIOMETER
Morey J.Kolber, William J. Hanney(June 2012)
Conducted a study “The reliability and concurrent validity of shoulder mobility measurements using a digital Inclinometer and Goniometer: A Technical Report”. This study investigated the intrarater reliability and concurrent validity of active shoulder mobility measurements using a digital Inclinometer and Goniometer. Two investigators used a goniometer and digital inclinometer to measure shoulder mobility on 30 asymptomatic participants in a blinded repeated measures design.

The results cautiously support the interchangeable use of goniometer and digital inclinometer for measuring shoulder mobility measurements.

SHOULDER PAIN AND DISABILITY INDEX (SPADI)
Joy C MacDermid, Patty Solomon, Kenneth Prkachin et al (Feb 2006)
Conducted a study “The Shoulder Pain Disability Index (SPADI) demonstrates factor, construct and longitudinal validity. This study determine aspects of cross sectional and longitudinal validity of Shoulder Pain Disability Index (SPADI) . Community volunteers (n=129) who self-identified as having shoulder pain were enrolled. This included examination of pain reported during active and passive shoulder motion as reported Visual Analogue Scale. Patients completed the Shoulder Pain And Disability Index (SPADI), Copping Strategies Questionnaire (CSQ) and the Sickness Impact Profile (SIP) at a baseline assessment and again 3 and 6 months later.

This study concluded that Shoulder Pain Disability Index (SPADI) is a valid measure to assess pain and disability in community based patients reporting shoulder pain due to musculo skeletal pathology.

DATA COLLECTION AND ANALYSIS
A comparative study with Adhesive capsulitis. 30 subjects were included in this study. The subject was assigned into two groups by simple random sampling, one group treated with Cyriax soft tissue release technique (Group A**)** and another group receives Myofascial release technique (Group B), is undertaken to study the effect based on SPADI and ROM. All subjects fulfilled the inclusion and exclusion criteria.

STATISTICAL TOOLS
The following statistical tools were used to compare pre/post test values.

1. MEAN : $\bar{X} = \frac{\Sigma x}{n}$

2. STANDARD DEVIATION : $S = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n-1}}$

3. PAIRED "t" TEST : $t = \frac{d}{s/\sqrt{n}}$

d = mean difference.
n = total number of subjects. S= Standard deviation.

The data is collected from Out Patient Department in Adhiparasakthi College of Physiotherapy and In Patients of Adhiparasakthi Hospital (Multi Super Specialty).

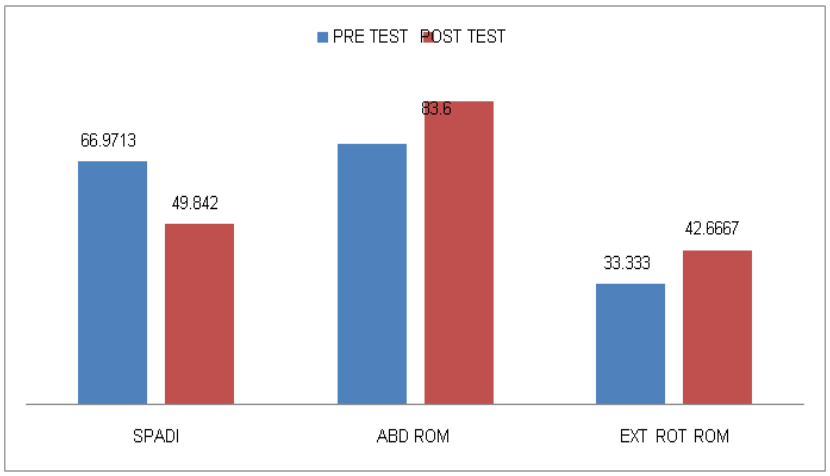
Descriptive statistical analysis has been carried out by using SPSS in the present study and p value set at 0.05.

- Independent sample test was used to find out significant difference of SPADI score within the groups.
- Independent sample test was used to find out significant difference for ROM within the groups.
- Paired sample test was used to find out the significant difference in SPADI score between the groups.
- Paired sample test was used to find out the significant difference for ROM between the groups.

Microsoft word and Excel have been used to generate graphs, tables etc.

5.1 Table showing comparison of Pre and Post test of Group A (Cyriax soft tissue release).

	Paired Samples Test					
	Mean	**N**	**Std. Deviation**	**Std. Error Mean**	**t value**	**P value**
SPADI PRE TEST	66.9713	15	3.87250	.99988	18.012**	P<0.001
SPADI POST TEST	49.8420	15	3.30370	.85301		
ABD ROM PRE TEST	71.8000	15	11.30866	2.91988	9.407**	P<0.001
ABD ROM POST TEST	83.6000	15	9.73066	2.51245		
EXT ROT PRE TEST	33.3333	15	8.38082	2.16392	9.727**	P<0.001
EXT ROT POST TEST	42.6667	15	10.83425	2.79739		

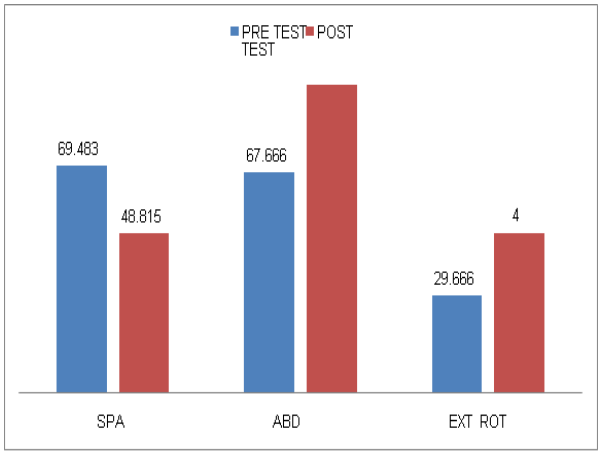


Graphical Representation

In the above graph, the SPADI score and shoulder Abduction, External rotation ROM shows significant improvement in post treatment of group A (Cyriax soft tissue release).

Table showing comparison of Pre and Post test of Group B (Myofascial Release technique)

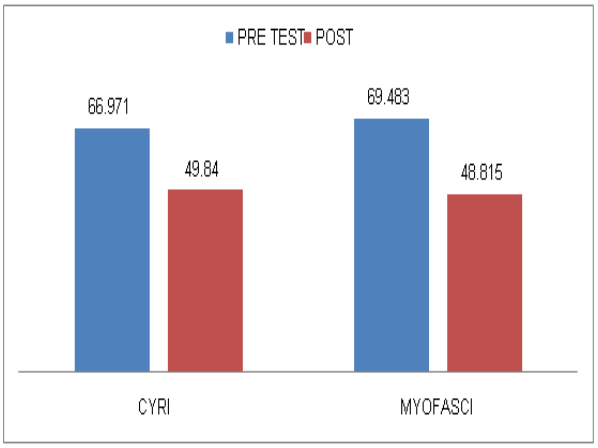
	Paired Samples Test					
	Mean	**N**	**Std. Deviation**	**Std. Error Mean**	**t value**	**P value**
SPADI PRE TEST	69.4833	15	4.11850	1.06339	25.567**	P<0.001
SPADI POST TEST	48.8153	15	5.67536	1.46537		
ABD ROM PRE TEST	67.6667	15	11.93235	3.08092	33.466**	P<0.001
ABD ROM POST TEST	94.3333	15	13.34523	3.44572		
EXT ROT PRE TEST	29.6667	15	8.12111	2.09686	29.000**	P<0.001
EXT ROT POST TEST	49.0000	15	7.60639	1.96396		



Graphical Representation

In the above graph, the SPADI score and Abduction, External rotation ROM shows significant improvement in post treatment of group B (Myofascial release).

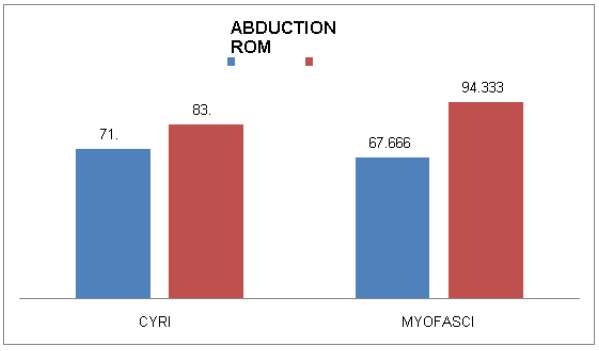
Shoulder Pain And Disability Index (SPADI) Measurement



Graphical Representation to comparing pre and post values of SPADI score for both groups

Analysis of variance was used to compare difference between both the groups and differences was calculated using by paired t-test, $p<0.001$.
Cyriax – pre test - 66.97, post test - 49.84 Myofascial - pre test – 69.48, post test - 48.81

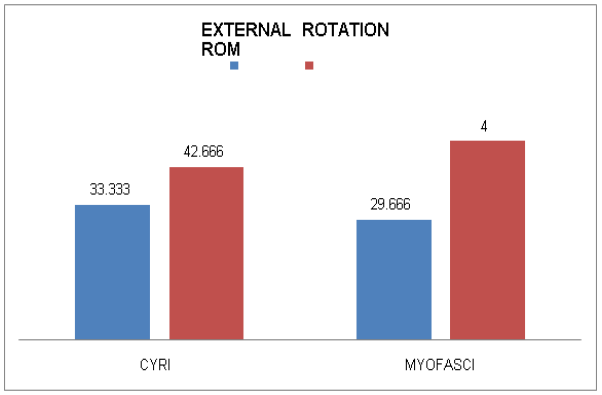
GONIOMETER MEASUREMENT



Graphical Representation to comparing pre and post values of shoulder Abduction

ROM for both groups

Analysis of variance was used to compare difference between both the groups and differences was calculated using by paired t-test, $p<0.001$.
Cyriax – pre test – 71.8, post test – 83.6 Myofascial - pre test – 67.667, post test – 94.3333



Graphical Representation comparing pre and post values of shoulder External rotation ROM for both groups

Analysis of variance was used to compare difference between both the groups and differences was calculated using by paired t-test, $p<0.001$.
Cyriax – pre test – 33.3333, post test – 42.6667 Myofascial - pre test – 29.6667, post test - 49

RESULTS

30 patients with Adhesive Capsulitis were included in the study treated with Cyriax soft tissue release technique and Myofascial release technique. Pre and Post test values were assessed by Shoulder Pain And Disability Index (SPADI), Goniometer.

Paired t test was used to compare variables before and after interventions. After the intervention, pain gets reduced and shoulder function significantly improved.

Collected data's analyzed and the result indicates that Myofascial release technique is effective than the Cyriax soft tissue release technique.

DISCUSSION

In this study comparing the effectiveness of 2 treatment strategies techniques in subjects with Adhesive Capsulitis, it appeared that both Cyriax soft tissue release technique and Myofascial release technique is effective in increasing shoulder ROM and function and the differences within the groups were strongly significant, and with both treatment strategies, subjects showed clinically significant improvement.

In group A (Cyriax soft tissue release) all the outcome variables like SPADI pain score, SPADI disability score, total SPADI score along with abduction ROM and external rotation ROM showed statistically significant improvement. This improvement is in accordance with a

study done by **Fusun Guler-Uysal** who found out that cyriax manipulation provides a faster and better response than conventional physiotherapy in improving ROM and decreasing pain.

Pain relief in cyriax group during and after treatment may be due to modulation of the nociceptive impulses at the level of the spinal cord, the „„gate control theory"". The centripetal projection into the dorsal horn of the spinal cord from the nociceptive receptor system is inhibited by the concurrent activity of the mechanoreceptors located in the same tissues. Another mechanism by which reduction in pain may be achieved is through diffuse noxious inhibitory controls, a pain suppression mechanism that releases endogenous opiates. The latter are inhibitory neurotransmitters which diminish the intensity of the pain transmitted to higher centers.

The reduction in pain may also be due to traumatic hyperemia induced by transverse friction massage. Transverse friction massage causes enhancement of blood supply and diminishes pain by increasing the speed of destruction of Lewis P substance, the factor responsible for pain.

The study of **Arora et al (2011)** also states that deep tendon friction could give relief of pain and help in effective connective tissue repair by stimulating phagocytosis and regenerating connective tissue and also prevent adhesions formation. The improvement in ROM by cyriax method may be due to reason that moving the painful structure itself to & fro while giving deep friction massage frees the tissue from adhesions both actually present and as well as which is under formation and increases movement. Because of decrease in pain and improvement in ROM of the shoulder the shoulder function also might have been improved.

In group B (Myofascial release technique) also the outcome variables like SPADI pain score, SPADI disability score, total SPADI score along with abduction ROM and external rotation ROM showed statistically significant improvement.

The study of **Choie and Jung et al (2015**), states that thoraco lumbar fascia release was effective in reducing shoulder pain and the degree of shoulder pain as indicated by SPADI measured after the intervention significantly differed from that before the intervention. Myofascial Release facilitates mechanical and neural responses there by enabling a hearing physiological adaptation of the fascia through the interface system.

The study of **Kanase and Shanmugum in 2012** also supports the results that Myofascial release and Deep transverse friction along with conventional treatment, the conventional approach showed extremely significant results in pain reduction and range of motion improvement.

However the statistics shows significant difference between group A (Cyriax soft tissue release) and group B (Myofascial release technique). Group B (Myofascial release technique) is showing statistically moderate significance in terms SPADI score ($p =<0.001$), highly significant difference in Abduction ROM ($p <0.001$) and External rotation ROM ($p < 0.001$).

Hence it can be concluded that Myofascial release technique is effective in reduce pain and improve shoulder function than the Cyriax soft tissue release technique in patients with Adhesive capsulitis

LIMITATIONS OF STUDY

- Limited same size for this study, more sample size will impact on the study result.
- It does not select the subjects based on the occupational causes
- Study period is short – 3 weeks

SUGGESTIONS FOR THE FUTURE STUDY

- Study can be done comparatively with other therapeutic technique
- Sample size can be increased with inclusion of more number of subjects to generalize the effect in larger population.
- The period of study should be increased as the disease process is also long; hence it may lead to better and valuable results.

CONCLUSION

From the present study can be assumed that both Cyriax soft tissue release technique and Myofascial release technique is effective in improving function of shoulder and improving ROM. But the outcome of this study with significant statistical improvement seen in Myofascial release technique on the outcome variables than Cyriax soft tissue release technique, thus accepting the alternate hypothesis which could be stated as Myofascial release technique is effective in improving shoulder abduction and external rotation, shoulder function than Cyriax soft tissue release technique.

As there is statistically significant difference between Cyriax soft tissue release technique and Myofascial release technique groups in improving ROM and shoulder function, the alternate hypothesis is accepted and the null hypothesis is rejected. The study could be concluded as "There is significant difference produced in the Myofascial release technique than the Cyriax soft tissue release technique in improving shoulder ROM and shoulder function in subjects with Adhesive capsulitis.

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