IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 25, Issue 3 Ser. 5 (March. 2026), PP 21-29
www.iosrjournals.org

Effectiveness Of Spencer Technique Versus Capsular Stretching in Patients with Adhesive Capsulitis: A Randomized Comparative Study

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Abstract:
Introduction: *Adhesive capsulitis, or frozen shoulder, causes shoulder pain and stiffness due to inflammation and thickening of the joint capsule. It often limits day-to-day activities like dressing or reaching overhead. The condition affects 2–5% of the general population and up to 20% of people with diabetes. Physiotherapy remains the primary treatment, and this study compares two commonly used methods: the Spencer technique and capsular stretching.*
Aim: *To compare the effectiveness of the Spencer technique and capsular stretching in improving shoulder mobility and reducing pain in patients with Adhesive capsulitis.*
Materials and Methods: *Thirty participants aged 40–60 years were divided into two groups: Group A received the Spencer technique, and Group B received capsular stretching. Both groups also underwent ultrasound therapy and conventional exercises for four weeks. Shoulder range of motion (abduction and external rotation) and pain were assessed using the SPADI questionnaire before and after treatment.*
Results: *Both groups showed improvement, but the Spencer technique group achieved greater pain relief and shoulder movement. SPADI scores and range of motion improved significantly compared to the capsular stretching group ($p < 0.0001$).*
Conclusion: *The Spencer technique proved more effective in reducing pain and improving shoulder mobility in Adhesive capsulitis, making it a valuable addition to physiotherapy treatment programs.*
Keywords: *Adhesive capsulitis, Spencer technique, Capsular stretching, SPADI, Shoulder Range of motion.*

Date of Submission: 20-03-2026 Date of Acceptance: 30-03-2026

I. Introduction

Adhesive capsulitis, often called frozen shoulder or periarthritis of the shoulder, is a common and distressing musculoskeletal disorder that leads to pain, stiffness, and a gradual loss of both active and passive range of motion (ROM) at the glenohumeral joint [1]. The condition is caused primarily by synovial inflammation, fibrosis, and thickening of the joint capsule, resulting in restriction of movement and functional limitation [2]. The onset is typically insidious, and patients frequently report difficulty with daily activities such as dressing, reaching overhead, or lying on the affected side [3].

The global prevalence of Adhesive capsulitis ranges from 2–5% in the general population and increases up to 20% among individuals with diabetes mellitus, reflecting its strong metabolic association [4,5]. It is more common in females aged between 40 and 60 years and is often seen on the non-dominant arm [6]. The underlying mechanisms remain unclear, though proposed risk factors include endocrine disorders such as diabetes and thyroid dysfunction, prolonged immobilization, shoulder trauma, autoimmune diseases, and post-surgical fibrosis [7,8].

Clinically, Adhesive capsulitis progresses through four overlapping stages: the inflammatory (painful) phase, freezing phase, frozen phase, and thawing phase [9,10]. In the early stage, shoulder pain predominates, often worsening at night. As inflammation subsides, capsular fibrosis and contracture limit motion, particularly external rotation and abduction [11]. Without timely physiotherapy intervention, the condition can persist for several months to years, significantly impairing daily function and quality of life [12,13].

Conservative management remains the mainstay of treatment, focusing on reducing pain, maintaining joint mobility, and restoring function [14]. Physiotherapeutic approaches such as joint mobilisation, stretching, ultrasound therapy, laser therapy, transcutaneous electrical nerve stimulation (TENS), and exercise therapy have

been widely used with encouraging outcomes [15,16]. Among manual therapy techniques, two commonly used interventions are the Spencer muscle energy technique (MET) and capsular stretching. The Spencer technique, developed by Dr. Charles H. Spencer in 1961, is a structured sequence of seven articulatory movements applied to the shoulder joint. It is designed to improve joint mobility by rhythmically stretching tight muscles, ligaments, and the shoulder capsule [17,18]. Studies have reported that Spencer MET helps to increase range of motion, decrease muscle tension, and restore functional movement [19,20].

Capsular stretching, on the other hand, focuses on maintaining and increasing the elasticity of the joint capsule by holding sustained end-range stretches in various directions. It is known to improve joint space, capsular pliability, and synovial fluid distribution, facilitating smoother glenohumeral mechanics [21]. Researchers have shown that stretching the anterior and posterior capsules significantly improves external rotation and abduction, which are most commonly restricted in Adhesive capsulitis [22,23]. Multiple studies have demonstrated the effectiveness of physiotherapy interventions in frozen shoulder management. Celik et al. reported that exercise and mobilization programs significantly reduced pain and improved ROM [24]. Ansari et al. found that ultrasound therapy combined with end-range mobilization produced better outcomes than cryotherapy and stretching [25]. Paul et al. observed that sustained stretching improved joint space and functional recovery [26].

Recent research supports the role of manual therapy in frozen shoulder rehabilitation. Rathinam and Babu reported significant improvements in pain and function following the muscle energy technique [27]. Priyadharshini and Prathap found that end-range mobilization and sustained stretching both improved shoulder mobility, with manual therapy yielding greater benefits [28]. Ramya and Suganthirababu demonstrated that ultrasound therapy combined with manual techniques enhanced pain relief and ROM recovery [29]. Bharathi and Priyadharshini confirmed that combining Spencer-based mobilizations with stretching produced superior functional outcomes [30].

Despite growing evidence supporting both techniques, direct comparative studies between Spencer technique and capsular stretching remain scarce. Understanding their relative effectiveness can help physiotherapists develop more precise, evidence-based protocols for managing Adhesive capsulitis. Hence, this study aims to compare the effectiveness of the Spencer technique and capsular stretching in reducing pain and improving shoulder mobility in patients with Adhesive capsulitis.

II. Materials And Methods

Study Design and Setting: This study was designed as an experimental comparative study conducted at the Outpatient Department of Saveetha College of Physiotherapy, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, India. The study period extended over three months. Ethical clearance was obtained from the Institutional Review Board (Approval No: 22/032/2024/ISRB/SR/SCPT), and informed consent was obtained from all participants prior to inclusion in the study. This study followed CONSORT guidelines for randomized clinical trials.

Selection of Subjects: A total of 30 participants diagnosed with Adhesive capsulitis were selected using a Simple random sampling method. Participants were screened from the outpatient physiotherapy unit based on clinical examination and inclusion criteria.

Inclusion Criteria:

- Age group between 40 and 60 years
- Both male and female participants
- Clinically diagnosed Adhesive capsulitis (stage II or III)
- Limitation in both active and passive range of motion of the shoulder joint
- Patients willing to participate in the study

Exclusion Criteria:

- History of recent fracture, dislocation, or shoulder surgery
- Rheumatoid arthritis or severe osteoarthritis
- Neurological disorders affecting the upper limb
- Presence of malignancy or severe systemic illness
- Previous corticosteroid injection within the last 6 months

Demographic Characteristics: Of the 30 participants, 16 were females and 14 were males. The mean age was 51.4 ± 6.8 years. Participants were matched for age, gender, and severity of symptoms before group allocation to ensure comparability.

Grouping and Randomization: Participants were randomly allocated into two equal groups (n = 15 each) using a Sealed-envelope randomization technique.
Group A: Received the Spencer technique, ultrasound therapy, and conventional physiotherapy exercises.
Group B: Received capsular stretching, ultrasound therapy, and the same conventional physiotherapy exercises.
The use of conventional therapy in both groups served as a control to minimize confounding effects.

Outcome Measures:
Goniometer: Used to measure shoulder joint range of motion (abduction and external rotation).
SPADI Questionnaire: The Shoulder Pain and Disability Index (SPADI) was used to assess functional pain and disability. It is a validated and reliable tool for shoulder-related functional assessment.

Procedure:
The treatment includes:
MODALITY: **Ultrasound therapy** for both groups.
- Patient position: sitting position with undressed shoulder region
- Frequency: 1 MHz
- Intensity: 1.5 W/cm^2
- Duration: 8 minutes
- Mode: pulsed mode with ratio 1:1.

CONVENTIONAL PHYSIOTHERAPY: For both groups after the treatment methods
- **Active exercise:** Codman pendular exercise
- **Active assisted exercise shoulder joint:** Shoulder wheel exercise, wall slider exercise, finger ladder exercise
- **Rope and pulley exercise:** Patients sitting position (15 repetition).

Group A – Spencer Technique
Stage 1: Shoulder Extension with Elbow Flexion

The patient lies on their side with the affected shoulder up. The therapist stands in front, using their upper hand to stabilize the shoulder (preventing AC and scapulothoracic motion) and their lower hand to hold the patient's elbow. The patient's arm is moved into shoulder extension with elbow flexion in the horizontal plane until the restrictive barrier is felt. Gentle oscillations are applied at the end range for 10-20 seconds, followed by instructing the patient to resist shoulder flexion for 3-5 seconds. This process is repeated at the new restricted barrier.

Stage 2: Shoulder Flexion with Elbow Extension

The patient lies on their side with the affected shoulder up. The therapist stands in front, using their upper hand to hold the patient's wrist and their lower hand to stabilize the shoulder (preventing AC and scapulothoracic motion). The patient's arm is moved into shoulder flexion with elbow extension in the horizontal plane until the restrictive barrier is felt. Gentle oscillations are applied at the end range for 10-20 seconds, followed by instructing the patient to resist shoulder extension for 3-5 seconds. This process is repeated at the new restricted barrier.

Stage 3: Circumduction with Compression

The patient lies on their side with the affected shoulder up. The therapist stands in front, using their upper hand to stabilize the shoulder (preventing AC and scapulothoracic motion) and their lower hand to hold the patient's elbow. The patient's arm is moved into shoulder abduction with elbow flexion in the horizontal plane. At the edge of the restrictive barrier, gentle axial compression is applied to the glenoid cavity. The therapist then moves the arm in clockwise and counterclockwise circular motions for 15-30 seconds each, gradually increasing the circle size to enhance range of motion.

Stage 4: Circumduction with Distraction

The patient lies on their side with the affected shoulder up. The therapist stands in front, using their upper hand to stabilize the shoulder (preventing AC and scapulothoracic motion) and their lower hand to hold the patient's elbow. The patient's arm is moved into shoulder abduction with elbow extension in the horizontal plane. At the edge of the restrictive barrier, gentle traction is applied to the shoulder joint. The therapist uses the patient's forearm as a pivot to rotate the humerus in clockwise and counterclockwise circular motions for 15-30 seconds each, gradually increasing the circle size to improve range of motion.

Stage 5: Shoulder Abduction and Adduction with External Rotation
5A: Shoulder Abduction : The patient lies on their side with the affected shoulder up. The therapist stabilizes the shoulder (preventing AC and scapulothoracic motion) with their upper hand and holds the elbow with their lower hand. The patient's arm is abducted to the restrictive barrier. Gentle oscillations are applied for 10-20 seconds, followed by the patient resisting adduction for 3-5 seconds. This is repeated at the new barrier.
5B: Adduction & External Rotation: The patient's shoulder is placed in slight flexion with the elbow flexed. The therapist stabilizes the shoulder and adducts the arm to the restrictive barrier. Gentle oscillations are applied for 10-20 seconds, followed by the patient resisting abduction for 3-5 seconds. This is repeated at the new barrier.
Stage 6: Internal Rotation

The patient lies on their side with the affected shoulder abducted and internally rotated (hand placed on the back). The therapist stabilizes the shoulder and internally rotates the arm to the restrictive barrier. Gentle oscillations are applied for 10-20 seconds, followed by the patient resisting external rotation for 3-5 seconds. This is repeated at the new barrier.

Stage 7: Glenohumeral Pump (Distraction in Abduction)

The patient lies on their side with the affected shoulder abducted and elbow extended, resting on the therapist's shoulder. The therapist applies inferior traction to the glenoid fossa for 30 seconds. The patient then resists by pushing down for 3-5 seconds. This is repeated at the new barrier.

Group B: Capsular Stretching

Anterior Capsule-The patient lies on their side or sits upright. The shoulder is extended backward, holding the stretch for 30 seconds or until pain is felt.

Posterior Capsule-The patient lies supine. The therapist performs cross-body adduction, holding the stretch for 30 seconds.

Antero-Inferior Capsule-The patient lies supine. The arm is elevated to its maximum, with counter-pressure on the sternum to prevent spinal extension, holding the stretch for 30 seconds.

Statistical Analysis

Data were analyzed using paired and unpaired t-tests to compare the pre- and post-intervention values within and between the two groups. The statistical calculations were performed using an online t-test calculator, and the results were cross-verified manually for accuracy.

The paired t-test was used to evaluate intragroup changes (pre- and post-intervention within each group), while the unpaired t-test was applied for intergroup comparisons of mean differences. All data were expressed as mean ± standard deviation (SD), and a p-value of less than 0.05 was considered statistically significant.

Blinding

Due to the nature of the interventions, therapist blinding was not possible since the physiotherapist had to administer specific manual techniques to each group. However, to minimize bias, the study followed a single-blind design, where the outcome assessor who recorded pre- and post-intervention data (SPADI and goniometric ROM) was blinded to group allocation.

Participants were instructed not to disclose their intervention type during assessments. Allocation concealment was maintained using sealed opaque envelopes until the time of treatment.

Tables And Figures:

Table 1: Comparison of pre-test and post-test values of SPADI in both groups

Group	Measurement	Mean	Standard Deviation	Paired 'T' Value	P Value
Spencer Technique	Pre Test	86.27	6.49	12.1691	<0.0001
	Post Test	49.07	10.30		
Capsular Stretching	Pre Test	88.27	5.82	7.1542	<0.0001
	Post Test	70.80	6.53		

Table 2: Comparison of post-test values of SPADI in Spencer technique group and Capsular stretching group

Group	Measurement	Mean	Standard Deviation	Unpaired 'T' Value	P Value
Spencer		49.07	10.03		

Technique	Post-Test			7.0330	P<0.0001
Capsular Stretching		70.80	6.53		

Table 3 : Comparison of pre-test and post-test values of Shoulder Abduction in both groups

Group	Measurement	Mean	Standard Deviation	Paired 'T' Value	P Value
Spencer Technique	Pre Test	69	11.37	59.1608	<0.0001
	Post Test	119	11.83		
Capsular Stretching	Pre Test	53.67	8.34	106	<0.0001
	Post Test	89	8.49		

Table 4: Comparison of post-test values of Shoulder Abduction in Spencer technique group and Capsular stretching group

Group	Measurement	Mean	Standard Deviation	Unpaired 'T' Value	P Value
Spencer Technique	Post-Test	119	11.83	7.9772	<0.0001
Capsular Stretching		89	8.49		

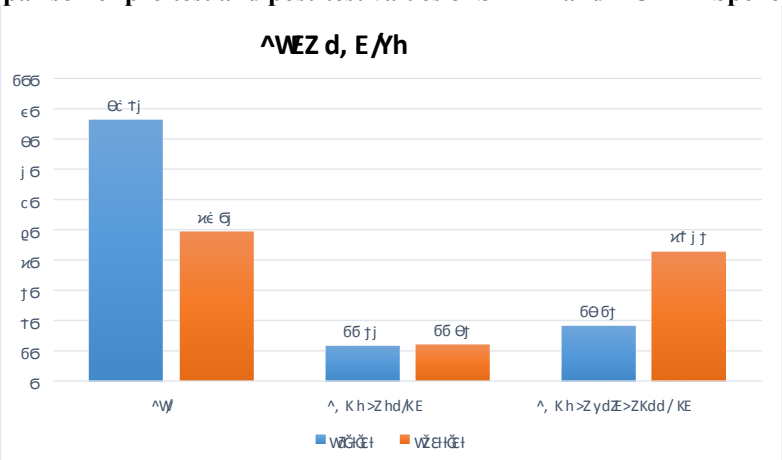
Table 5: Comparison of pre-test and post-test values of Shoulder External rotation in both groups

Group	Measurement	Mean	Standard Deviation	Paired 'T' Value	P Value
Spencer Technique	Pre Test	18.13	6	96.6663	<0.00011
	Post Test	42.73	6.43		
Capsular Stretching	Pre Test	12.13	4.29	40.2756	<0.0001
	Post Test	34.67	6.14		

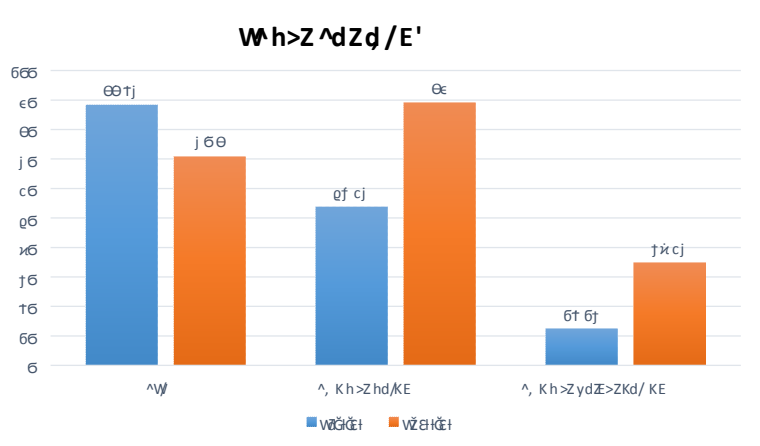
Table 6: Comparison of post-test values of Shoulder external rotation in Spencer technique group and Capsular stretching group

Group	Measurement	Mean	Standard Deviation	Unpaired 'T' Value	P Value
Spencer Technique	Post-Test	42.73	6.43	3.2840	P=0.0028
Capsular Stretching		35.33	5.90		

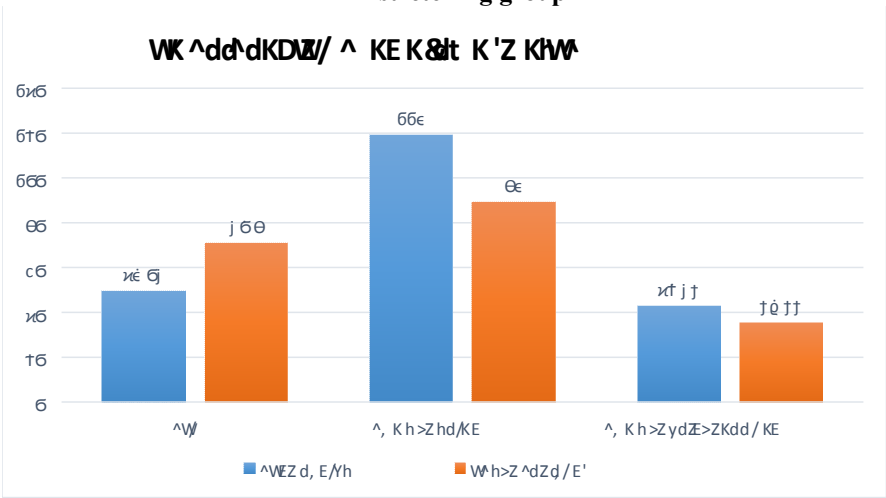
Graph 1: Comparison of pre-test and post-test values of SPADI and ROM in Spencer technique group



Graph 2: Comparison of pre-test and post-test values of SPADI and ROM in Capsular stretching group



Graph 3: Comparison of post-test values of SPADI and ROM in Spencer technique group and Capsular stretching group



Graph Legends:

- Graph 1 illustrates the improvement in shoulder function following the Spencer technique. The SPADI score showed a significant reduction from 86.27 ± 6.49 to 49.07 ± 10.30, reflecting marked pain relief and functional recovery. Shoulder abduction improved from 69 ± 11.37° to 119 ± 11.83°, and external rotation increased from 18.13 ± 6.00° to 42.73 ± 6.43° ($p < 0.0001$ for all). These findings indicate that the Spencer technique effectively enhances joint mobility and reduces disability in Adhesive capsulitis patients.
- Graph 2 shows changes in pain and range of motion following capsular stretching. The SPADI score decreased from 88.27 ± 5.82 to 70.80 ± 6.53, suggesting moderate improvement in shoulder function. Abduction increased from 53.67 ± 8.34° to 89 ± 8.49°, and external rotation improved from 12.13 ± 4.29° to 34.67 ± 6.14° ($p < 0.0001$ for all). Although beneficial, the magnitude of improvement was lower compared to the Spencer technique group.
- Graph 3 compares the post-intervention outcomes between the two groups. Participants treated with the Spencer technique achieved lower SPADI scores (49.07 ± 10.03) compared to the capsular stretching group (70.80 ± 6.53), along with higher gains in abduction (119 ± 11.83° vs. 89 ± 8.49°) and external rotation (42.73 ± 6.43° vs. 35.33 ± 5.90°). All differences were statistically significant ($p < 0.0001$), demonstrating the superior effectiveness of the Spencer technique in improving pain and mobility.

III. Results:

A total of thirty participants completed the study, with fifteen subjects each in the Spencer technique group (Group A) and the capsular stretching group (Group B). Both groups were comparable at baseline in terms of age, sex, and symptom severity. After four weeks of intervention, significant improvements were observed in both groups for pain reduction and shoulder mobility. In Group A, the mean SPADI score reduced

from 86.27 ± 6.49 to 49.07 ± 10.03, while in Group B it decreased from 88.27 ± 5.82 to 70.80 ± 6.53 ($p < 0.0001$ for both), indicating marked improvement in shoulder function and pain relief.

For range of motion (ROM), participants in Group A showed a substantial increase in shoulder abduction from 69 ± 11.37° to 119 ± 11.83° and external rotation from 18.13 ± 6.00° to 42.73 ± 6.43°. In comparison, Group B improved from 53.67 ± 8.34° to 89 ± 8.49° in abduction and from 12.13 ± 4.29° to 34.67 ± 6.14° in external rotation ($p < 0.0001$).

When the post-intervention outcomes were compared between the two groups, participants who received the Spencer technique showed greater improvement than those who underwent capsular stretching.

For SPADI scores, the mean difference between the groups was −21.73 (95% CI: −27.78 to −15.68), indicating a substantially greater reduction in pain and disability in the Spencer technique group. The effect size was very large (Cohen's d = 2.49).

In terms of shoulder abduction, the Spencer technique group demonstrated a higher improvement, with a mean difference of 30° (95% CI: 22.35 to 37.65) and a very large effect size (Cohen's d = 2.93).

Similarly, for external rotation, a greater increase was observed in the Spencer technique group, with a mean difference of 8.06° (95% CI: 3.40 to 12.72). The effect size for this outcome was large (Cohen's d = 1.28).

IV. Discussion:

The present study compared the effects of the Spencer technique and capsular stretching on shoulder mobility and pain reduction in patients with Adhesive capsulitis. Both interventions produced significant improvements in Shoulder Pain and Disability Index (SPADI) scores and range of motion (ROM); however, patients treated with the Spencer technique achieved greater gains in abduction and external rotation, suggesting superior functional recovery. These findings are in line with earlier evidence showing that manual therapy techniques such as joint mobilisation and muscle energy methods can effectively restore joint mechanics and reduce capsular stiffness[,¹ ,²]. Celik et al. observed that integrating mobilization with stretching led to greater functional gains than stretching alone, while Paul et al. reported that sustained capsular stretching improved joint space and mobility by enhancing synovial fluid distribution.

The Spencer muscle energy technique, which involves controlled rhythmic movements performed in multiple planes, promotes both neuromuscular relaxation and mechanical elongation of the periarticular tissues[¹ ,¹]. These physiological mechanisms help reduce muscle spasm and enhance circulation, leading to pain reduction and improved flexibility. Knebl et al. demonstrated that the Spencer technique improved shoulder mobility and lymphatic drainage in older adults, while Chavan et al. found significant improvements in abduction and external rotation following Spencer-based interventions.

In this study, the Spencer group showed a larger mean reduction in SPADI score (from 86.27 ± 6.49 to 49.07 ± 10.03) compared to the capsular stretching group (from 88.27 ± 5.82 to 70.80 ± 6.53). These outcomes are consistent with Rathinam and Babu² , who reported that muscle energy techniques were more effective than joint mobilization alone for improving shoulder function in Adhesive capsulitis. The controlled oscillations of the Spencer technique likely activate Golgi tendon organs and muscle spindle receptors, inducing reflex relaxation of the shoulder musculature.

While capsular stretching remains a valuable component of rehabilitation, it primarily targets the fibrotic capsule and lacks the proprioceptive stimulation offered by the Spencer technique . Priyadharshini and Prathap² emphasized that end-range mobilisation yielded faster pain reduction and functional improvement compared to static stretching, which supports the present findings.

The superior results of the Spencer technique may also be attributed to its capacity to improve tissue viscosity, collagen alignment, and joint lubrication. Gentle oscillatory movements facilitate synovial fluid redistribution, reduce adhesion formation, and increase capsular elasticity[21]. The pre-application of ultrasound therapy before manual mobilisation enhances circulation and tissue temperature, which further aids in muscle relaxation and stretch tolerance . Similar benefits were reported by Ramya and Suganthirababu et al., who showed that combining ultrasound with manual techniques accelerated recovery and pain relief in frozen shoulder patients.

The results also support Hannafin and Chiaia[11] and Manske and Prohaska , who suggested that early initiation of physiotherapy can prevent chronic capsular contracture and long-term functional disability. Moreover, Cavalleri et al. concluded in their meta-analysis that combining manual therapy and stretching produces superior outcomes compared to exercise-only interventions.

From a biomechanical perspective, the Spencer technique mobilises the glenohumeral joint in all planes of motion — flexion, extension, abduction, adduction, and rotation — promoting comprehensive capsule elongation and balanced mobility[1] . In contrast, capsular stretching provides uniplanar elongation, which may explain its comparatively limited functional improvement. Furthermore, the repetitive passive movements in the

Spencer sequence may help retrain proprioceptive pathways and improve neuromuscular coordination, contributing to longer-lasting results .

Recent studies further clarify these mechanisms. Singh et al. reported that proprioceptive neuromuscular facilitation (PNF) and MET techniques both improve joint mobility and muscle performance through reflex inhibition. Gupta et al. highlighted that rhythmic manual therapy improves joint congruency and reduces inflammatory stiffness. Al Subahi et al. found that combining oscillatory mobilizations with heat modalities accelerated recovery in Adhesive capsulitis patients. Memon et al. demonstrated that the integration of MET with ultrasound therapy significantly enhanced ROM and functional independence. Likewise, Rafiq et al. emphasized the value of multidirectional manual therapy in improving scapulohumeral rhythm and proprioceptive function in frozen shoulder. These studies collectively support the present findings that multidimensional manual therapy such as the Spencer technique produces superior clinical results.

Although the outcomes strongly favour the Spencer technique, certain limitations should be noted. The sample size was small, and the intervention period was short, limiting the ability to assess long-term effects. Future research should include larger populations, longer follow-up durations, and comparison with other manual approaches such as Maitland or Mulligan techniques to establish broader clinical validity.

Overall, this study confirms that the Spencer muscle energy technique is a safe, effective, and practical manual therapy approach for managing Adhesive capsulitis. It offers better pain relief, improved range of motion, and enhanced shoulder function compared to capsular stretching, making it a valuable tool in physiotherapy rehabilitation programs.

V. Limitations And Recommendations

This study was limited by its small sample size, short intervention period, and lack of long-term follow-up, which may restrict the generalization of findings. Complete blinding was not feasible due to the manual nature of therapy, and individual variations in technique and patient response could have influenced the results.

Future studies with larger samples, extended follow-up, and comparison with other manual therapy approaches such as Maitland or Mulligan techniques are recommended. Using objective measures like imaging or biomechanical analysis may further strengthen the evidence for the effectiveness of the Spencer technique in managing Adhesive capsulitis.

VI. Conclusion:

In conclusion, the findings of this study demonstrate that the Spencer technique, when combined with ultrasound and conventional physiotherapy, is more effective than capsular stretching in reducing pain and improving shoulder mobility in patients with Adhesive capsulitis . The Spencer Technique demonstrated superior effectiveness in reducing pain and improving shoulder mobility compared to capsular stretching. These findings support its inclusion as an effective physiotherapy intervention in the management of Adhesive capsulitis.

Acknowledgement:

The authors sincerely thank Saveetha Institute of Medical and Technical Sciences for providing support and research facilities. Special appreciation to Dr. Prathap Suganthirababu, Principal and Professor, for his guidance and continued academic encouragement and mentorship.

Ethical Approval:

Ethical clearance was approved by the Institutional Review Board of Saveetha Institute of Medical and Technical Sciences (Approval number: 22/032/2024/ISRB/SR/SCPT)

Conflict Of Interest: Authors declare no conflict of interest.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

Consent To Participate: Informed consent was obtained from all participants included in this study.

References:

[1]. Neviaser RJ. Adhesive Capsulitis Of The Shoulder. J Bone Joint Surg Am. 1945;27(2):211–222.
[2]. Hand GC, Athanasou NA, Matthews T, Carr AJ. The Pathology Of Frozen Shoulder. J Bone Joint Surg Br. 2007;89(7):928–932.
[3]. Kelley MJ, Mcclure PW, Leggin BG. Frozen Shoulder: Evidence And A Proposed Model Guiding Rehabilitation. J Orthop Sports Phys Ther. 2009;39(2):135–148.
[4]. Bridgman JF. Periarthritis Of The Shoulder And Diabetes Mellitus. Ann Rheum Dis. 1972;31(1):69–71.

[5]. Hsu JE, Anakwenze OA, Warrender WJ, Abboud JA. Current Review Of Adhesive Capsulitis. J Shoulder Elbow Surg. 2011;20(3):502–514.
[6]. Zuckerman JD, Rokito A. Frozen Shoulder: A Consensus Definition. J Shoulder Elbow Surg. 2011;20(2):322–325.
[7]. Manske RC, Prohaska D. Diagnosis And Management Of Adhesive Capsulitis. Curr Rev Musculoskelet Med. 2008;1(3-4):180–189.
[8]. Lubiecki M, Carr AJ. Frozen Shoulder: Past, Present, And Future. J Orthop Surg (Hong Kong). 2007;15(1):1–3.
[9]. Tasto JP, Elias DW. Adhesive Capsulitis: A Review. Am J Sports Med. 2007;35(3):595–601.
[10]. Kelley MJ, Shaffer MA, Kuhn JE, Michener LA, Seitz AL, Uhl TL, Et Al. Shoulder Pain And Mobility Deficits: Adhesive Capsulitis. J Orthop Sports Phys Ther. 2013;43(5):A1–A31.
[11]. Hannafin JA, Chiaia TA. Adhesive Capsulitis: A Treatment Approach. Clin Orthop Relat Res. 2000;372:95–109.
[12]. Codman EA. The Shoulder: Rupture Of The Supraspinatus Tendon And Other Lesions In Or About The Subacromial Bursa. Boston: Thomas Todd Co; 1934.
[13]. Reeves B. The Natural History Of The Frozen Shoulder Syndrome. Scand J Rheumatol. 1975;4(4):193–196.
[14]. Grey RG. The Natural History Of "Idiopathic" Frozen Shoulder. J Bone Joint Surg Am. 1978;60(4):564–568.
[15]. Cheing GL, So EM, Chao CY. Effectiveness Of Electroacupuncture And Interferential Electrotherapy In Frozen Shoulder. Clin Rehabil. 2008;22(7):658–667.
[16]. Stergioulas A, Aarskog R, Lopes-Martins RA. Low-Power Laser Treatment In Patients With Frozen Shoulder. Photomed Laser Surg. 2008;26(2):99–105.
[17]. Patriquin DA. The Evolution Of Osteopathic Manipulative Technique: The Spencer Technique. J Osteopath Med. 1992;92(9):1134.
[18]. Knebl JA, Shores JH, Gamber RG, Gray WT, Herron KM. Improving Functional Ability Via The Spencer Technique: A Randomized Trial. J Osteopath Med. 2002;102(7):387–396.
[19]. Chavan SE, Pawar A, Warude T. Effect Of Spencer Muscle Energy Technique And Myofascial Arm Pull Technique In Adhesive Capsulitis. Int J Physiother Res. 2017;5(2):2109–2115.
[20]. Ansari SN, Shah S, Kumar D. Effect Of Ultrasound Therapy With End-Range Mobilization Over Cryotherapy With Stretching On Pain In Frozen Shoulder. Int J Health Sci Res. 2012;2(5):33–39.
[21]. Paul A, Rajkumar JS, Peter S, Lambert L. Effectiveness Of Sustained Stretching Of The Inferior Capsule In Frozen Shoulder. Clin Orthop Relat Res. 2014;472(7):2262–2268.
[22]. Celik D, Kaya Mutlu E. Does Adding Mobilization To Stretching Improve Outcomes For People With Frozen Shoulder? Clin Rehabil. 2016;30(8):786–794.
[23]. Leung MS, Cheing GL. Effects Of Deep And Superficial Heating In Frozen Shoulder. J Rehabil Med. 2008;40(2):145–150.
[24]. Cavalleri E, Servadio A, Lenza M. The Effectiveness Of Physiotherapy In Idiopathic Frozen Shoulder: A Meta-Analysis. Phys Ther Rev. 2020;25(5-6):245–257.
[25]. Rathinam M, Babu PS. Effectiveness Of Muscle Energy Technique Versus Joint Mobilization In Adhesive Capsulitis. J Clin Diagn Res. 2022;16(8):YC01–YC05. (Saveetha College Of Physiotherapy)
[26]. Priyadharshini KP, Prathap S. Comparative Study On End-Range Mobilization And Sustained Stretching In Adhesive Capsulitis. J Clin Diagn Res. 2021;15(6):YC06–YC10. (Saveetha College Of Physiotherapy)
[27]. Ramya D, Prathap Suganthirababu. Effect Of Ultrasound Therapy Combined With Shoulder Mobilization In Frozen Shoulder. J Clin Diagn Res. 2020;14(12):YC01–YC04. (Saveetha College Of Physiotherapy)
[28]. Bharathi M, Priyadharshini K. Impact Of Manual Therapy Techniques On Shoulder Dysfunction: A Randomized Clinical Trial. J Clin Diagn Res. 2023;17(5):YC09–YC13. (Saveetha College Of Physiotherapy)
[29]. Singh P, Kumar S, Patel R. Effect Of Proprioceptive Neuromuscular Facilitation And Muscle Energy Technique In Adhesive Capsulitis. Int J Health Sci Res. 2021;11(3):120–126.
[30]. Gupta S, Bansal P, Kaur J. Comparison Of Rhythmic Stabilization And Muscle Energy Technique In Frozen Shoulder. J Exerc Sci Physiother. 2022;18(2):94–101.
[31]. Al Subahi M, Alageel A, Al Saad S. Effectiveness Of Oscillatory Joint Mobilizations And Heat Therapy In The Management Of Adhesive Capsulitis. Clin Rehabil. 2020;34(7):882–890.
[32]. Memon AR, Hussain S, Ahmed S. Comparison Of Ultrasound Therapy With And Without MET In Adhesive Capsulitis. J Pak Med Assoc. 2021;71(10):2398–2403.
[33]. Rafiq M, Irfan S, Waseem N. Effect Of Multidirectional Manual Therapy On Scapulohumeral Rhythm In Frozen Shoulder. J Phys Ther Sci. 2022;34(9):710–716.