Majalah Ilmiah Fisioterapi Indonesia
Indonesian Scientific Journal of Physiotherapy

Case Reports
ISSN (Print): 2303-1921
ISSN (Online): 2722-0443
Volume 13, Number 3, Pages 567-574 (2025)
DOI: https://doi.org/10.24843/mifi.000000376

Physiotherapy Management of Right Frozen Shoulder: A Case Report

Adinda Salfa Sofia[1*], Maya Triyanita[2]

[1,2]Department of Physiotherapy, Widya Husada University Semarang, Semarang, Central Java, Indonesia

*Corresponding author:
E-mail: adindasalfa35@gmail.com

Received 23 July 2025; Revised 14 Augst 2025; Accepted 16 Augst 2025; Published 01 September 2025

Abstract
Introduction: Frozen shoulder, also known as adhesive capsulitis, is a chronic inflammation of the glenohumeral joint capsule that results in pain and restricted shoulder range of motion, particularly in rotational movements. Its onset can be either traumatic or idiopathic, with higher prevalence in females.
Methods: This case report describes a patient diagnosed with right frozen shoulder, presenting with muscle spasms in the deltoid and upper trapezius, pain at rest and during movement, decreased shoulder muscle strength, and impaired functional activity assessed using the Shoulder Pain and Disability Index (SPADI). The patient underwent five physiotherapy sessions, which combined transcutaneous electrical nerve stimulation (TENS), infrared therapy, and targeted exercise therapy.
Results: Following five treatment sessions, the patient demonstrated reduced pain, decreased muscle spasm, increased shoulder range of motion, improved muscle strength, and enhanced functional activity. These findings suggest that the combined physiotherapy modalities effectively addressed severe functional limitations associated with frozen shoulder.
Conclusion: Adhesive capsulitis leads to joint stiffness, tissue deterioration, pain, and decreased quality of life. A multimodal physiotherapy approach incorporating TENS, infrared therapy, and exercise therapy over five sessions effectively alleviated symptoms and improved functional outcomes in this patient.

Keywords
Frozen shoulder, adhesive capsulitis, physiotherapy, TENS, infrared therapy

Introduction

Physical capacity is an essential requirement for all individuals. A decline in physical capacity is commonly observed in the general population and can trigger pain, which acts as a protective mechanism in response to tissue damage, prompting the individual to avoid further injury.[1]

The prevalence of frozen shoulder is higher in women, ranging from 59% to 70%. Epidemiological data indicate an incidence of 3.38 per 1000 in women and 2.36 per 1000 in men annually, predominantly affecting middle-aged adults around 50 years of age.[2] In Indonesia, frozen shoulder prevalence is approximately 2%, with 11% of cases occurring in patients with diabetes mellitus. The condition may affect both shoulders simultaneously or sequentially in 16% of patients, while 14% experience involvement of the contralateral shoulder while the other shoulder is also affected.[3]

This case involves a 49-year-old female patient who experienced right shoulder pain for approximately three months. Previous medical treatment had failed to relieve symptoms, prompting referral to physiotherapy. The patient had no history of trauma, metabolic disorders such as diabetes, or family history of similar complaints. She is a housewife with high daily activity, including lifting heavy objects.

Frozen shoulder is characterized by restricted movement of the shoulder joint, with significant reduction in both active and passive glenohumeral range of motion (ROM) accompanied by pain.[4] Its prevalence is 2–5% and occurs more frequently in women. Rising morbidity and lifestyle changes have contributed to increased incidence.[5] Simon-Emmanuel Duplay first described this pathology as "periarthritis scapulohumeral," differentiating it from arthritis using radiographic evaluation of joint conditions.[6]

Adhesive capsulitis is defined as spontaneous and progressive restriction of passive glenohumeral joint mobility, particularly external rotation, accompanied by pain and disability. It is classified as primary when no systemic condition explains the loss of shoulder mobility or secondary when predisposing factors such as soft tissue injury, fracture, arthritis, upper motor neuron lesion, or cardiovascular events with residual symptoms are present.[7]

Arthrokinematics of the glenohumeral joint involve rolling and sliding of the humeral head within the glenoid fossa during flexion-extension and abduction-adduction. The sliding direction opposes the shaft of the humerus. During shoulder flexion, the humeral head slides posteriorly and inferiorly; during extension, it slides anteriorly and superiorly. Osteokinematics during flexion occur in the sagittal plane around the humeral head axis, primarily driven by the anterior deltoid and supraspinatus for 60–90°, and supplemented by pectoralis major, coracobrachialis, and biceps brachii for 90–180°. Extension occurs in the sagittal plane away from anatomical position, primarily by latissimus dorsi and teres major, with posterior deltoid assisting during hyperextension.[8]

Transcutaneous electrical nerve stimulation (TENS) is a non-pharmacological intervention that activates complex neural pathways to reduce pain by inhibiting descending central nervous system signals and decreasing hyperalgesia.[9] Infrared therapy uses electromagnetic radiation with wavelengths shorter than radio waves, typically 700 nm to 1 mm, applied at distances ranging from 3 to 80 cm to promote tissue healing and pain relief.[10]

Exercise therapy is a physiotherapy modality involving active or passive movement.[11] Codman's pendular exercise is a technique that employs arm swinging in a forward-bent position to prevent shoulder adhesion by promoting early passive motion, with active patient involvement and self-mobilization using gravity to traction the humeral head from the glenoid fossa.[12] The shoulder wheel is a rehabilitation device using rotational principles to facilitate circular shoulder movements across sagittal, frontal, and transverse planes, designed to improve shoulder ROM.[4]

This case is significant as it demonstrates the effectiveness of a multimodal physiotherapy approach—TENS, infrared, and exercise therapy—over just five treatment sessions in an elderly female patient with severe functional limitations due to adhesive capsulitis. Such a systematic multimodal approach remains rarely described in local literature.

Methods

The pathophysiology of adhesive capsulitis is not yet fully understood. The most widely accepted hypothesis suggests that the initial inflammatory process occurs between the joint capsule and synovial fluid, followed by fibrosis and reactive adhesions of the synovial tissue. Early inflammation causes pain, while subsequent fibrosis and adhesions lead to restricted range of motion (ROM).[13]

A comprehensive physical assessment was conducted, including palpation using fingertip proprioception, which revealed spasm in the right upper trapezius and supraspinatus muscles.[14] Pain intensity was assessed using the Visual Analog Scale (VAS), a tool measuring subjective pain along a continuum from 0 (no pain) to 10 (unbearable pain).[15]

Joint range of motion (ROM) was evaluated both actively and passively. ROM represents the extent of movement a joint can achieve from one position to another and can be categorized as inner, middle, outer, and full range.[16] Muscle strength was assessed via Manual Muscle Testing (MMT), which evaluates a joint's capacity to generate maximal torque against isometric resistance. Strength was scored on a six-point scale ranging from 0 (no visible contraction) to 5 (able to resist full examiner force).[17]

Specific shoulder tests were conducted to assess tendon and joint pathology. The Yergason test identifies pathology of the long head of the biceps brachii tendon, performed with the patient standing, shoulder in neutral, elbow extended, and wrist pronated; supination against resistance is applied, with pain in the bicipital groove considered positive. [8] The Apley's Scratch Test evaluates shoulder ROM by combining adduction with internal rotation and abduction with external rotation. Pain or inability to reach the contralateral scapula indicates a positive test.[18]

The Painful Arc Test differentiates subacromial impingement from acromioclavicular joint pathology. Active abduction is performed, with pain between 60°–120° indicating a positive test. Pain beyond this range suggests a negative result, whereas pain at 180° may indicate acromioclavicular joint involvement.18 The Drop Arm Test, performed according to Codman, involves passive elevation of the shoulder to 90° or 160°, followed by active controlled lowering, with inability to maintain the position for 10 seconds indicating a positive result.[19]

The Empty Can Test identifies supraspinatus weakness or impingement-related pain. With the patient standing, shoulder flexed 40°–70° in internal rotation, elbow extended, and wrist pronated, resistance is applied against abduction. Pain at the anterolateral shoulder indicates a supraspinatus tendon tear.[20] The Apprehension Test detects anterior glenohumeral instability, performed with the patient supine, shoulder abducted 90°, externally rotated 90°, simulating a throwing motion; a positive test is indicated by fear of imminent dislocation.[21]

Patient assessment revealed pain levels of 2/10 at rest, 6/10 during movement, and 5/10 upon palpation, as measured by the Visual Analog Scale (VAS). The right shoulder demonstrated a range of motion of 130° in flexion and 40° in internal rotation. Manual Muscle Testing (MMT) showed a strength grade of 4/5 for both the deltoid and supraspinatus muscles. The Empty Can Test was positive, producing anterolateral pain, while the Drop Arm Test was negative. The Painful Arc Test indicated discomfort between 60° and 120°. Additionally, the Apley Scratch Test revealed a limitation in reaching the contralateral scapula.

Transcutaneous Electrical Nerve Stimulation (TENS) is a low-intensity stimulation method aimed at reducing symptomatic pain by activating sensory nerves. Low-frequency current may irritate the skin at high intensity. TENS activates both large- and small-diameter fibers transmitting sensory information to the central nervous system. Effectiveness is explained by the gate control theory, using sinusoidal waveform, phase duration 125 μs, and frequency 100–200 Hz, adjusted to patient tolerance.[22] In this case, TENS was applied for 20 minutes at 100 Hz and 125 μs over the anterior shoulder region, with intensity tailored to patient comfort.

Infrared therapy, or heat therapy, delivers electromagnetic radiation to increase local blood circulation and tissue metabolism, enhancing absorption of local exudates, reducing muscle tone, inflammation, and pain. The radiation was applied at a distance of 45 cm for 15 minutes.[23]

Exercise therapy included Codman's pendulum exercises to stretch soft tissues, maintain flexibility, improve shoulder ROM, and reduce pain, combined with scapular mobilization performed in angular abduction of the glenohumeral joint, repeated 3 times per session for 8 repetitions.[12,24] Shoulder wheel exercises were performed for 5 minutes per session, 20–30 rotations, facilitating active shoulder ROM and preventing muscle atrophy.[25] The patient underwent five therapy sessions over two weeks. Modalities remained consistent, with exercise load and repetitions adjusted according to patient progress each session.

Results

The results section presents a comprehensive overview of the patient's clinical assessment findings across multiple evaluation domains, recorded at six different time points (T0–T5) during the intervention period. The assessments were designed to monitor changes in muscle spasm, pain intensity, muscle strength, joint mobility, and functional status of the right shoulder. Muscle spasm was evaluated through palpation and observation, pain intensity was measured using the Visual Analog Scale (VAS), and muscle strength was assessed using Manual Muscle Testing (MMT). Joint mobility was examined using both Active Range of Motion (AROM) and Passive Range of Motion (PROM) measurements. Functional outcomes were determined using the Shoulder Pain and Disability Index (SPADI), which includes pain and disability subscales as well as a total score. Table 1 presents the detailed results of the muscle spasm evaluation, providing an overview of the presence, severity, and distribution of spasms observed in the right shoulder during the initial assessment. These findings serve as an important indicator of muscular tension and potential limitations in movement.

Table 1. Muscle Spasm Evaluation Results

Muscle	T0	T1	T2	T3	T4	T5
M. Supraspinatus	Spasm	Spasm	Spasm	Reduced spasm	Reduced spasm	No spasm
M. Upper trapezius	Spasm	Spasm	Spasm	Reduced spasm	Reduced spasm	No spasm

The data in Table 1 demonstrate that supraspinatus spasm persisted until T3 and resolved by T5, while upper trapezius spasm decreased gradually and was absent by T5. Table 2 illustrates the pain intensity scores as measured using the Visual Analog Scale (VAS), offering a subjective yet reliable representation of the patient's perceived pain level. This measurement is essential for tracking changes in pain throughout the course of therapy.

Table 2. Visual Analog Scale (VAS) Evaluation Results

VAS	T0	T1	T2	T3	T4	T5
Resting pain	2	2	2	1	0	0
Movement pain	6	6	5	4	4	2.8
Palpation pain	5	5	4	2	1	0

As shown in Table 2, pain scores decreased over five sessions: resting pain from 2/10 to 0/10, movement pain from 6/10 to 2.8/10, and palpation pain from 5/10 to 0/10, indicating substantial pain relief. Table 3 summarizes the outcomes of the Manual Muscle Testing (MMT) performed on the right shoulder. This assessment provides an objective measure of muscle strength across specific movements, which is vital for evaluating functional capacity and rehabilitation progress.

Table 3. Manual Muscle Testing (MMT) of Right Shoulder

Movement	Muscle	T0	T1	T2	T3	T4	T5
Flexion	M. Deltoid anterior	4	4	5	5	5	5
Extension	M. Deltoid posterior	4	4	4	4	4	4
Adduction	M. Latissimus dorsi	4	4	4	4	4	4
Abduction	M. Supraspinatus	4	4	4	5	5	5
Horizontal adduction	M. Pectoralis major	4	4	4	5	5	5
Horizontal abduction	M. Deltoid middle	4	4	4	4	5	5
Internal rotation	M. Subscapularis	4	4	4	4	4	5
External rotation	M. Infraspinatus	4	4	4	4	4	4

MMT evaluation (Table 3) showed progressive strength improvement from T0 to T5 for most muscles. No significant change was observed in extensor, adductor, or external rotator muscles. Table 4 presents the measurements of the Active Range of Motion (AROM) of the right shoulder. These values reflect the patient's voluntary ability to move the joint without assistance, offering insight into functional independence and mobility.

Table 4. Active Range of Motion (AROM) of Right Shoulder

Movement	T0	T1	T2	T3	T4	T5
Flexion–Extension	S. 15°–0°–130°	S. 15°–0°–165°	S. 20°–0°–175°	S. 25°–0°–180°	S. 35°–0°–185°	S. 35°–0°–185°
Abduction–Adduction	F. 140°–0°–40°	F. 140°–0°–45°	F. 150°–0°–50°	F. 170°–0°–50°	F. 175°–0°–55°	F. 180°–0°–65°
Horizontal abduction–adduction	T. 120°–0°–60°	T. 120°–0°–45°	T. 120°–0°–55°	T. 125°–0°–45°	T. 130°–0°–40°	T. 135°–0°–35°
External–Internal rotation	R. 40°–0°–40°	R. 45°–0°–40°	R. 45°–0°–55°	R. 50°–0°–65°	R. 55°–0°–80°	R. 60°–0°–80°

Active ROM increased from T1 to T5 for all measured movements, indicating improved shoulder mobility. Table 5 provides the results for the Passive Range of Motion (PROM) assessment of the right shoulder, which evaluates the joint's mobility when moved by the examiner without active muscle contraction from the patient. This measurement is critical for identifying structural or soft tissue restrictions.

Table 5. Passive Range of Motion (PROM) of Right Shoulder

Movement	T0	T1	T2	T3	T4	T5
Flexion–Extension	S. 25°–0°–160°	S. 30°–0°–180°	S. 30°–0°–185°	S. 35°–0°–185°	S. 40°–0°–185°	S. 35°–0°–185°
Abduction–Adduction	F. 155°–0°–50°	F. 160°–0°–55°	F. 170°–0°–60°	F. 180°–0°–70°	F. 185°–0°–70°	F. 185°–0°–75°
Horizontal abduction–adduction	T. 125°–0°–55°	T. 125°–0°–55°	T. 130°–0°–40°	T. 130°–0°–40°	T. 135°–0°–30°	T. 135°–0°–35°
External–Internal rotation	R. 40°–0°–50°	R. 40°–0°–55°	R. 45°–0°–60°	R. 50°–0°–80°	R. 70°–0°–85°	R. 75°–0°–85°

PROM measurements (Table 5) demonstrated improvements in all directions from T1 to T5, reflecting enhanced passive shoulder mobility. Table 6 displays the scores obtained from the Shoulder Pain and Disability Index (SPADI) pain subscale. This section specifically focuses on the intensity of shoulder pain during various daily activities, reflecting the subjective impact of discomfort on the patient's quality of life.

Table 6. SPADI Pain Subscale Results

Pain Item	T0	T1	T2	T3	T4	T5
Pain at rest	2	2	1	0	0	0
Pain when lying on affected side	4	4	4	3	3	3
Reaching high	3	3	2	2	1	1
Touching back of neck	6	6	5	4	3	2
Pushing with affected hand	3	3	2	1	0	0
Total	17	17	14	10	7	6
Percentage	34%	34%	28%	20%	14%	12%

The SPADI pain subscale decreased from 34% at T0 to 12% at T5, indicating significant pain reduction during five functional activities. Table 7 outlines the results from the SPADI disability subscale, which assesses the degree of difficulty the patient experiences when performing common functional tasks. This information is crucial for determining the extent of activity limitation.

Table 7. SPADI Disability Subscale Results

Disability Item	T0	T1	T2	T3	T4	T5
Washing hair	2	2	1	1	1	0
Scrubbing back	7	7	6	4	3	3
Dressing	6	6	6	4	2	0
Buttoning shirt	0	0	0	0	0	0
Putting on pants	4	4	3	1	0	0
Reaching high shelf	3	3	2	2	1	1
Carrying 10 lbs	2	2	2	2	1	0
Retrieving from back pocket	7	7	7	4	3	1
Total	31	31	27	18	11	5
Percentage	36.9%	36.9%	33.8%	22.5%	13.8%	6.3%

Disability scores decreased from 36.9% at T0 to 6.3% at T5, indicating improved functional ability in eight daily activities. Table 8 reports the total SPADI score, combining the pain and disability subscale results into a comprehensive measure of shoulder-related functional impairment. This overall score provides a clear picture of the patient's condition and the effectiveness of the intervention over time.

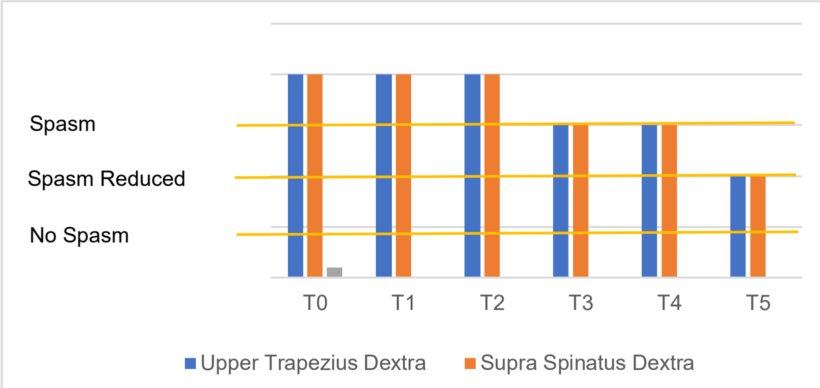
Table 8. SPADI Total Score

Total SPADI Score	T0	T1	T2	T3	T4	T5
Percentage	37.7%	37.7%	31.5%	21.5%	13.8%	8.5%

The total SPADI score decreased from 37.7% at T0 to 8.5% at T5, demonstrating overall improvement in pain and functional outcomes. During the intervention period, the patient attended all five therapy sessions and adhered to home exercises, including Codman pendulum exercises and shoulder-cervical stretching. No adverse events, such as increased pain or reactions to modalities, were observed. Post-therapy follow-up was not conducted due to time and scheduling constraints.

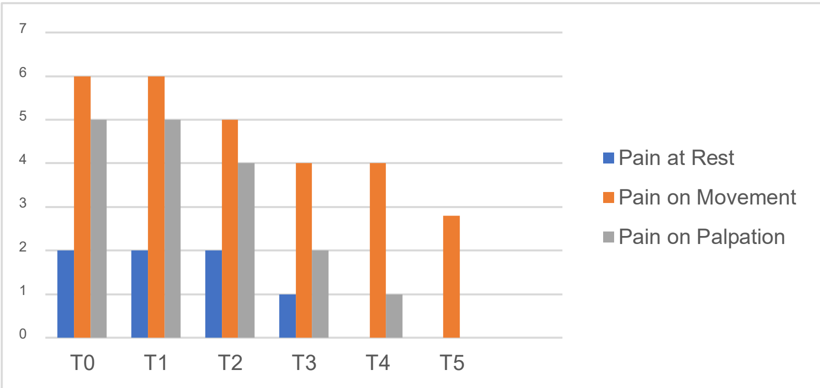
Discussion

This case report aimed to evaluate the effectiveness of a multimodal physiotherapy intervention—consisting of infrared (IR) therapy, transcutaneous electrical nerve stimulation (TENS), shoulder wheel exercises, and Codman pendulum exercises—in managing frozen shoulder due to adhesive capsulitis. The discussion interprets the observed changes across all clinical parameters, linking them to underlying physiological mechanisms and previous research findings. Improvements were analyzed in terms of muscle spasm reduction, pain relief, joint mobility, muscle strength, and functional capacity, with reference to relevant literature to contextualize the outcomes. The following subsections address each evaluation parameter in detail, highlighting both the clinical relevance and alignment of these results with prior studies.



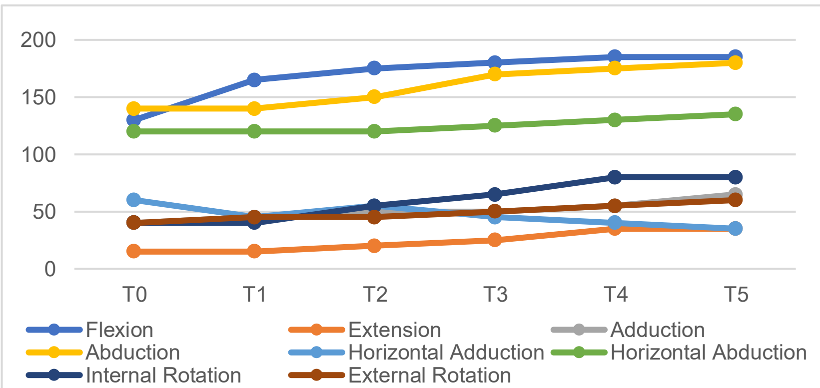
Graph 1. Muscle Spasm Evaluation

Based on the results (Graph 1), a reduction in spasm was observed in both the supraspinatus and upper trapezius muscles, progressing from presence of spasm at T0 to complete resolution by T5. Infrared (IR) therapy, as an electrotherapy modality, generates electromagnetic energy, which is absorbed by the tissues and produces thermal effects. The resulting warmth enhances superficial tissue vasodilation, promotes local metabolism, and induces relaxation of sensory nerve endings, thereby reducing muscle spasm.[11] These findings are consistent with the study by Anggraini Puji Safitri and Andung Maheswara Rakasiswi, demonstrating that three sessions of infrared therapy effectively reduce muscle spasm.[26]

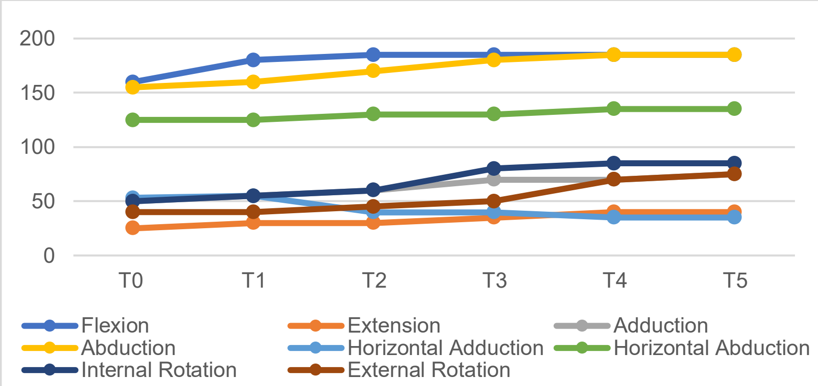


Graph 2. Pain Evaluation Using Visual Analog Scale (VAS)

Graph 2 shows that the patient experienced a decrease in pain across five sessions, as measured by the VAS. Transcutaneous electrical nerve stimulation (TENS) reduces pain by stimulating unmyelinated fine nerve fibers surrounding tissues and blood vessels. Pain reduction is achieved via the gate control mechanism, whereby stimulation of large A-type fibers inhibits transmission of nociceptive signals from small fibers to the brain, while simultaneously increasing local blood flow and stimulating endogenous analgesic production, including endorphins.[27] These results align with the study by Endang Susilaningsih and Farid Rahman, in which eight sessions of TENS reduced pain intensity by up to 80%.[28]

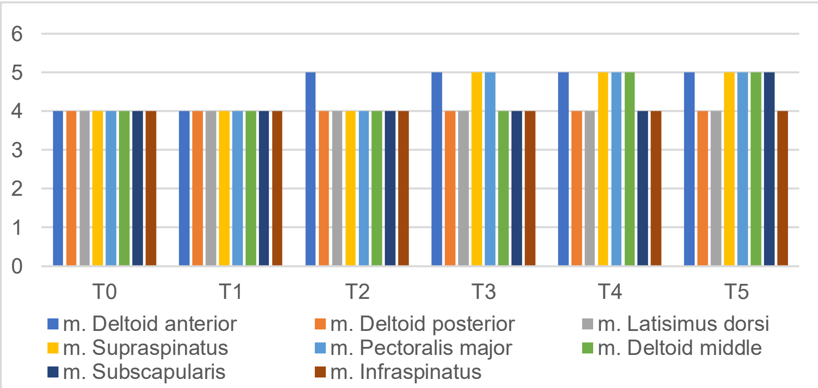


Graph 3. Active Range of Motion (AROM and PROM) of the Right Shoulder



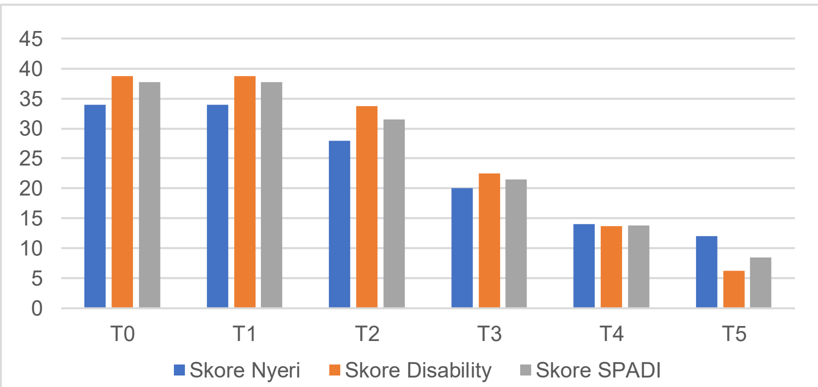
Graph 4. Passive Range of Motion (AROM and PROM) of the Right Shoulder

As illustrated in Graphs 3 and 4, both active and passive shoulder range of motion increased across all movements, although full extension, adduction, and external rotation were not achieved after five sessions. The exercise program included the shoulder wheel, which facilitates Free Active Exercise (FAE) by allowing patients to move each joint maximally and pain-free, maintaining tissue flexibility and improving functional mobility.27 This observation is consistent with Ekisha Gaba, Jasobanta Sethi, and Mona Bhardwaj, who reported a 50% improvement in shoulder range of motion following 14 sessions of shoulder wheel therapy.[29]



Graph 5. Manual Muscle Testing (MMT) of the Right Shoulder

Graph 5 indicates increased muscle strength in abductor, extensor, horizontal adductor, horizontal abductor, internal rotator, and external rotator groups over five sessions. Most muscles achieved grade 5 (normal, able to resist maximal resistance). Limited strength gains in certain muscle groups may be due to non-specific training targeting extensors and adductors. Muscle weakness in frozen shoulder patients often results from pain-induced movement avoidance. Therefore, as pain decreases, muscle strength is expected to improve. Codman pendulum exercises were implemented to prevent joint adhesions while leveraging gravity to mobilize the humeral head and enhance shoulder muscle strength.[30] These results correspond with the findings of Yeni Tri Nurhayati, Aulia Kurnianing Putri, et al., who reported improved flexion and internal rotation strength after four sessions of Codman pendulum exercises, with MMT



Graph 6. Functional Outcomes Using SPADI

Graph 6 demonstrates improved functional capacity, as indicated by the SPADI scores. Pain subscale decreased from 34% at T0 to 12% at T5, disability subscale decreased from 38.75% to 6.25%, and total SPADI score declined from 37.67% to 8.46%. The combination of reduced pain, increased muscle strength, decreased spasm, and enhanced range of motion translated into improved functional activities. These results suggest that targeted physiotherapy interventions are highly effective in supporting recovery in patients with frozen shoulder.

In conclusion, the therapeutic program combining infrared, TENS, shoulder wheel exercises, and Codman pendulum exercises demonstrated significant improvements in pain reduction, muscle strength, joint mobility, and functional ability in a patient with adhesive capsulitis. This supports the role of multimodal physiotherapy in the rehabilitation of frozen shoulder patients.

The results of this case report are consistent with previous research demonstrating the effectiveness of combined physiotherapy modalities in managing frozen shoulder due to adhesive capsulitis. Infrared therapy has been shown to reduce muscle spasm through local vasodilation and relaxation of sensory nerve endings, supporting findings by Anggraini Puji Safitri and Andung Maheswara Rakasiswi, who reported reduced muscle spasm after three sessions of infrared therapy.[26] Similarly, the analgesic effect of transcutaneous electrical nerve stimulation (TENS) observed in this case aligns with previous studies, which indicate that TENS reduces pain via the gate control mechanism and endorphin release, as reported by Endang Susilaningsih and Farid Rahman. [27,28]

Moreover, improvements in active and passive range of motion (ROM) through shoulder wheel exercises and Codman pendulum exercises are comparable to findings by Ekisha Gaba et al. and Yeni Tri Nurhayati et al., which reported increased shoulder mobility and muscle strength after structured exercise interventions. [29,30]

Several limitations should be considered. First, this study is a single-case report, which limits generalizability to the broader population of patients with frozen shoulder. Second, the therapy program was conducted over only five sessions in two weeks, which may not fully capture long-term functional recovery or relapse potential. Third, there was no follow-up assessment after the completion of therapy, so sustained effects of the interventions remain unknown. Lastly, certain exercises may not have fully targeted all shoulder muscle groups, potentially explaining the incomplete improvement in specific movements such as extension, adduction, and external rotation.

Clinically, the findings suggest that a multimodal physiotherapy program—including infrared therapy, TENS, shoulder wheel exercises, and Codman pendulum exercises—can effectively reduce pain, decrease muscle spasm, improve ROM, and enhance functional abilities in patients with frozen shoulder due to adhesive capsulitis. Physiotherapists may consider incorporating these modalities into routine treatment plans, with adjustments based on patient tolerance and progression.

For future research, larger-scale studies with control groups and extended follow-up periods are recommended to validate these findings and determine long-term outcomes. Investigating the comparative effectiveness of specific exercise protocols targeting underactive or restricted muscle groups could further optimize therapy strategies for adhesive capsulitis.

Conclusion

After undergoing transcutaneous electrical nerve stimulation (TENS), infrared therapy, and exercise therapy, a patient diagnosed with frozen shoulder due to adhesive capsulitis received five therapy sessions over two weeks. The treatment resulted in reduced muscle spasm, improved active range of motion in the right shoulder, decreased pain, increased shoulder muscle strength, and enhanced functional activity of the affected shoulder. Although improvements were evident, full recovery was not achieved, likely due to time constraints for both the patient and the therapist. Therefore, additional education and a home exercise program, progressing to the strengthening phase, were recommended beyond the scope of this study. Further therapy is needed to maximize outcomes and facilitate full recovery in such cases.

Author Contribution

Sofia Adinda Salfa contributed to the conception and design of the study, data collection, data analysis, and manuscript drafting. Triyanita Maya contributed to critical revision of the manuscript, supervision, and final approval of the version to be published. All authors read and approved the final manuscript.

Acknowledgments

The authors would like to express their sincere gratitude to all individuals who provided support during the research and manuscript preparation. Special thanks are extended to Ms. Mya Triyanita, S.Tr.Kes., M.Fis, as the supervising lecturer, for her guidance and valuable advice throughout the research and manuscript development. Appreciation is also extended to all faculty members and staff of the Diploma 3 Physiotherapy Program at Universitas Widya Husada for their knowledge, guidance, and support during the course of study. This manuscript was prepared and published to fulfill one of the requirements for obtaining the Associate Degree in Physiotherapy.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

Funding Sources

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

Ethics Statement

This study is a case report involving a single patient. Written informed consent was obtained from the patient for publication of this case and any accompanying images. Ethical approval was not required for this type of study according to the institutional guidelines of Widya Husada University Semarang.

References

1. Putra YW, Rizqi AS. Index massa tubuh (IMT) mempengaruhi aktivitas remaja putri SMP Negeri 1 Sumberlawang. Gaster. 2018;16(1):105–115.
2. Bintang SSBS, Berampu S, Saleha M, Zannah M, Sinuhaji S, Silaban LS. Seminar pemberian Codman pendular exercise terhadap peningkatan lingkup gerak sendi penderita frozen shoulder di Rumah Sakit Grandmed Lubuk Pakam. J Pengmas Kestra. 2021;1(1):163–167.
3. Purnomo D, Amin AA, Purwanto. Microwave diathermy, manual therapy and exercise therapy effect in frozen shoulder et causa capsulitis adhesiva. J Fisioter Rehabil. 2017;1(2):71–72.
4. Kurniawan R. Penatalaksanaan fisioterapi pada frozen shoulder. J Innov Knowl. 2021;1:435–436.
5. Cho CH, Bae KC, Kim DH. Treatment strategy for frozen shoulder. Clin Orthop Surg. 2019;11:249–257.
6. Le HV, Lee SJ, Nazarian A, Rodriguez EK. Adhesive capsulitis of the shoulder: review of pathophysiology and current clinical treatments. Shoulder Elbow. 2017;9:75–84.
7. Ardilla AMS, Torto SA. Capsulitis adhesiva. Trabajo de revisión. Medigraphic. 2017;62:37–43.
8. Suharti A, Sunandi R, Abdullah F. Penatalaksanaan fisioterapi pada frozen shoulder sinistra terkait hiperintensitas labrum posterior superior di Rumah Sakit Pusat Angkatan Darat Gatot Soebroto. J Vokasi Indonesia. 2018;6:51–65.
9. Vance CGT, Dailey DL, Rakel BA, Sluka KA. Using TENS for pain control: the state of the evidence. Pain Manag. 2014;4:197–209.
10. Aryanto FB. Analisis kinerja infrared sensor dalam memberikan perintah terhadap komponen IC gerbang logika pada palang pintu otomatis. J Penelit Rumpun Ilmu Teknik. 2022;1(4):116–127.
11. Abdillah OZ, Putri AK, Nugraha DA, Putri AMA. Pengaruh modalitas infrared dan terapi latihan hold relax exercise dalam mengurangi nyeri dan meningkatkan kemampuan fungsional pasien tendinitis bicipitalis. Physiother Health Sci. 2021;3:70–71.
12. Putri AR, Wulandari ID. Penatalaksanaan fisioterapi kondisi frozen shoulder e.c tendinitis muscle rotator cuff dengan modalitas short wave diathermy, active resisted exercise dan Codman pendular exercise. PENA. 2018;32:[pages not available].
13. Rossi LA, Bertona A, Tanoira I, Ranalletta M. Capsulitis adhesiva de hombro: conceptos actuales. Relart. 2021;28:193–194.
14. Rosinta A. Penatalaksanaan fisioterapi dengan microwave diathermy, terapi latihan shoulder wheel dan finger ladder pada pasien frozen shoulder dextra et causa capsulitis adhesive. 2022 May:19–23.
15. Faridah U, Kuati S. Pengaruh ROM exercise bola karet terhadap kekuatan otot genggam pasien stroke di RSUD RAA Soewondo Pati. Indonesia J Perawat. 2018;3(1):36–43.
16. Nugraha NH, Tianing NW, et al. Kombinasi intervensi infrared dan contract relax stretching lebih efektif daripada infrared dan slow reversal dalam meningkatkan lingkup gerak sendi leher pada pemain game online di BMT NET Bajera Tabanan. Maj Ilm Fisioter Indonesia. 2016;4(2):[pages not available].
17. Garcia SC, Dueweke JJ, Mendias CL. Optimal joint positions for manual isometric muscle testing. J Sport Rehabil. 2016;25(4):[pages not available].
18. Sanjaya YA, Sari FL, Taufiqurrahman A. Tendinitis supraspinatus pada ibu usia 59 tahun. J Ilmiah Maksitek. 2022;7:1–9.
19. Sgroi M, Loitsch T, Reichel H, Kappe T. Diagnostic value of clinical tests for supraspinatus tendon tears. Arthroscopy. 2018;34(8):2326–2333.
20. Labrum H, Superiordi P, Sakit R, Hiperintensitas P, Posterior L, Rumah S, et al. Penatalaksanaan fisioterapi pada frozen shoulder sinistra terkait hiperintensitas labrum posterior superiordi Rumah Sakit Pusat Angkatan Darat Gatot Soebroto. 2018;6:[pages not available].
21. Cotter EJ, Hannon CP, Christian D, Frank RM, Bach BR. Comprehensive examination of the athlete's shoulder. Sports Health. 2018;10(4):366–375.
22. Jannah AHN. Penatalaksanaan transcutaneous electrical nerve stimulation, terapi manipulasi dan terapi latihan pada frozen shoulder sinistra di RST dr. Soedjono Magelang. Universitas Muhammadiyah Surakarta. 2017;[pages not available].
23. Hengwei M. Intervention of Taichi Softball with infrared light therapy for chronic shoulder periarthritis. Int J Health Pharm Med. 2021;2(3):12–24.
24. Selviani I, Okilanda A, Resmana R. The effectiveness of Codman pendulum exercise and scapular mobilization to reduce pain in frozen shoulder condition. 2023;6:554–560.
25. Serg SGF, Ashem HN, Waked ISAE, Elghani SEA, Elnour NA. Efficacy of muscle energy technique on shoulder adhesive capsulitis post mastectomy. Int J Membr Sci Technol. 2023;10(4):1637–1644.
26. Safitri AP, Rakasiwi AM. Penatalaksanaan fisioterapi pada kondisi Bell's palsy sinistra dengan modalitas infrared, electrical stimulation arus faradik dan terapi latihan di RSUD Bendan Kota Pekalongan. 2022;2(1):[pages not available].
27. Yudiansyah Ika GB. Perbedaan penambahan transcutaneous electrical nerve stimulation pada heel slide exercise terhadap gangguan gerak dan fungsi lutut akibat osteoarthritis genu di Poliklinik Fisioterapi Rumah Sakit Muhammadiyah Palembang. Masker Medika. 2018;6:542–546.
28. Susilaningsih E, Rahman F. Case study: the influence of ultrasound and TENS on increasing the range of motion of joint in frozen shoulder due to rotator cuff. 2021;[pages not available].
29. Gaba E, Sethi J, Bhardwaj M. Effect of interferential therapy over ultrasound therapy with common protocol of manual therapy in Grade II frozen shoulder. J Exerc Sci Physiother. 2020;16(2):23–31.
30. Nurhayati YT, Putri AK, et al. Kombinasi modalitas ultrasound diathermy dengan Codman pendulum exercise, towel exercise serta finger walk exercise pada frozen shoulder dextra. JOHC. 2023;4(1):1–5.