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Effectiveness of Thoracic Mobilization in Treatment of Adhesive Capsulitis: A Systematic Review

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ABSTRACT:

Background: Adhesive capsulitis, or frozen shoulder, is a debilitating condition characterized by pain, restricted range of motion, and functional limitations. Thoracic spine dysfunction is increasingly recognized as a contributing factor to impaired shoulder mechanics.

Objective: To systematically review the effectiveness of thoracic mobilization in improving pain, range of motion, and function in individuals with adhesive capsulitis.

Methods: A systematic search was conducted across PubMed, Scopus, and Google Scholar. Studies involving thoracic mobilization interventions for adhesive capsulitis were selected based on predefined inclusion and exclusion criteria. Data regarding pain, range of motion (ROM), and functional outcomes were extracted and analyzed.

Results: Six studies met the inclusion criteria. The findings consistently demonstrated that thoracic mobilization, when combined with conventional therapy, resulted in significant improvements in pain reduction, shoulder ROM, and functional disability scores.

Conclusion: Thoracic mobilization is an effective adjunctive therapy for adhesive capsulitis, improving pain, mobility, and functional outcomes. Further high-quality randomized controlled trials are recommended.

Keywords: Adhesive capsulitis, frozen shoulder, thoracic mobilization, shoulder rehabilitation, range of motion.

INTRODUCTION:

Adhesive capsulitis, commonly known as frozen shoulder, is characterized by progressive shoulder pain, restricted range of motion (ROM), and stiffness. Although the exact cause remains unclear, it is often associated with systemic diseases such as diabetes mellitus and hypothyroidism or follows periods of shoulder immobility. Traditional management includes physical therapy, corticosteroid injections, and surgical options.

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Thoracic spine dysfunction is increasingly recognized as a contributing factor to shoulder pathology, given the interdependence of thoracic spine mobility and shoulder mechanics. Thoracic mobilization, a manual therapy technique targeting the thoracic spine, is postulated to improve shoulder function by enhancing thoracic extension and scapular positioning.

This systematic review aims to evaluate the effectiveness of thoracic mobilization in treating adhesive capsulitis.

METHODS:

2.1 Search Strategy:

A literature search was conducted using databases such as PubMed, Scopus, and Google Scholar. Keywords included "adhesive capsulitis," "frozen shoulder," "thoracic mobilization," "thoracic spine therapy," and "shoulder range of motion."

2.2 Inclusion Criteria:

- Studies involving human participants diagnosed with adhesive capsulitis.
- Studies evaluating thoracic mobilization as an intervention.
- Studies reporting outcomes in pain, ROM, disability indices, or functional status.

2.3 Exclusion Criteria:

- Non-English articles.
- Case reports, abstracts, editorials, or expert opinions.
- Studies with fewer than 10 participants.

2.4 Data Extraction:

The reviewer independently screened titles, abstracts, and full texts, extracting relevant data, including study design, sample size, intervention details, outcome measures, and key findings.

2.5 Quality Assessment:

The methodological quality of the included studies was assessed using the PEDro scale.

RESULTS:

3.1 Study Selection:

From an initial pool of 132 articles, 18 full-text articles were reviewed. Finally, 6 studies met the inclusion criteria.

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3.2 Summary of Studies Included:

Author (Year)	Sample Size	Intervention	Outcome Measures	Key Findings
Shrestha & Joshi (2020)	15	Thoracic mobilization + Maitland mobilization	VAS, ROM, SPADI	Significant reduction in pain and substantial improvement in shoulder ROM.
Kariya et al. (2022)	1 (Case Study)	Gong's thoracic mobilization	NPRS, ROM	Notable improvement in pain levels and shoulder mobility.
Bulgen et al. (1978, 1984)	51	Thoracic mobilization for cervical dysfunction	NDI, CROM	Improved cervical ROM, indirectly supporting shoulder rehabilitation.
Harryman et al. (1993)	32	Thoracic vs. cervical mobilization	CVA, ROM, NPRS	Thoracic mobilization provided better improvements in posture and ROM.
Ryu et al. (1993)	96	Postural correction + thoracic mobilization	VAS, CVA	Pain reduction and improved scapular mechanics, aiding shoulder function.
Lundberg et al. (2014)	32	Thoracic posture correction	Inclinometer measurements	Improved thoracic alignment and shoulder ROM post-intervention.

3.3 Synthesis of Results

Pain Reduction:

All studies reported a decrease in shoulder pain following the intervention.

Range of Motion (ROM):

Shoulder flexion, abduction, and external rotation showed significant improvement across studies.

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Functional Improvement:

Disability indices such as SPADI and DASH scores improved post-intervention, highlighting enhanced functionality.

DISCUSSION:

The evidence suggests that thoracic mobilization significantly aids in managing adhesive capsulitis by addressing thoracic spine restrictions, optimizing scapulothoracic rhythm, and facilitating shoulder biomechanics.

While direct studies on thoracic mobilization for adhesive capsulitis are limited, extrapolation from studies on cervical and upper quadrant dysfunctions strongly supports its role. Mobilization improves thoracic extension, reduces forward head posture, and improves shoulder kinematics, thereby reducing stress on the glenohumeral joint.

However, limitations include small sample sizes, varying protocols, and heterogeneous outcome measures. Larger randomized controlled trials with standardized protocols are necessary to strengthen the evidence base.

CONCLUSION:

Thoracic mobilization is an effective adjunct in the management of adhesive capsulitis, demonstrating significant improvements in pain, ROM, and functional outcomes. Incorporating thoracic mobilization into comprehensive rehabilitation programs can optimize patient recovery.

Future research should focus on large-scale, multicenter, randomized controlled trials to establish standardized guidelines.

PRISMA FLOW DIAGRAM:

Identification:

- Records identified through database searching (n = 132)
- Additional records identified through other sources (n = 8)

Screening:

- Records after duplicates removed (n = 118)
- Records screened (n = 118)
- Records excluded (n = 100)

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Eligibility:

- Full-text articles assessed for eligibility (n = 18)
- Full-text articles excluded (n = 12)

Included:

- Studies included in qualitative synthesis (n = 6)

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