

## Exercises for Periarthritis Shoulder/ Adhesive Capsulitis/ Frozen Shoulder - An Overview

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### Abstract

This short communication sought to perform an overview of research on efficacy of exercises in periarthritis shoulder/ adhesive capsulitis/ frozen shoulder. The included evidence demonstrated efficacy of exercises either individually (active range of motion exercises) or as comparison between types of exercise (scapulothoracic versus glenohumeral), comparison between exercises and other conservative treatments (supervised neglect, Maitland mobilization), exercises administered in combination (stretching and as a home exercise prescription an adjunct to other orthopaedic procedures such as hydroplasty, distension arthrography and manipulation under anesthesia. Although, limited evidence existed for its individual use, combination with other treatments might be suggested as a viable and cost-effective treatment option in orthopaedic rehabilitation of people with frozen shoulder.

**Keywords:** Shoulder Rehabilitation; Shoulder Orthopaedics; Orthopaedic Rehabilitation; Exercise Therapy.

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This short communication sought to perform an overview of research on efficacy of exercises in periarthritis shoulder/ adhesive capsulitis/ frozen shoulder.

#### *Active Range of Motion Exercise*

Lin et al [1] evaluated and compared the effects of an intra-articular injection of corticosteroid and lidocaine versus active ROM exercise in the treatment of primary adhesive capsulitis in 79 overweight and normal-weight patients. The ROM exercises were started immediately after injection and was performed four times daily. Both groups had improved Constant scores, but the responses were better in normal weight group at 8 weeks.

#### *Scapulothoracic Versus Glenohumeral Exercises*

Celik [2] compared the effects of two different

exercise programs on pain, range of motion (ROM), and function in 30 patients with frozen shoulder. Supervised exercises were given for 6 weeks (30 sessions) in addition to transcutaneous electrical nerve stimulation, cold pack, and nonsteroidal anti inflammatory drugs; and glenohumeral ROM exercises. The second group received scapulothoracic exercises in addition to above. The scapulothoracic exercises given in addition were better than glenohumeral ROM exercises for decreasing pain and increasing ROM in patients with frozen shoulder.

#### *Active Stretching and Supervised Neglect Exercise*

Lubis and Lubis [3] compared the serum levels of proteins related to frozen shoulder, such as matrix metalloproteinase (MMP), tissue inhibitor of metalloproteinase (TIMP) and transforming growth factor-beta (TGF- $\beta$ ) before and after physical exercise

active stretching and gentle thawing in frozen shoulder and normal subjects who were randomly divided into intensive stretching and supervised neglect groups. "Increased MMPs and decreased TIMPs were significantly greater after intensive stretching than after supervised neglect exercise. Abbreviated Constant score improvement was significantly higher in intensive stretching group than in supervised neglect group."

#### *Maitland Mobilization and Exercises*

Maricaret al [4] performed a single-case design (ABCBC) to investigate the responses for baseline phase (phase A), exercises (phase B), and exercise plus mobilization (phase C) where the phase C treatment included: Maitland "accessory" glenohumeral mobilization techniques, anteroposterior mobilization in shoulder flexion and longitudinal caudad in shoulder abduction. All phases showed improvements in SPADI and ROM assessments, but Phase C showed better changes and adding exercise to mobilization was also cost-effective.

#### *Exercises Following Hydroplasty*

Callinan et al [6] performed a retrospective review to evaluate the effectiveness of a hydraulic distention technique (hydroplasty) combined with a therapy program for treatment of 60 patients with idiopathic frozen shoulder. The active range of motion improved for all the shoulder movements: flexion 28 degrees, abduction 42 degrees, internal rotation 22 degrees, and external rotation 26 degrees.

#### *Distension Arthrography and Home Exercise*

Piotte et al [6] measured the effect of repeated distension arthrographies combined with a home exercise program on disability, pain, range of motion, and pain-free static strength in 15 subjects with adhesive capsulitis of the shoulder. The distension arthrography was performed thrice, with steroid at 3-wk intervals followed by a home exercise prescription. The effects were procedure-specific, without an added value of third, and were not exercise-specific.

#### *Manipulation under Anesthesia (MUA) with Home Exercises (HEX) Versus Home Exercises Alone*

Kivimäki et al [7] compared MUA with HEX versus HEX alone in 125 patients who were randomly assigned to the manipulation group (n = 65) or control group (n = 60). Both groups were instructed in specific therapeutic exercises and clinical data were

gathered at baseline and at 6 weeks and 3, 6, and 12 months after randomization. There were no differences between the two groups in pain or working ability. The MUA group had slightly better improvements in the range of movement compared to HEX group.

The included evidence demonstrated efficacy of exercises either individually (active range of motion exercises) or as comparison between types of exercise (scapulothoracic versus glenohumeral), comparison between exercises and other conservative treatments (supervised neglect, Maitland mobilization), exercises administered in combination (stretching and as a home exercise prescription an adjunct to other orthopaedic procedures such as hydroplasty, distension arthrography and manipulation under anesthesia. Although, limited evidence existed for its individual use, combination with other treatments might be suggested as a viable and cost-effective treatment option in orthopaedic rehabilitation of people with frozen shoulder.

#### **References**

1. Lin HH, Huang TF, Ma HL, Liu CL. Body mass index and active range of motion exercise treatment after intra-articular injection in adhesive capsulitis. *J Chin Med Assoc.* 2013; 76(4): 225-8.
2. Celik D. Comparison of the outcomes of two different exercise programs on frozen shoulder. *Acta Orthop Traumatol Turc.* 2010; 44(4): 285-92.
3. Lubis AM, Lubis VK. Matrix metalloproteinase, tissue inhibitor of metalloproteinase and transforming growth factor-beta 1 in frozen shoulder, and their changes as response to intensive stretching and supervised neglect exercise. *J Orthop Sci.* 2013 Apr 19. [Epub ahead of print]
4. Maricar N, Shacklady C, McLoughlin L. Effect of Maitland mobilization and exercises for the treatment of shoulder adhesive capsulitis: a single-case design. *Physiother Theory Pract.* 2009; 25(3): 203-17.
5. Callinan N, McPherson S, Cleaveland S, Voss DG, Rainville D, Tokar N. Effectiveness of hydroplasty and therapeutic exercise for treatment of frozen shoulder. *J Hand Ther.* 2003; 16(3): 219-24.
6. Piotte F, Gravel D, Moffet H, Fliszar E, Roy A, Nadeau S, et al. Effects of repeated distension arthrographies combined with a home exercise program among adults with idiopathic adhesive capsulitis of the shoulder. *Am J Phys Med Rehabil.* 2004; 83(7): 537-46.
7. Kivimäki J, Pohjolainen T, Malmivaara A, Kannisto M, Guillaume J, Seitsalo S, et al. Manipulation under anesthesia with home exercises versus home exercises alone in the treatment of frozen shoulder: a randomized, controlled trial with 125 patients. *J Shoulder Elbow Surg.* 2007; 16(6): 722-6.