Russell S, Jariwala a, et al. A blinded, randomized, controlled trial assessing conservative management strategies for frozen shoulder. J Shoulder Elbow Surg 2014; 23, 500-507.

Design: randomized clinical trial

Study question: For patients with primary frozen shoulder, are there therapeutic differences between exercise classes plus home exercises, individual physical therapy plus home exercises, and home exercises alone?

Population/sample size/setting:

- 75 adults (35 women, 40 men, mean age 51) at an upper limb physiotherapy facility in the UK
- Eligibility criteria were age 40 to 70, local shoulder pain of spontaneous onset for at least 3 months, marked loss of active and passive shoulder motion, with at least 50% loss of external rotation, and normal glenohumeral x-rays
- Exclusion criteria were pathologic radiographic findings, clinical evidence of cervical spine disease, significant trauma to the shoulder, local steroid injection or any PT intervention in the past 3 months, medical events such as stroke, inflammatory joint disease of the shoulder, thyroid disease, any coronary event, bilateral frozen shoulder due to possible systemic disease, prior surgery, dislocation, or fracture, and active medicolegal involvement

Main outcome measures:

- 850 patients were referred to the study, but 705 of them did not fit the study inclusion criteria, and 70 declined to participate; 75 patients remained for randomization
- Randomization was to exercise class (n=25), individual multimodal PT (n=24), or exercise class alone (n=26)
    - Exercise class met twice weekly for 6 weeks, with patients performing 12 exercises during a 50 minute session
        - Patients did stick, pulley, and ball techniques, and were given a sheet to ensure compliance (Appendix 1, attached)
        - The patients also received the same home exercise booklet which was given to all participants (Appendix 2, attached)
    - Individual PT group met for individual treatment twice weekly for 6 weeks with a therapist experienced in musculoskeletal physiotherapy, but no standardization was attempted
    - The home exercise group received instruction on the specific exercises in the exercise booklet (Appendix 2)
- Outcomes were measured at baseline and again at 6 weeks, 6 months, and 1 year
- Primary outcome was the Constant score; secondary outcomes were the Oxford Shoulder score, the SF-36, the Hospital Anxiety and Disability Scale

(HADS), and range of motion (ROM) for forward elevation and external rotation
    - An improvement of 15 points in the Constant score was considered clinically important
- All three groups had clinically important improvements in the Constant and Oxford scores between baseline and all followup periods
    - For the exercise class, the baseline Constant score was 37.5 ; the 6 week, 6 month, and one year scores were 71.5, 82.0, and 88.1
    - For the individual PT group, the baseline Constant score was 40.2 ; the 6 week, 6 month, and one year scores were 62.9, 70.8, and 77.8
    - For the home exercise group, the baseline Constant score was 41.7; the 6 week, 6 month, and one year scores were 52.0, 64.8, and 72.0
- There was a statistically significant advantage of the exercise class compared to both the individual PT and the home exercise groups; these differences exceeded 15 points for the comparison of exercise class and home exercise, but were less than 15 points for the comparison of exercise class and individual PT
    - The individual PT group also had significantly greater improvements in the Constant and Oxford scores compared with the home exercise group
- Both forward elevation and external rotation increased significantly for all three groups; the two groups which received PT had greater ROM improvements than the home exercise group
- For the domains of the SF-36, the groups did not greatly differ from one another, except for the bodily pain domain, where the exercise group improved more than the home exercise group
- No patient underwent surgery during the study

Authors' conclusions:

- A group exercise class provides superior outcomes for frozen shoulder in comparison with home exercise and individual PT, but individual PT is a good alternative intervention
- A trial of PT should be done for stiffness-predominant frozen shoulder before more invasive treatment are done
- The fact that only 17% (145 of 805) patients referred to the study met the inclusion criteria suggests that there is a need to educate primary care physicians in the clinical diagnosis of frozen shoulder; many of the referred patients probably had rotator cuff problems instead of frozen shoulder
- The lack of difference for the SF-36 scores suggests that the SF-36 may be less sensitive to change in upper extremity problems than the shoulder-specific scores; the SF-36 has a focus on lower limb aspects of musculoskeletal disease

Comments:

- Methodologically the study is sound, and the method of analysis is a good one for longitudinal data, with nearly complete followup and blinded assessment of outcomes

- The size of the exercise classes is not specified, and the optimum number of patients for such classes is not discussed
- The home exercise group had some instruction in the booklet, but it is not clear how the instruction was given, and it is not clear how much instruction was given before the patients were sent home with the booklets

Assessment: High quality study with good evidence that in the setting of primary frozen shoulder, supervised physiotherapy and home exercises alone lead to clinically important improvements in shoulder pain and function, and that an exercise class is superior to home exercise alone. An exercise class has a marginal advantage over individualized physiotherapy but both of these interventions are good alternatives

Appendix 1

FROZEN SHOULDER STUDY

Name ……..
Patient ID ……

These exercises are aimed at improving range of movement. Please use this sheet to record your progress.

DATE:								
1	Pulleys	Forwards 2’						
		Backwards 2’						
2	Flexion / Horizontal Add	Over Head 2”						
		Across Body 2”						
3	Ball Rolling (time)	Forwards 2’						
		Sideways 2’						
4	Medial Rot/ Extension	Towel + Rope						
		Stick behind back						
5	Lateral Rotation Lying with stick	1	30^o					
		2	60^o					
		3	90^o					
6	Abduction Stretch	4	Stick					
		2	Doorway					
7	Scapula Setting	1	0^o					
		2	60^o					
8	Trunk rotation	1	Chair					

		2	Ball					
9	Trunk side flx rot	Ball Rolling side to side						
10	Proprioception/Bal	Circular ball rolling						

Ashton, Leigh & Wigan
Primary Care Trust

In conjunction with

Wrightington, Wigan & Leigh NHS Trust

PHYSIOTHERAPY SERVICE

FROZEN SHOULDER/ ADHESIVE CAPSULITIS

PATIENT ADVICE AND LIAISON SERVICE (PALS)

The PALS are able to provide 'on the spot' help and advice to patients, carers, friends and families. We will listen to you and provide you with relevant information and support, to help resolve any concerns or problems you may have that you do not wish to discuss with a member of staff, as quickly and efficiently and confidentially as possible.

If you have a concern, or need help or information, you can contact the PALS and we will do our best to help you. We can be contacted Monday to Friday, 9.00 am to 5.30 pm on 01942 822376 – outside these hours there is an answer phone service available.

Alternatively, we can be contacted by bleep. Just ring the switchboard on the main Leigh Hospital number (01942 672333) and ask them to bleep us on 2376.

If they are unable to allay your concerns and you feel you would like to take your complaint further, you can write to:

The Complaints Manager
Ashton, Leigh & Wigan PCT

Bryan House
Standishgate

Wigan

WN1 1AH

Author: Sarah Russell

Review Date: May 2008

WHAT IS FROZEN SHOULDER/ADHESIVE CAPSULITIS?

Frozen shoulder is an extremely painful condition in which the shoulder is completely or partially unmovable. Frozen shoulder often starts without any serious cause but may be triggered by a mild injury to the shoulder. The condition goes through three phases, starting with pain, then stiffness and finally a stage of resolution as the pain eases and most of the movement returns. This process may take an awfully long time, sometimes as long as two or more years.

Three Stages of Development

Typically frozen shoulder develops slowly, and in three stages:

- **Stage One:** Pain increases with movement and is often worse at night. There is a progressive loss of motion with increasing pain. This stage lasts approximately 2 to 9 months.

- **Stage Two:** Pain begins to diminish; however the range of motion is now much more limited, as much as 50% less than in the other arm. This stage may last 4 to 12 months.

- **Stage Three:** The condition may begin to resolve. Most patients experience a gradual restoration of motion over the next 12 to 42 months.

TREATMENT

Many different treatments have been tried varying from surgery to physiotherapy or advice alone. At present it is not known which of these is the most effective.

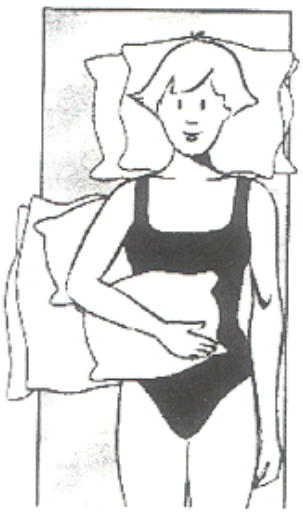
SELF HELP

Analgesia or Painkillers

Heat

Resting Positions

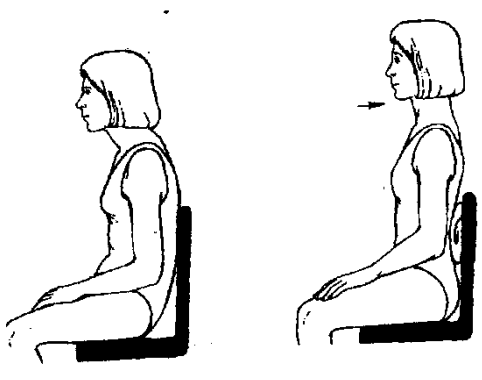
Sleep can be uncomfortable if you try and lie on your affected arm. We would recommend that at first you lie on your back or on the opposite side. If you lie on your back, support your affected arm. Make sure that your elbow is above your shoulder. If you are on your side then a folded pillow supports your affected arm from your elbow to your wrist.



Posture

Poor posture can aggravate your symptoms. It is advisable to:

- Always try and maintain an upright position. This applies to standing, walking or sitting.
- Maintain the lumbar lordosis in all positions.
- Change position frequently.
- Avoid slouching.



Sitting

- When sitting, maintain the lumbar lordosis.
- Use a rolled up towel and place in the bottom of your back.
- Use a chair with some lumbar support, if possible.
- Use a straight back, firm chair.
- Use a chair that is not too low.
- When sitting on an easy chair or settee, use your lumbar roll and change position.

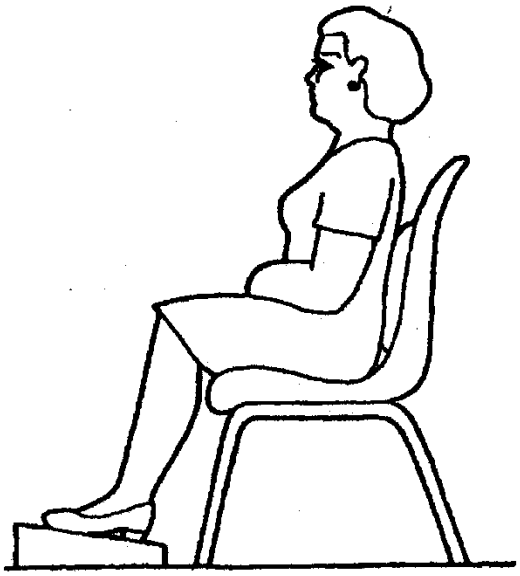
- **DO NOT SLOUCH**

- Avoid crossing legs or curling legs underneath.

- Sit straight in a chair, not leaning to one side.

- Do not sit for prolonged periods; get up and move around.

- Take care when getting in and out of a chair.
  Stand in front of the chair, bend the knees at the same time and place the hands behind you to rest on the seat or arms of the chair.



TENS MACHINES

Transcutaneous electrical nerve stimulator (TENS) is effective for many people in the reduction of pain.

By passing electrical pulses through the skin which pass up to the brain. TENS can help block the pain gate. It also works by increasing the level of endorphins released.

There are many machines on the market and it is advisable that you try one on loan before purchasing to see if it helps you.

Examples Of Companies

- Physio-Med Services,
  7-11 Glossop Brook Industrial Park,

  Glossop.

  SK13 7AJ

  Tel: 01457 860444

- Body Clock Healthcare Ltd.,
  108 George Lane,

  South Woodford,

  London.

  E18 1AD

  Tel: 0208 5329595

EXERCISES

The following exercises should be done 10-15 repetitions, 4 times a day.

1. Sit or stand with good posture.

   Keeping face forward,
   tip ear towards shoulder.

   Hold for 10 seconds.

   Repeat to other side.

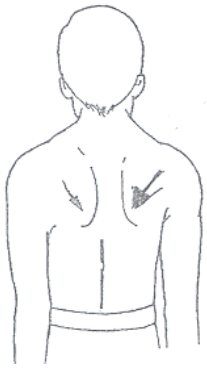
2. Sit or stand with good posture.

   Turn head to one side then the other.

   Hold for 10 seconds.

3. Assume upright posture with shoulders relaxed.

   Move affected shoulder blade down and towards opposite hip.

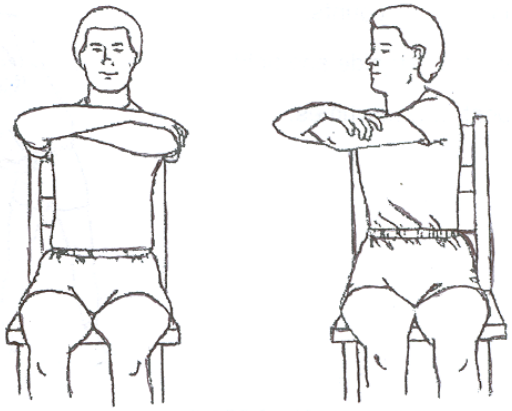


4. Sitting, arms crossed at shoulder height. Turn to right.

   Hold for 10 seconds.

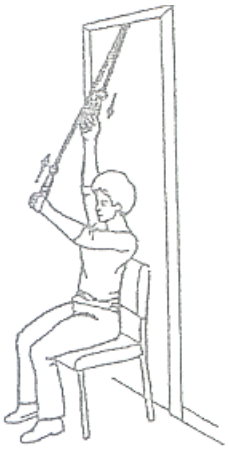
   Turn to left and hold.

   Repeat 10 times.



5. Sit in a chair with pulley assembled as shown.

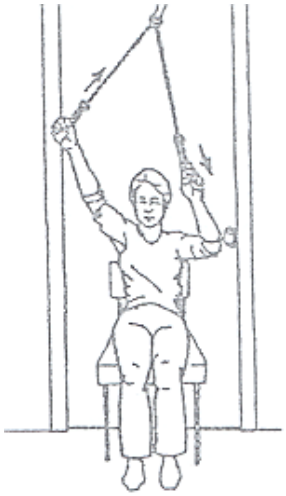
   Raise the affected arm overhead pulling down on the pulley with the



other hand so that you
feel a stretch.

6. Sit in a chair with pulley assembled as shown.

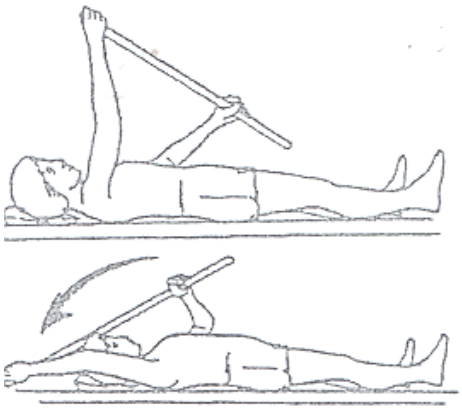
   Raise the affected arm out to side and overhead, pulling down on the pulley with the other hand so that you feel a stretch.



7. Lie on back as shown, with affected hand at the top of the stick.

   Using the stick for assistance, stretch your arm higher overhead.

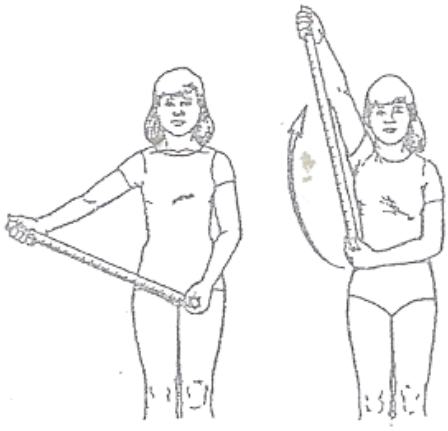
   Hold for 10 seconds.



8. Stand holding stick as shown with your affected arm out to the side.

Using the stick for assistance, stretch your arm further out to side and overhead.

Hold for 10 seconds.



9. Stand grasping the elbow with other hand as shown.

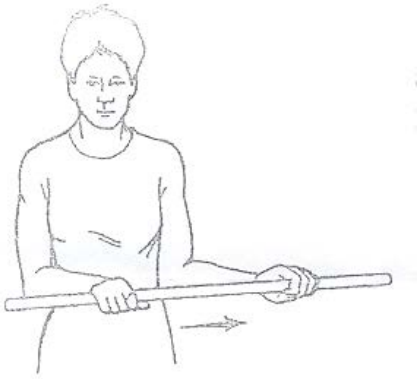
Pull the elbow and arm across your chest so that you feel a stretch.

Hold for 10 seconds.

10. Lie on your back or stand with a pillow under your arm.

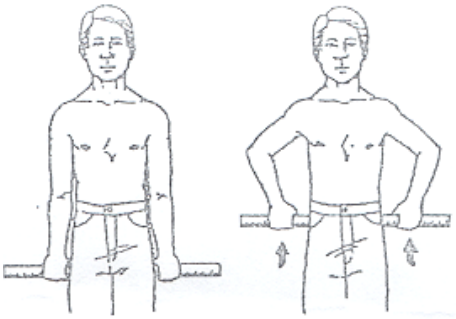
    Using stick for assistance, rotate your operation hand and forearm out away from your body. Make sure your elbow stays tucked into your side.

    Hold for 10 seconds.



11. Grasp stick behind back as shown.

    Slide stick up back so that you feel a stretch.



12. Place a rolled hand towel under the affected arm.

    Grasp forearm with other hand and pull behind back and downwards as shown.

    Hold for 10 seconds.