

**USING STATIC PROGRESSIVE STRETCH AND  
STRESS RELAXATION IN THE TREATMENT  
OF GLENOHUMERAL  
JOINT ADHESIVE CAPSULITIS**

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## USING STATIC PROGRESSIVE STRETCH AND STRESS RELAXATION IN THE TREATMENT OF GLENOHUMERAL JOINT ADHESIVE CAPSULITIS

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### **OBJECTIVES**

Restoring glenohumeral joint range of motion (ROM) in patients with adhesive capsulitis is a challenge for the orthopaedic surgeon. External rotation is a prerequisite for elevation. Restrictions of external rotation may result in functional limitations and cause degenerative disease. Current treatment protocols include injection, oral medication and physical therapy. Manipulation is an option if the conservative approach produces an unsatisfactory result. Physical therapy includes modalities to relieve the pain and mobilization techniques performed in the clinic. Patients are also instructed in a home exercise program. The goal of the conservative program is to improve ROM by stretching the involved musculature. Using a stress relaxation loading condition (SR) and incorporating static progressive stretch (SPS) has been proven to be the most efficient means to permanently elongate a material with viscoelastic properties. A new orthosis that incorporates these principles and addresses external rotation of the glenohumeral joint has been developed. Instead of the home exercise program, the patient uses this orthosis at home to apply a stress relations load to the involved tissue. The force exerted on the tissue is patient directed and simulates the static progressive stretch technique. The goal of this prospective study was to utilize this new device as part of a home rehabilitation program and determine differences in ROM when compared to traditional physical therapy. The study also attempted to determine if a correlation between increases in external rotation and elevation of the shoulder.

### **METHOD**

Thirty patients with a diagnosis of adhesive capsulitis were randomly placed in one of two groups. Inclusion criteria were passive external rotation less than 45 and elevation less than 150. Both groups were seen in Physical Therapy two times per week for three weeks. Treatment in the clinic was the same for both groups. Group I was sent home with a daily exercise program and Group II was sent home with the new orthosis. Group I worked on their home program once a day addressing three planes of motion. Group II wore the orthosis once a day for thirty minutes working only on external rotation. Goniometric measurements were recorded on the first and last therapy visit with a follow-up visit scheduled three weeks after discharge.

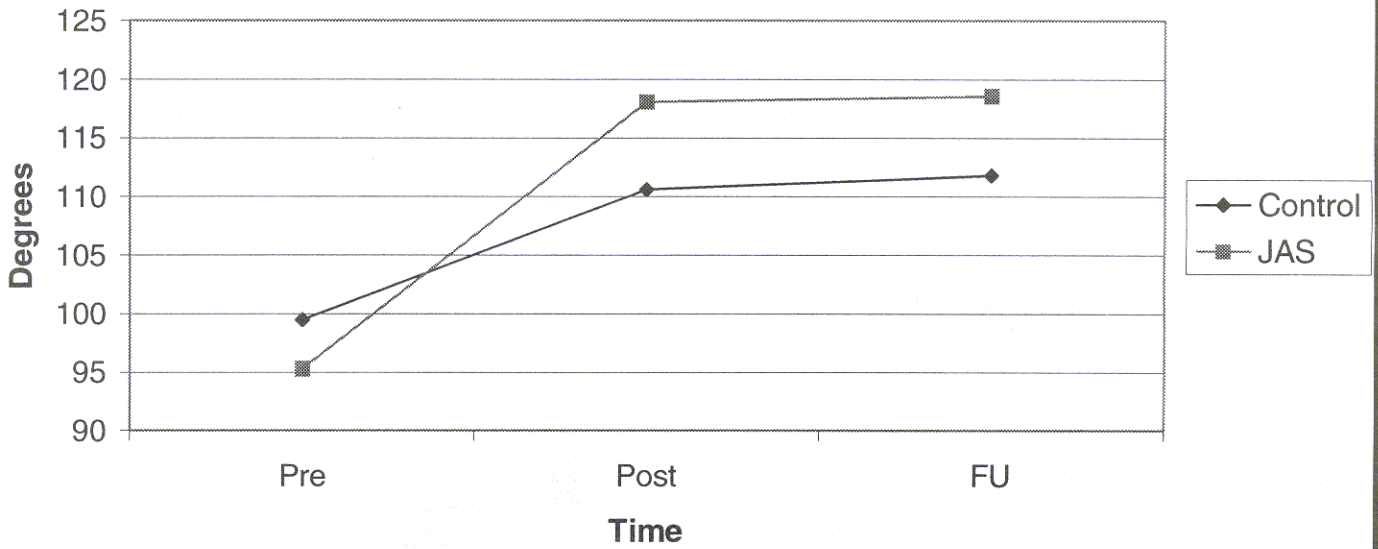
### **RESULTS**

Both Groups did gain ROM. However, Group II patients gained twice as much external rotation in a shorter period of time and also twice as much elevation. This is significant due to the fact that their rehab program concentrated on external rotation only. A ratio of 1:1.5 exists with respect to external rotation and elevation. The new orthosis was able to provide a controlled stretch using a stress relation loading condition and SPS. Patients using the new shoulder orthosis reported less pain during and after their treatment.

### **CONCLUSION**

Re-establishing shoulder ROM for patients with adhesive capsulitis has been a challenge with respect to time and cost. A new orthosis incorporating the principles of stress relaxation and static progressive stretch has been statistically more effective in improving external rotation than working on a home exercise program. The study further suggests a possible relation between gains in external rotation and shoulder elevation. Patient compliance with orthosis was better due to the short thirty minute wearing schedule. The orthosis is patient directed, allowing the patient to control the amount of force applied. Therefore, the patient is actively involved in their rehab and tends to be more aggressive with their stretching program. Patients being able to control the amount of force, also report less pain during and after the treatment session. Increased patient compliance helps to support the favorable outcomes. Because it helps to shorten the time of the rehab program and outcomes indicate permanent increases in ROM, the device is cost effective and has a place in the area of managed care.

## Elevation



## External Rotation

