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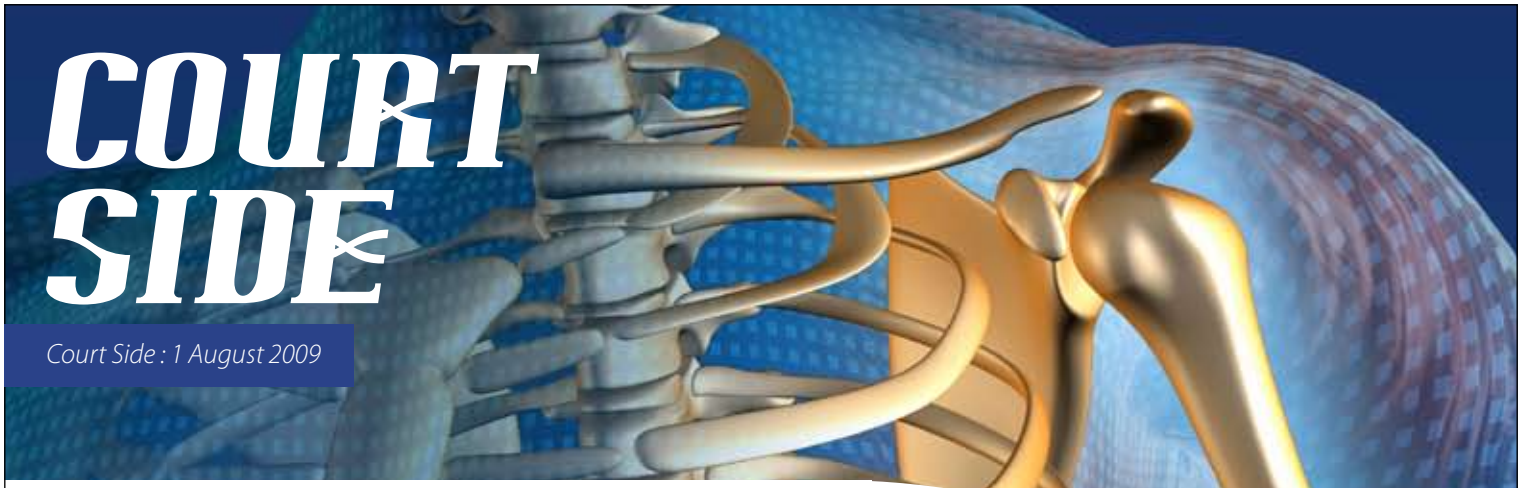
Court Side : 1 August 2009



A Back2Sports Sports Injury Management Newsletter

Shoulder Impingment:
The What, Why and How

It is a well documented fact since the mid-1990s that shoulder pain is the second most common musculoskeletal complaint in physiotherapy clinics after low back pain[1,2]. Commonly, patients would complain of pain over the lateral aspect of the shoulder (over the deltoid tubercle) and/or have difficulty lifting their arm up. The common diagnosis would normally be either a frozen shoulder or shoulder impingement. But what causes the pain? Primary causes of shoulder pain have been difficult to pin down due to the complexity of the shoulder[3].

A common source of shoulder pain is impingement of the structures under the sub-acromial arch, leading to the diagnosis of shoulder impingement. The commonly accepted causes of shoulder impingement are generally tendinitis or bursitis[2]. However, the question we therapists always ask is what had caused the tendinitis or bursitis?

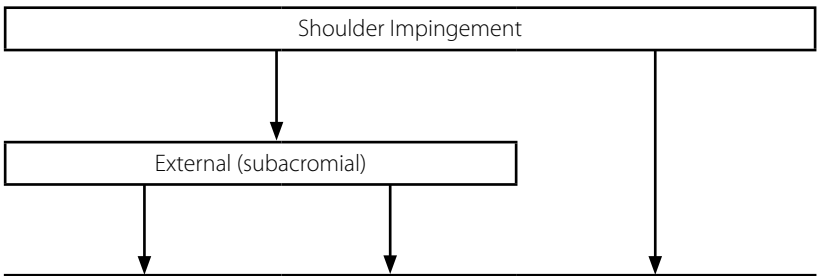
Causes of Shoulder Impingement

There are 2 broad categories of causes of impingement, internal and external impingement, with external impingement being further sub-divided into primary and secondary causes. This flow chart below summarizes the classification[3]:

The most common shoulder impingement cases presented to a physiotherapy clinic is the external secondary impingement cases. However, on assessment of clients with a shoulder impingement, the most common problem we see is the weak scapular stabilizers leading to poor scapular humeral control. This weakness can also be attributed to a forward head posture with protracted shoulders. With the shoulders being in a protracted position, the scapular stabilizers would be placed in a lengthen position, altering the length-tension relationship, leading to weakness and poor control. Shoulder protraction also decreases the sub-acromial space as the scapular is rotated anteriorly. Tightness in the posterior capsule of the shoulder has also been closely associated with shoulder impingement as it pushes the humeral head against the sub-acromial arch on flexion, entrapping the structures within the sub-acromial space[3,4].

How to manage Shoulder Impingement

Conventional physiotherapy management, through the years, has been described as range of motion (ROM) exercises, soft tissue mobilization and modalities like heat pack, therapeutic ultrasound, lasers and SWD (short wave diathermy)[5,6]. However, these generally are just symptomatic relief. The ROM exercises would help maintain the shoulder range and prevent adhesive capsulitis (frozen shoulder). As for the soft tissue mobilization, it would help loosen up



	Primary	Secondary	Internal (Glenoid)
Etiology	Outlet Obstruction	Instability	Repetitive microtrauma
Location of Impingement	Subacromial	Subacromial	Posterior Superior Glenoid
Age of presentation	>35 years old	< 35 years old	< 35 years old
Impingement Tests	+ve	+ve	Maybe +ve/-ve
Apprehension Test	-ve	Maybe +ve/-ve	Maybe +ve/-ve
Relocation Test	-ve	Maybe +ve/-ve	Maybe +ve/-ve
Radiographs	Presence of acromial spur, AC arthritis	NAD	NAD

any tight muscles of the shoulder region arising from the compensatory mechanisms that the client adopts to decrease their pain. The modalities would help reduce the inflammation of the tendon or bursa. However none of these treatments would be actually correcting the impaired mechanics of the shoulder.

However, in the past decade, more studies have started to cover manual therapy and therapeutic exercise protocols; comparing them against the conventional physiotherapy management[5,6]. Manual therapy has been defined as manually applied mobilization techniques that would directly affect the joint movement. These techniques are normally directed into the direction of stiffness or resistance to improve the flexibility or mobility of tight structures like ligaments or muscles at the position of pain. Therapeutic exercises are those taught to patients to improve the strength and/or neuromuscular control of the shoulder joint, thus decreasing the clients' pain.

Therapeutic Exercises

Scapular stabilization exercises have been the choice in recent research as they have been found to bring about the best therapeutic results in shoulder impingement and are simple to do. Below are simple scapular stabilizing exercises that are taught to patients:

1. **Scapular Retraction** (Figure 1)
   Pull your scapular backwards and downwards. This activates your rhomboids, serratus muscles and lower traps to stabilize the scapular in the saggital plane. .

2. **Scapular Clock** (Figure 2)
   With the palm against the wall at a 8 o'clock position, and the shoulder starting at 45o flexion, move the shoulder into the various clock positions, e.g. 3 o'clock, 6o'clock, etc. The palm position can be progressed to move towards a 4 o'clock position while moving the shoulder. This facilitates the scapular into elevation, depression, retraction while the humeral bone moves independently from the scapular.

3. **Low Row** (Figure 3)
   Pushing one's arm backwards while pulling the scapular downwards activates the lower traps, an essential muscle in improving the scapular control as the arm is raised or lowered.

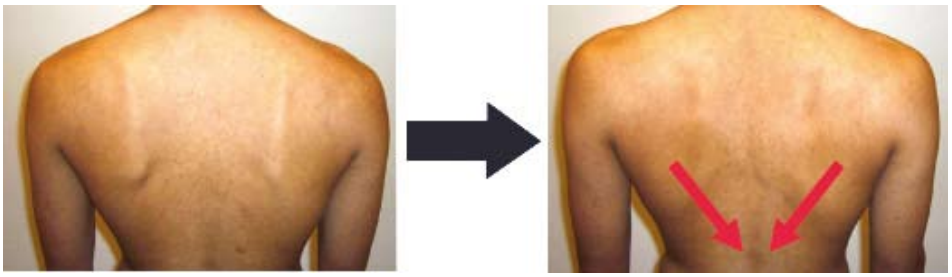


Figure 1: Scapular Retraction

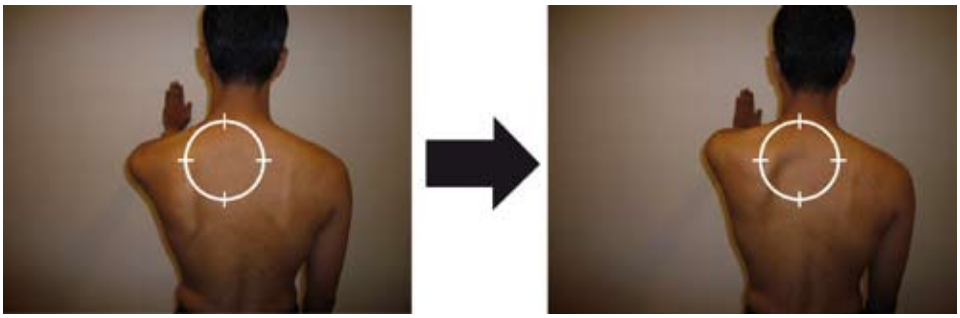


Figure 2: Scapular Clock

Figure 3: Low Row

Scapular stabilization exercises should be progressed into functional activities to manage the impingement and close monitoring of the scapular-humeral rhythm is essential while progressing into functional activities.

Conclusion

In managing shoulder impingement, one should not neglect looking into the stability of the scapular as it plays a very important role in the biomechanics of the movement of the shoulder. Ample attention should be given to improving the stability and control of the scapular muscles to give patients the relief they need from shoulder pain.

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