

Shoulder Pain

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Scapular Downward Rotation

There are many possible contributing factors to shoulder pain. These include muscle imbalances, rotator cuff weakness, overuse (particularly with the arm overhead), bony changes, and postural abnormalities. Scapular dysfunction often exists with shoulder pain. While this may occur secondary to the pain, poor scapular control can be a primary cause of impingement.

Normally, for 180° of shoulder elevation, the glenohumeral joint contributes 120°, and the scapula 60°. The scapula does this through a complex pattern of movements that include upward rotation, abduction (sliding laterally around the ribs), elevation, and posterior tilt. If any of these movements are faulty, problems can arise.

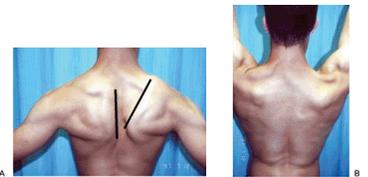
To illustrate this, I have chosen one common scapular dysfunction – excessive downward rotation. You can



see in the photograph that the inferior angles of both scapulae are closer to the midline than the superior medial aspects. This means the

whole scapula, and in effect the glenoid fossa, is pointing downward. This is a risk factor for impingement, because the greater tuberosity can impinge the subacromial space early in elevation. Not only is there downward rotation at rest. The scapula

will be slow to rotate upwards during elevation (2nd photo), and may never achieve the rotation needed for effective full shoulder



flexion / abduction. This will overload the rotator cuff, and lead to impingement in the upper ranges as the glenohumeral joint attempts more than its 120° contribution to elevation.

This syndrome is also associated with persistent neck pain. It is common to have accompanying neck and shoulder protraction. And the position of the scapula places constant strain on the neck through tension in upper trapezius and levator scapula.

Various muscles can be responsible for the excessive downward rotation. Overactive ones may include:

Rhomboids: This muscle group both downwardly rotates and draws the scapula medially.

Supraspinatus: If shortened, the result will be a resting position of shoulder abduction. However at rest, the weight of the arm will push the scapula into downward rotation rather than the arm being held away from the body.

Deltoid: As the main abductor of the arm, shortening will create the same problem as explained for supraspinatus. This muscle can also maintain downward rotation during abduction, by out-competing the upward rotators (trapezius & serratus).

Levator scapula: Its action is to elevate and downwardly rotate.

Latissimus dorsi: Tightness in this muscle can work

indirectly on scapular position. There are also a small number of people in who this muscle attaches to the inferior scapular angle.

Pectoralis minor: As this muscle anteriorly tilts the scapula, the result will be resistance to upward rotation

Weakness, excessive length, or poor coordination of the main upward rotator muscles can also be a factor. These are:

Upper trapezius: elevates and upwardly rotates.

Serratus anterior: elevates, protracts, and upwardly rotates.

Lower trapezius: Depresses and upwardly rotates. In synergy with the elevation function of upper trapezius, this ensures a balanced scapular position.

Management: A medium to long-term programme of postural correction and strengthening is required:

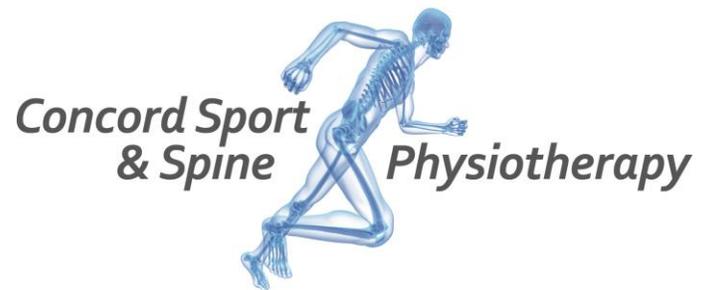
- Initial support for the arm in dependent positions.
- Postural correction, both for the neck and shoulders.
- Modification of clothing and bags that depress the lateral shoulder.
- Strengthening, particularly for upper trapezius and serratus anterior.
- Stretching and releasing of tight muscles.
- Neuro-muscular reeducation. Faulty movement patterns would have been present for some time, and the patient needs to be shown various ways to self-correct.
- Treatment for the neck as necessary.

For information for doctors on physiotherapy management of all types of injuries visit:

<http://www.cssphysio.com.au/Doctors/fordoctors.html>

Information for patients is at:

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