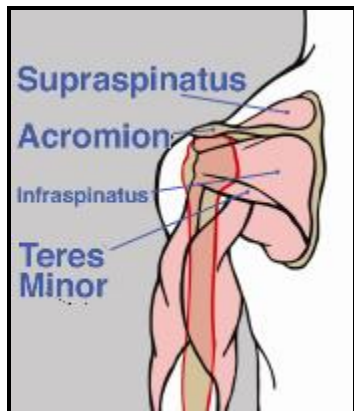


ROTATOR CUFF TEARS AND THE MANAGEMENT OF THE SHOULDER

A prominent shoulder surgeon in Australia once told me that if you live to be over the age of 80, you are almost guaranteed of having had a major rotator cuff injury in the shoulder or you will go to your grave with a rotator cuff tear but not know it. Recent research in Japan looked at exactly this issue and discovered that the 3 biggest factors that are associated with a rotator cuff injury are age, arm dominance and previous shoulder trauma. In fact, they found that from the age of 30, your chance of sustaining a rotator cuff tear increases exponentially with each decade of life.

The rotator cuff tendons, in particular the supraspinatus, are subject to wear and tear that causes degeneration over the years due to its close anatomical relationship with the acromion process. The small space between the humeral head and the acromion process houses the supraspinatus tendon, subacromial bursa and biceps tendon. If anything reduces that subacromial space, then the chances of something being pinched and worn down increases greatly. Understanding the subacromial space is important as the factors which influence the size of this space are multifactorial.



Firstly, an unusual shape to the acromion where it hooks downward can increase the chances of impinging the above structures. This can be inherited as an anatomical variant or it may be created by osteophytes (spurs or bone growth) growing down from the underside of the acromion.

Secondly, previous shoulder trauma that either disrupts the stabilising mechanism of the shoulder joint (as in shoulder dislocation) or an injury induced change in the firing patterns of the stabilising rotator cuff can create a situation whereby the humeral head bounces and shears too much under the arch and thus increases the chance for impingement.

Finally, altered scapula position due to muscle tightness or poor muscle firing can influence the position of the acromion as the arm is lifted above the head. The key muscle to influence a poor scapula position is the pec minor. This muscle causes the scapula to sit in a downwardly rotated position at rest, bringing the acromion process closer to the humeral head.

Age is an important predictive element in rotator cuff tears as the longer you live on this earth, then the more times you will lift your hand above your head. Coupled with this, the major 'white tissue' changes occur between the ages of 40 and 50, whereby the white tissues such as tendons, ligaments and connective tissue become degenerated and fibrotic. This is usually the starting point for the degenerative processes we see occurring in tendons.

Understanding some of these key points can help us 'predict' what type of rotator cuff injury a particular age group may suffer. For the 20-30 year olds, the injuries are most likely traumatic tears of the cuff (from strong contraction in the gym or from dislocating a

shoulder), acute bursitis or biceps/supraspinatus tendinitis. For the 30—40 year old group, again it is most likely acute/chronic bursitis and/or tendinitis with signs of degeneration.

For the 40-50 year old group, we start to see more calcification in the tendons and more degeneration. For the 50-60 year olds, they are the ones with major degenerative changes in terms of acromian osteophytes, tendon degeneration and worn down bursa. And the 60+ group are the ones who suffer the degenerative partial thickness/full thickness tears.

From a management point of view, what a physiotherapist can influence directly is the firing patterns of the dynamic stabilisers of the shoulder – the rotator cuff. In particular, the subscapularis muscle as it can work to reduce the excessive forward and upward movement of the humeral head during movement. This needs to be activated. Coupled with this we usually witness an overactive and tight posterior cuff (infraspinatus) and posterior shoulder joint capsule. This needs to be loosened and stretched.

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Furthermore, the physiotherapist can address the scapula muscles. The muscles which prevent upward rotation of the scapula due to tightness (the pec minor and levator scapulae) need to be loosened and stretched. And the muscles which work to upwardly rotate the scapula need to be strengthened (the trapezius and the serratus anterior).

What we can also try and correct is the postural faults such as poor thoracic spine extension which places the scapula very protracted and downwardly rotated. Furthermore, we can address the global imbalances between the 'push' type muscles such as pecs versus the 'pull' type muscles such as rhomboids and middle traps. If we catch the gym going population from a young age, we need to convince them to prioritize the 'pull' type movements as by being very 'push' dominant in the gym; they tend to set up these imbalances quite early in the piece.