

ROTATOR CUFF IMPINGEMENT

A WEIGHT TRAINING DILEMMA

TIM KEELEY | PRINCIPAL PHYSIOTHERAPIST

During the past few months at our gym based clinics we are seeing an increasing amount of rotator cuff impingement problems. The impingement scenario can be a major dilemma for people who are trying to recover and return to weights and exercise again without causing further impingement.

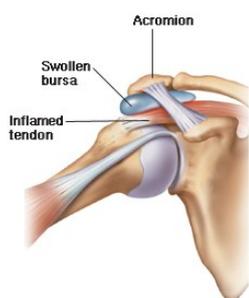
Breaking the cycle of impingement is the key. Successful recovery involves good advice and treatment, exact instruction on the right rehab exercises and order of progression, coupled with a long term plan of prevention that one can stick to.



IMPINGEMENT - HOW DOES IT HAPPEN?

The shoulder joint moves with two muscle systems, a postural system and a power system. The postural muscles control the shoulder blade (serratus anterior, trapezius) and the shoulder joint rotation and stability (the rotator cuff), whilst the power muscles (deltoid, lats, pecs) move the arm bone around. Impingement occurs when the rotator cuff tendons get caught or trapped in the 'sub-acromial space' which is the gap between the roof of the shoulder (acromion) and the ball of the humerus (glenoid head) during the arm movement, mostly abduction above 90 degrees (*see below figure*). As the tendons get caught, a number of things can occur;

The supraspinatus tendon is squashed and rubbed on other structures, causing inflammation of the tendon (tendonitis) and pain.



If the tendonitis is not addressed, the tendon becomes weaker over time and the person develops a 'tendinopathy' where the tendon structure degenerates and the function of the rotator cuff is compromised, leading to the cycle of impingement and the training dilemma.

The sub-acromial bursae which sits on top of the tendon, protecting it from the bony roof of the shoulder can also become inflamed with more severe impingement. This in turn reduces the space for the tendon to slide and adds to the compression problem. In the most severe cases the tendon becomes so weak it tears, usually near the insertion into the top of the humerus.

HOW DO I KNOW IF I HAVE IT?

Pain usually means you already have an inflamed tendon. The pain is most commonly felt on the edge of the shoulder, sometimes radiating down the outside of the shoulder. There is a symptom of a 'painful arc' where during raising the arm outwards and upwards (abduction) the inflamed part of the tendon gets caught in the sub-acromial space and pain is produced, and then the further through abduction the sore

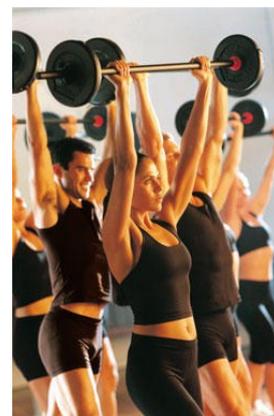
part of the tendon moves away from the structures and the pain usually lessens at the top of the movement. With severe impingement the pain does not lessen at the top (due to the factors below), and with a tear in the tendon there is significant power loss into abduction and lateral rotation and you are unable to fully raise the arm.

WHY IS IT HAPPENING TO ME?

There are many factors that actually lead to the impingement process, and if not addressed early can become a cycle that worsens as time goes on. The most common cause is having an 'unbalanced' shoulder and performing repetitive heavy pressing exercises such as bench press and overhead shoulder press.

Most people have an imbalance between their left and right arms (being left or right handed) as well as an imbalance within the shoulder muscles (power vs. postural). So firstly, when training in the gym doing exercises like shoulder press or bench press, where the hands are fixed to a bar, one arm leads the other and the bar acts as a stabiliser between the two.

The problem with fixed bar exercises in a pressing position whether it be above the head or outwards, is that there is less requirement for the postural (stabiliser) muscles – the rotator cuff to act in controlling the shoulder. As one arm is stabilised through the bar by the other it's easier to push heavy weights, hence the results of these exercises in muscle growth and strength gains in the aesthetic pecs and deltoids (and why these exercises are done so often!). Secondly, the force generated by the power muscles (pecs, deltoids) during the heavy press or abduction movement of the arm, outweighs the functional ability of the rotator cuff muscles. This creates an increased movement of the humeral head into the sub-acromial space, as due to the force of the power muscles impingement is created. Basically the pull of the big muscles is too great and the little muscles





simply can't keep up. This imbalance is increased with weak scapular stabilisers and tight rotator cuff muscles, mostly because muscles like serratus and lower trapezius are underdeveloped due to a lack of functional and stability exercises

and a overuse of power and pressing exercises. If you have had a previous injury to the shoulder (like falling on the shoulder of a bike or skiing, or a dislocation in sport) then the ligament stability may be compromised, as well as a rotator cuff that is weakened. Poor technique is ALWAYS a factor, which weakness in the stabilisers (or a 'relative' weakness) is the root cause in the end. The person CANT keep good form not just from the weight being too heavy, but because they don't have the strength in the postural muscles to hold the body and shoulder in the correct position nor keep the correct muscle firing pattern correct during the concentric and eccentric phase of the press. During a bench press the scapular movement is restricted and so the alignment of the shoulder joint socket is compromised and thus there is an increased shearing force created at the shoulder joint structures and rotator cuff. The tendons are overused and become fatigued and inflamed, fail to stabilise and rotate the shoulder and you create impingement again.

THE DILEMMA

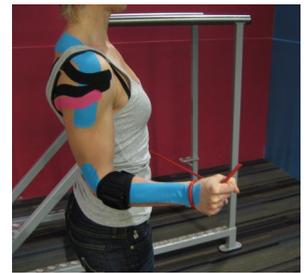
In almost with every case we see of shoulder impingement the problem recurs through a 'cycle of impingement'. Breaking this cycle is essential for successful recovery. Because the rotator cuff tendon(s) are sore, inflamed and weakened, they don't perform their stabilisation and movement assisting jobs. Once they start becoming weak and the more you continue with conventional exercises like lateral raises, shoulder press, and bench press, the more the tendons keep getting caught. The tendon and rotator cuff complex become weaker and more inflamed, it loses its function and the problem gets worse.

Rest alone does not fix the issue, which is what most people do. They rest until the pain subsides and initially don't seek the Physio and rehab exercises. However what they don't know that inside their shoulder the rotator cuff function has significantly reduced. The tendons have become weak, and they stay weak unless rehabilitated. Waiting for too long before rehabilitation will create too much weakness as well as strengthening the shoulder too early will result in re-aggravation. At the same time, returning to normal exercises too early without enough rehabilitation or progressing the exercises too quickly (through boredom or poor guidance) will return the impingement. If you have not properly rehabilitated the shoulder to its full function again then you are definitely a candidate for impingement over time. Even if your serratus anterior, trapezius and rotator cuff muscles are developed, if the pecs and rhomboids are MORE developed then you have a relative functional weakness in the stabilisers, and an unbalanced shoulder - which is very common problem.

So what to do?.....

THE SOLUTION: PHYSIO AND REHAB

My advice, is at the first episode of pain you seek a Physio for a consult to test if you have impingement. Good Physio's will successfully be able to diagnose a tendon impingement as well as if you have the possibility of a tear. You will be given personalised and structured treatment, education, taping and home exercises which will



help settle the pain and inflammation down. You will then undergo a rehabilitation program of a progressive course of exercises to increase the control and strength of the scapular and rotator cuff muscles and overall function. Rehab and stability exercises need to begin at a low level, and all in the right sequence with very slow progression and advancement of difficulty and resistance. Selection of correct closed kinetic chain exercises will work more quickly and more effectively over open chain exercises. The success secret comes with continuation of rehab exercises for 6-9 months and the revisiting these exercises as part of shoulder training.

ONGOING PREVENTION

Once your shoulder is strong enough to return to standard weight training exercise you will need to change the shoulder training program to give it more stability bias and conventional less muscle building. e.g. TRX press-ups instead of Bar Bench Press, as well as varying your shoulder exercise routine often and multidirectional with less load. You should avoid heavy or repetitive movements above shoulder height, bench press, lateral raises, front raises, and any exercise that places excessive demand on the rotator cuff. Any advanced, new or sport specific exercise programs should always be checked over by the Physio before commencement.



In some instances you may simply not be able to return to heavy shoulder press and other exercises, depending on the level of injury and age. If you do have positive testing for a tear, the Physio will then suggest a MRI for further investigation. If there is a tear you will most likely be referred to a specialist or sports doctor for further opinion on what injection or surgical intervention (if any)

needs to be done. You will still then need to go through eh full rehab program with the Physio.

For more advice on Rotator Cuff Impingement you can email me at timkeeley@physiofitness.com.au

For more articles go to: physiofitness.com.au/articlesandtips.htm



Tim Keeley B.Phty, Cred.MDT, APA

Principal Physiotherapist and Director of Physio Fitness Australia

Tim has over 13 years experience in Physiotherapy and the Fitness Industry. He is also an exercise rehabilitation expert, clinical educator and regular FILEX convention presenter.

As well as the Principal Physiotherapist at his Bondi Junction clinic inside Fitness First Platinum, Tim is also the Director of Physio Fitness Australia operating four clinics across Sydney.

For more information go to www.physiofitness.com.au or to book an appointment call 1300 233 300.

[>> View my Profile](#)