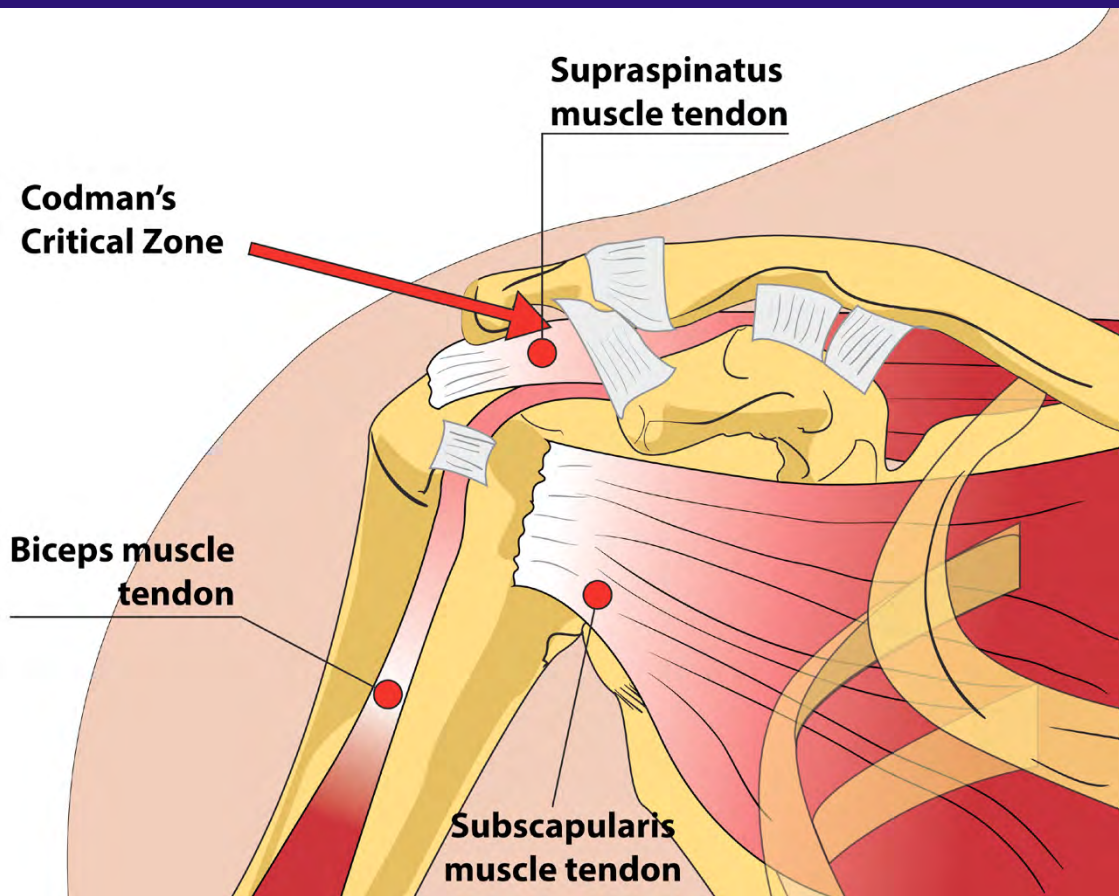


Niel Asher.

Advanced Trigger Point Techniques



Treating The Rotator Cuff Trigger Point Therapy Course

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NAT Pro Series:

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Welcome

Shoulder pain is the 2nd to 3rd most common musculoskeletal complaint in the general population¹ and rotator cuff tendon problems are the largest subset. 1 in 3 (30-60%) people will experience shoulder pain at some point in their life and the incidence increases with age². Furthermore, shoulder pathology is associated with a high morbidity (negative state of being) rate, with 50% resolving within 6 months but a whopping 40-54% of people report on-going symptoms for 1-3 years³.

The incidence of shoulder pain is on the increase for a number of reasons. Thanks to years of research and improved technology we now have a handle on some of the main reasons for this: We live longer (the shoulder was only designed to work efficiently for about 40 years), a lack of metabolic activity (from inactive childhoods to repetitive office work), sports or occupation with an overhead component (professional swimmers and ceiling painters are pretty much guaranteed), and a variety of lifestyle factors (nicotine inhibits rotator cuff tendon repair).

Rotator cuff issues are actually ubiquitous, with up to 96% of 'asymptomatic' men over 70 demonstrating a moderate to severe shoulder cuff pathology on ultrasound⁴! This fact needs to be understood in context; what is it that 'switches on' a silent rotator cuff problem? Trigger points may well be part of the answer. Our body always attempts to protect us and trigger points are part of our 'protect and defend' mechanism. Any change in shoulder mechanics over time can manifest as areas of tight muscles or muscular knots (trigger points). Trigger points can develop in muscles for a number of reasons. When present they cause the host muscle to be shorter, tighter, and less efficient. Trigger points can also add to the cycle of increased input to the peripheral and central nervous system.

This course is designed to help you understand the rotator cuff in detail, and to offer you a clear hands-on pathway for its treatment

and management. We passionately believe that an understanding of trigger points, and how to use them, will give you valuable extra tools for treatment. Weaving trigger points into your massage or soft tissue routines can have truly profound effects. Combine this with self-help, stretching, and advice on lifestyle modification and you should be able to help the majority of those in pain.

At the end of this course you will find a reflective learning exam. This is not a 'pass or fail' test but a mechanism to see that you have understood the information and can apply it for the good of your patients. We are excited to share this information with you and don't forget that if you have any questions, we are here to support you.

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Introduction

The shoulder is involved in almost all of our waking activities. It is extremely flexible, along with its several sub-joints; all of which combine to give the widest range of motion in any joint in the body – this is also what makes it vulnerable to injury. The innate joint concavity/convexity stability is weak so an intricate system of capsule, ligaments, connective tissues, and muscles is employed to fix the large ball into the small socket. The four cuff muscles concurrently bring the glenohumeral joint back and down to stabilize the shoulder, whilst we manipulate our environment with our hands. These structures are prone to wear and tear, which tends to start in the 4th decade and is directly influenced by mechanical and ergonomic factors.

In 70% of all doctor and therapist visits for shoulder problems, the diagnosis is rotator cuff disorder (Lewis 2014)⁵; but this is not the whole story. Interestingly, several recent imaging studies have highlighted the frequency of shoulder problems in the ‘asymptomatic’ normal population. In 2011 Girish et al⁶ conducted an ultrasound study on 51 men, aged between 40 and 70, who were **asymptomatic** for shoulder pain. The results concluded that 96% of asymptomatic males have some degree of moderate to severe shoulder pathology. The most common pathologies visualized were:

- Subacromial thickening - 78%
- Acromioclavicular joint degeneration - 65%
- Rotator cuff tendon pathology - 39%,
- Subscapularis tendon pathology - 25%,
- Partial thickness tear - 22%
- Cartilage pathology in the ball socket - 14%.

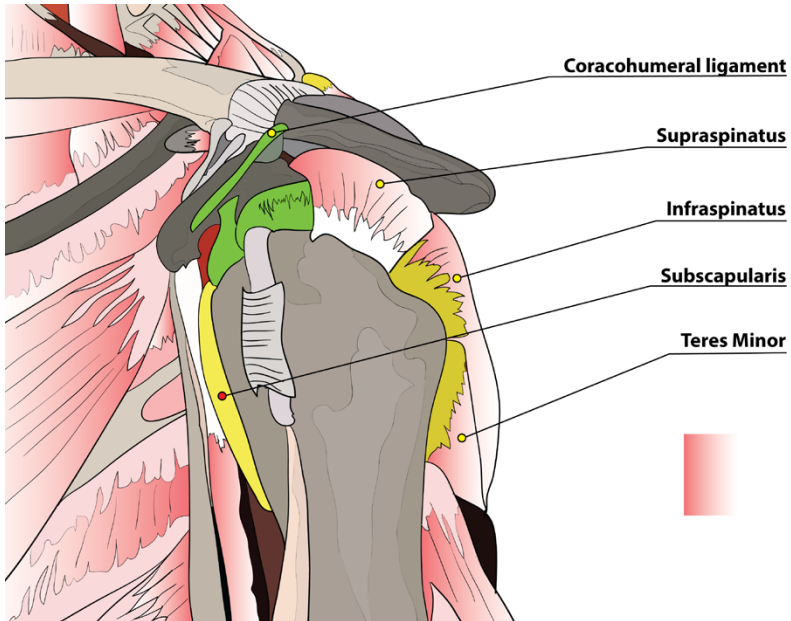
MRI studies also indicate that rotator cuff disorder is extremely common in the **asymptomatic** population. In 1999, Frost et al⁷ conducted an

MRI study of 31 subjects and concluded that the incidence of rotator cuff disease in the normal population is 'common and increases with age'. They found that 72% of subjects over the age of 50 had rotator cuff disorder, compared with 48% for those 40-49 years old, and 43% for subjects between the ages of 30-39. Sher et al (1995)⁸ scanned the dominant shoulder in 96 asymptomatic subjects and examined the rotator cuff. The results concluded that 28% of asymptomatic subjects between the ages of 40-60 had a moderate to severe structural pathology of the rotator cuff tendon. After the age of 60, the figure rose to 52%.

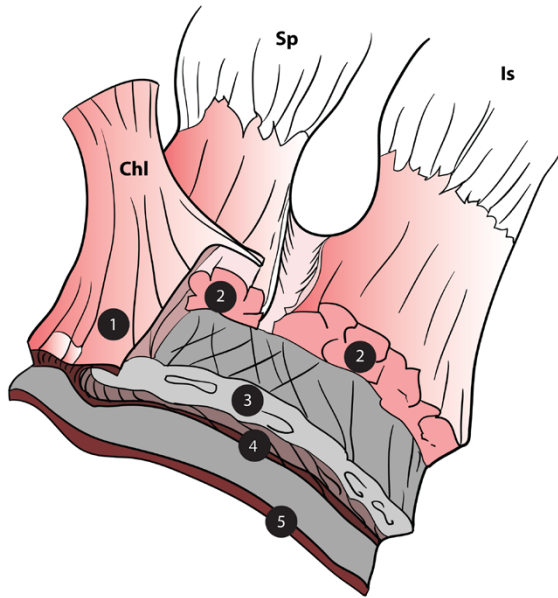
The fact is that anyone coming to us over the age of 50 is likely to have a moderate to severe shoulder pathology even if asymptomatic. The big question here then is, what 'switches on' an asymptomatic shoulder? Is it the soft tissue 'holding pattern'? There is a compelling argument that trigger points may have a key role. Trigger points make the host muscle shorter and fatter and reduce mechanical efficiency. According to Robert Gerwin (2014)⁹ the head of pain medicine at Johns Hopkins School of Medicine, 'Myofascial trigger points are responsible for 75-95 percent of muscular (shoulder) pain'.

What is the rotator cuff (RC)?

The rotator cuff stabilizes the ball and socket of the glenohumeral joint; the cuff muscles pull the shoulder backwards and downwards to form a stable base for using the arm. The majority of anatomical texts describe the tendons as distinct structures¹⁰ but in reality this is not the case. These muscle tendons are the:



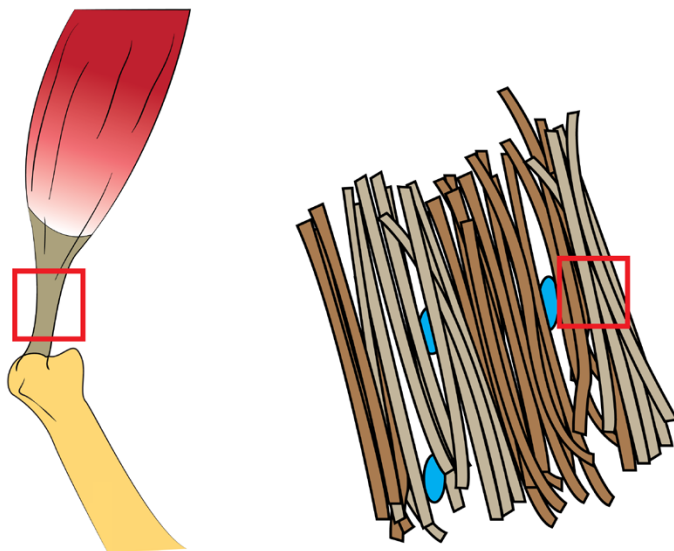
In reality the RC tendons fuse and blend together to form an aponeurosis (continuous common tendon) over the humeral tuberosities. It is a postural tendon designed to pull a large ball onto small socket. It is short, flat, and wide, and composed of five layers interwoven with synovium, joint capsule, and ligaments (coracohumeral).



Chl = Coracohumeral ligament, Sp = Supraspinatus, Is = Infraspinatus
 1. Coracohumeral ligament, 2. Cut portion of supraspinatus and cut portion of infraspinatus, 3. Fibrous cuff interblend, 4. Bursa, 5. Bursal surface of cuff

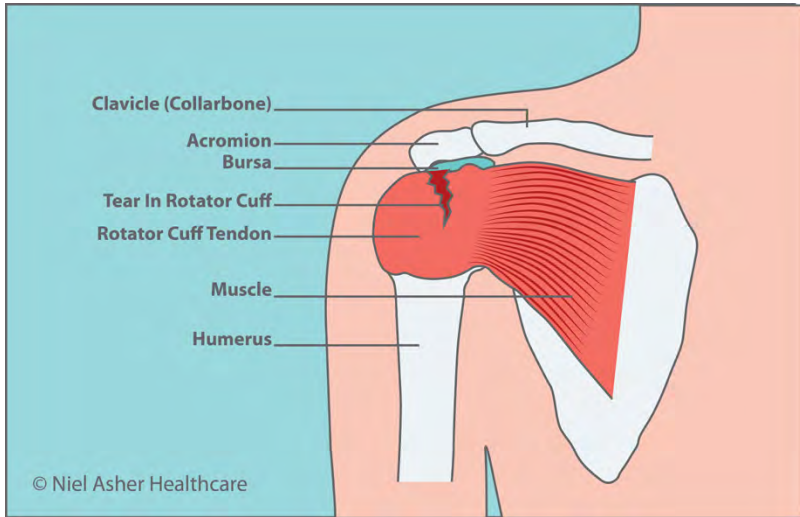
The tendon itself is stronger than steel and it transports the muscle forces to the bone. The RC is made mainly composed of type I collagen (there are 29 types).

Unlike others types of collagen, type I tendon fibers are parallel, this adds to their tensile properties; it helps to think of layers of thick and thin spaghetti-like fibers.



There are two distinct layers to the tendon: the bursal side (underneath) supraspinatus tendon fibers, which are thicker/larger, and the articular side (acromioclavicular joint), which are thinner.

Traditionally, many orthopedic texts talk of tendon tears typically occurring due to rubbing of the tendon on the acromion or a spur; this has given rise to operations such as decompression or acromioplasty, where a piece of the acromion is removed. Interestingly and IMPORTANTLY however, the evidence says otherwise. Ultimate failure stress of the bursal side is **double** that of articular side fibers¹¹. This may mean that many shoulder operations (estimated \$3bn per year USA) may be totally unnecessary and is **not** based on the evidence!



Epidemiology – who gets rotator cuff problems?¹²

The etiology of rotator cuff disease is likely multifactorial, including age-related degeneration and microtrauma and macrotrauma. The incidence of rotator cuff tears increases with aging, with well over half of individuals in their 80's having a rotator cuff tear. Smoking, hypercholesterolemia, and genetics have all been shown to influence the development of rotator cuff tearing. Substantial full-thickness rotator cuff tears, in general, progress and enlarge with time. Pain, or worsening pain, usually signals tear progression in both asymptomatic and symptomatic tears and should warrant further investigation. Larger (>1-1.5 cm) symptomatic full-thickness cuff tears have a high rate of tear progression and, therefore, should be considered for earlier surgical repair in **younger patients** only. If the tear is reparable and there is limited muscle degeneration, surgery should help to avoid long-standing irreversible changes of the cuff. Smaller symptomatic full-thickness tears have been shown to have a slower rate of progression (similar to partial-thickness tears), and are more suited to hands-on treatment and exercise due to the limited risk for rapid tear progression. In both small full-thickness tears and

partial-thickness tears, increasing pain should alert you to obtain further imaging, as it can signal tear progression.

Natural History - Tendinopathy Continuum

Three stages of cuff damage have been suggested¹³. Stage I occurs in patients < 25 years with swelling (edema) and hemorrhage of the tendon and bursa. Stage II involves tendinitis and fibrosis of the rotator cuff in patients aged between 25 and 40 years of age. Stage III involves tearing of the rotator cuff, either partial or full-thickness, and occurs in patients > 40 years of age. Research has demonstrated¹⁴ that 10% of partial thickness tears heal and 10% become smaller, but 53% of tears will propagate and 28% progress to full thickness tears. A full thickness tear will not heal spontaneously.

Tendon changes can be considered as a continuum (Lewis 2014)¹⁵, the way we treat or approach treatment will very much depend upon which stage of this continuum your patient presents with. Let's examine these stages one by one, starting with the 'normal tendon'.

