

# ROTATOR CUFF TENDINOPATHY AND TEARS

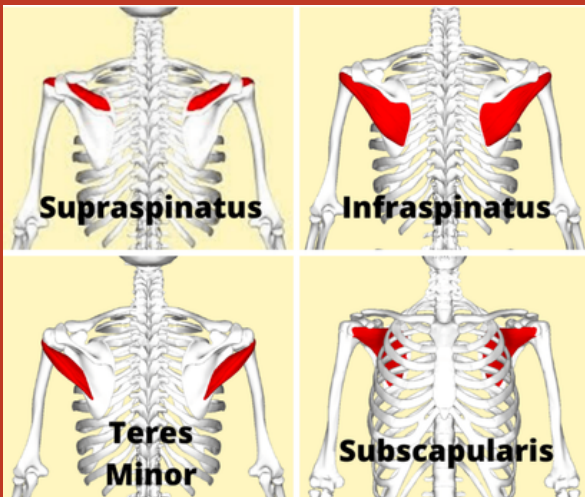
## Evidence Based "CHEAT SHEET"

### PREVALENCE

- Rotator cuff tendinopathy is the most common form of shoulder pain (1)
- Between 16 and 26% of the general population will report shoulder pain at any given time
  - Believed to be from rotator cuff tendinopathy, impingement, or tear
- Cuff tears are more common as we age (10). Partial thickness tears have been found in:
  - 51.8% of people aged 60-69
  - 61.8% of people aged 70-79
  - 72.5% of people aged 80-89



### ANATOMY



- The rotator cuff consists of 4 muscles (supraspinatus, infraspinatus, teres minor, subscapularis)
  - Help to control motion in the glenohumeral joint
- When the rotator cuff gets injured it isn't the muscle itself that's usually irritated, it's the tendon (5)
- The rotator cuff muscles connect to bone via a tendon and the tendon is generally what becomes painful (5)
- Tendinopathy occurs in the areas of the tendon where stress is concentrated and usually occurs when the tendon takes more stress than it is able to handle (5)
  - ex. starting a bench press program 5x/week when you're only accustomed to pressing 1x/week

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### TENDINITIS VS. TENDINOSIS

- These conditions were formerly known as rotator cuff "tendinitis"
  - We've found this condition is not mainly inflammatory in nature but more of a degenerative (wear and tear) condition (7)
- Too much tendon intensive movement, or insufficient recovery can induce changes in the tendon's mechanical properties
  - Referred to as a "tendinopathy" or "tendinosis"





## RISK FACTORS

- Factors that increase your risk of getting rotator cuff tendinopathy are: (35)
  - Age above 50 years
  - Diabetes
  - Overhead activities (as an occupation or sport)
  - Dyslipidemia (high cholesterol) (55)

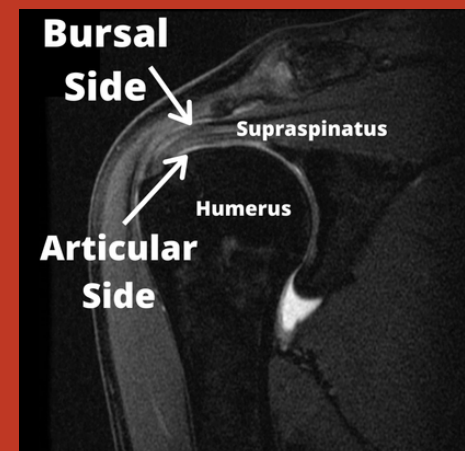
## CLINICAL PRESENTATION

- Rotator cuff injuries all present a bit differently from person to person but here are some of the hallmark signs you may find:
  - Reduced shoulder function (4) (difficulty taking on and off shirts, reaching behind the back, putting on a jacket, reaching in the backseat of a car, overhead reaching)
  - Scapular dyskinesis, pain, and stiffness (4)
  - Night pain while lying on the shoulder or sleeping with the arm overhead (4)
  - Painful arc (4)
  - Weak external rotators and supraspinatus (4)
  - Positive special tests meant to provoke symptoms
    - Hawkin's Kennedy, Neer's (4)
  - Pain radiating to the lateral mid humerus or anterolateral acromion (4)



## WHICH TENDONS ARE MOST COMMONLY TORN?

- The supraspinatus tendon is widely regarded as the most commonly injured tendon and where the majority of degenerative rotator cuff tears begin (16)
- Evidence is mixed and some authors report the infraspinatus is the most common place for tears to begin (15)
  - Either way, cuff tears probably begin somewhere between these two muscles





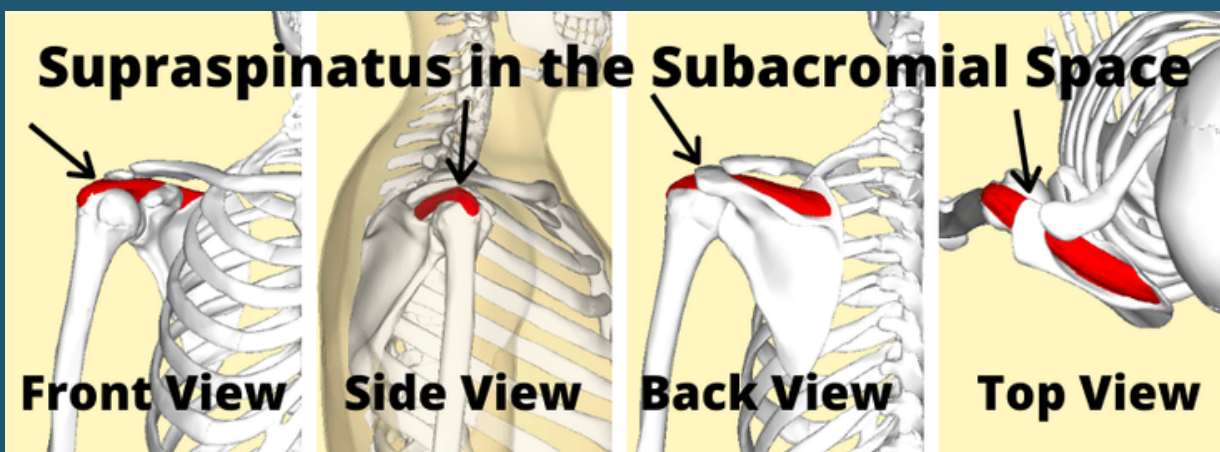


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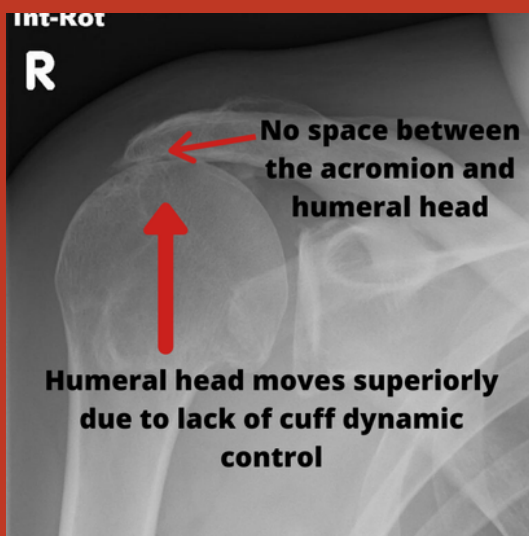
## HOW DO ROTATOR CUFF TEARS OCCUR?

- There are two main types of factors that contribute to the formation and worsening of rotator cuff problems:
  - Intrinsic Factors (4, 24):
    - Aging
    - Microvascular Blood Supply
    - Alteration in Tendon Matrix on Mechanical Properties Through Overload and Overuse
  - Extrinsic Factors
    - Acromial shape, acromial slope, AC joint changes, abnormal humeral kinematics, abnormal scapular kinematics, posture, soft tissue tightness

## STAGES OF TENDON PATHOLOGY (14)

- 1.) Reactive Tendinopathy (14)
  - Seen clinically in a tendon that's been acutely overloaded
- 2.) Tendon Dysrepair (14)
  - Tendon is attempting to heal, and an increase in chondrocytic cells and myofibroblasts result in an increased protein production and disorganization of the tissue matrix
- 3.) Degenerative Tendon (14)
  - Areas of cell death become more and more apparent leaving whole areas of acellularity
  - Stage where you'll see tearing of the rotator cuff tendons (7)

## DO ROTATOR CUFF TEARS HEAL OVER TIME?



- Rotator cuff tears most commonly do not heal over the course of time (19)
- Tear size is one variable that dictates the speed of rotator cuff disease progressions:
  - Progression rates for partial thickness tears <50% torn are 14% over two years
  - Progression rates for partial thickness tears >50% are 55% over two years
- As the tear progressively gets larger over time, the rotator cuff muscles can start to be replaced with fat in a process known as "fatty infiltration" (17,18)
- Once enough tendon damage occurs, the rotator cuff can no longer stabilize the humeral head in the glenoid and superior humeral head migration occurs (18)

# REHABILITATION AND EXPECTATIONS

- The majority of rehab studies generally show positive outcomes for folks with both rotator cuff tendinopathy and tears (47)
- Most rehab programs last between 6 and 12 weeks and improvements are usually seen by the 12 week mark (47)
  - Most people improved over time, not a complete resolution of symptoms

- Factors that increase the likelihood of success with physical therapy:
  - Good abduction strength
  - External rotation ROM >52 degrees
  - Negative impingement signs
  - Little to no atrophy of the supraspinatus
  - Preserved intramuscular tendon of supraspinatus
- Factors that decrease the likelihood of success with physical therapy:
  - Restricted ROM
  - Tears extending from supraspinatus to the infraspinatus
  - Full thickness tears >1cm combined with symptoms >1 year
  - Functional impairments and weakness
  - Emotional distress (51)



## WHO ARE THE BEST SURGICAL CANDIDATES?

- Several factors to consider
  - Symptoms (pain/disability)
  - Full thickness vs. partial thickness
  - Size of tear
  - Whether injury is acute or chronic or both
- Having a large or full thickness tear bumps up the decision making process in favor of surgical repair
- Acute traumatic tears are more often repaired earlier than chronic tears
- The decision of undergoing surgery must be tailored to the person and their activity level
- Higher level athletes will need a fully functioning rotator cuff to perform at a high level of function where as a person who doesn't need their shoulder for high level functioning might not need surgery



# WANT TO LEARN MORE ABOUT HOW TO GET YOUR PATIENTS OUT OF PAIN AND BACK IN THE GYM WHERE THEY BELONG?

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**7 REASONS WHY PEOPLE GET HURT IN THE GYM & WHAT TO DO ABOUT IT**  
The Evidence-Based Guide to Understanding Injury Mechanisms in the Gym and Reducing Future Injury Risk

Injuries are multifactorial and often occur from a combination of issues. Understanding these mechanisms is vital in order to both prevent further injury and properly rehabilitate clients from an injury. With some help from the best available evidence and my experience as a coach and physical therapist, I've identified 7 reasons why people get hurt in the gym and what we are able to do to help get them back to training the lifts they love.

**1** **TECHNIQUE**

- Poor technique is the most common cause of injury in the gym.
- Improper form can lead to acute or chronic injuries.
- Lack of proper warm-up can increase the risk of injury.
- Overtraining and fatigue can lead to poor technique.
- Poor technique can lead to compensatory movements, which can lead to injury.
- Poor technique can lead to joint instability, which can lead to injury.
- Poor technique can lead to muscle imbalances, which can lead to injury.

**2** **TOTAL VOLUME**

- Total volume is the sum of all sets and reps performed.
- High total volume can lead to fatigue, which can lead to poor technique.
- High total volume can lead to overtraining, which can lead to injury.
- High total volume can lead to joint instability, which can lead to injury.
- High total volume can lead to muscle imbalances, which can lead to injury.

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