INTEGRATED
PHYSICAL THERAPY
& SPORTS MEDICINE

Risk Factors of Re-Tear Following Rotator Cuff Repair: A Clinical Perspective

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About Me

- Education
  - Bachelor's from Central College in Exercise Science and Athletic Training in 2001
  - Doctorate of Physical Therapy from Duke University in 2004
- Work History
  - Carmel Orthopedics and Sports Therapy in Soledad, CA
  - Sports Rehab and Professional Therapy Associates in Storm Lake, IA
  - Currently at Integrated Physical Therapy and Sports Medicine in Des Moines, IA

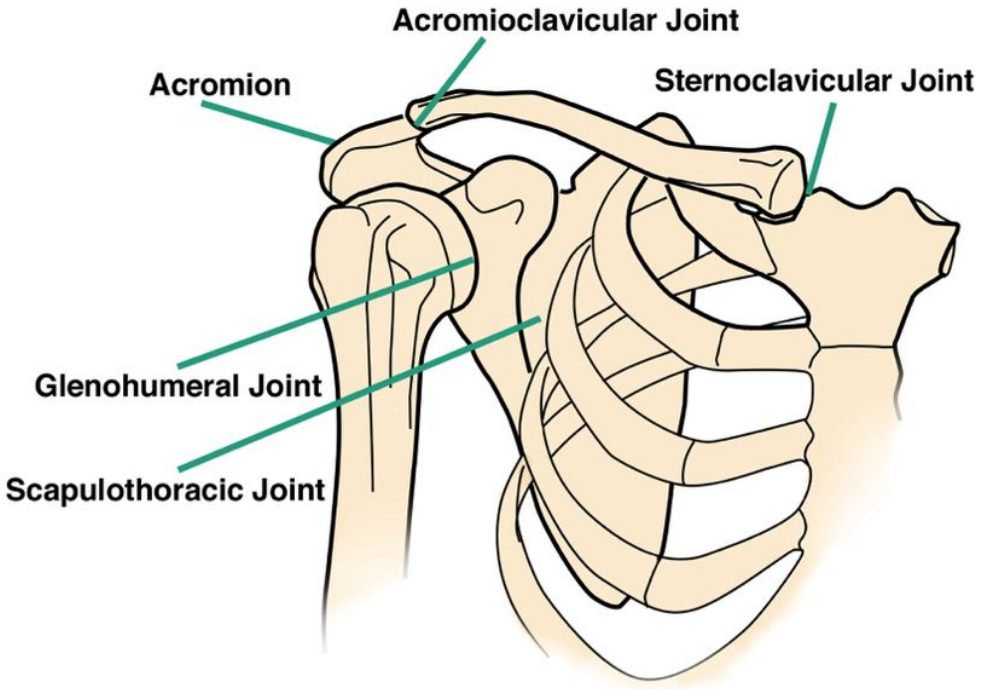
About Integrated Physical Therapy and Sports Medicine

- Locally owned, private practice outpatient clinic
- 8 DPT's and 2 PTA's
- Postural Restoration Certified Clinic

- Pride ourselves on communication and collaborative care

Objectives

- Describe the anatomy and function of the shoulder and rotator cuff
- Explain mechanism of rotator cuff injuries
- Outline treatment options following rotator cuff injuries
- Discuss the prevalence of re-tear following rotator cuff repair
- Outline the phases of tissue healing following rotator cuff repair that guides physical therapy treatment

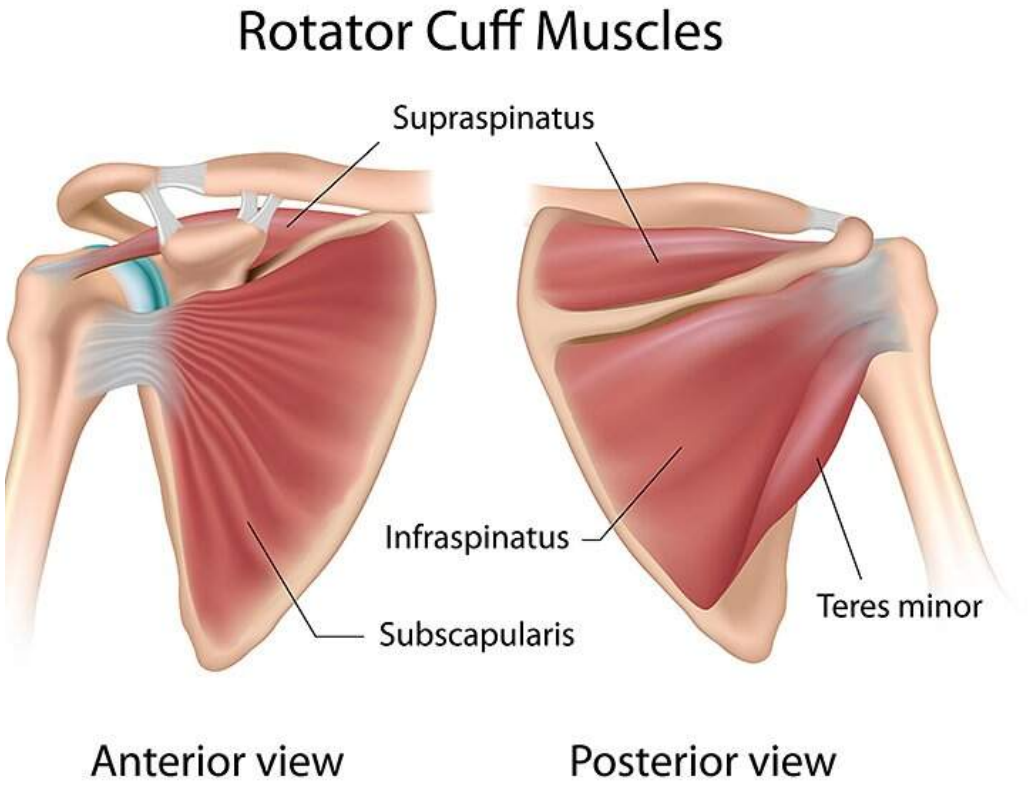


Shoulder Joint

Shoulder Joint

- Consists of scapula, ribs, humerus, and clavicle
- Dynamic joint with multiple planes of motion
  - Flexion and extension
  - Abduction and adduction
  - External and internal rotation
  - Horizontal abduction and horizontal adduction
- 17 muscles attach to the scapula and humerus in order to provide the above motions

What is the Rotator Cuff?



What is the Rotator Cuff?

- Consists of 4 muscles
  - Supraspinatus, Infraspinatus, Teres Minor, and Subscapularis
- Function
  - Stabilize the shoulder joint by holding the humerus centered on the shallow glenoid fossa to avoid impingement and help produce increased range of motion
- Muscle Actions
  - Supraspinatus initiates abduction and external rotation
  - Infraspinatus and teres minor create external rotation
  - Subscapularis functions as an internal rotator

Mechanism of Rotator Cuff Injuries

- Traumatic vs. Degenerative Causes
  - Common workplace traumatic causes
    - Most common is a fall onto an outstretched arm
    - Forceful external rotation with an abducted arm
    - Lifting a heavy object
    - Reaching to prevent a fall
  - Common workplace degenerative causes
    - Repetitive overhead use
    - Repetitive shoulder external and/or internal rotation

Mechanism of Rotator Cuff Injuries (continued)

- Role of posture and degenerative changes in the contribution of RTC tears
  - Small subacromial space
  - A/C joint hypertrophy
  - Tightness and degenerative changes in glenohumeral ligaments
    - Causing the humeral head to translate superiorly and anteriorly
    - Resulting in fraying of the rotator cuff tendons predisposing them to eventually rupturing

Prevalence of Rotator Cuff Injuries

- Age 50 and older: >50%
- Ages 40-49: 29%
- Ages 30-39: 5%

Muscles Most Commonly Torn

- 84% of injuries included torn supraspinatus
- 78% of injuries included torn subscapularis
- 39% of injuries included torn infraspinatus

Rotator Cuff Treatment Options

- Conservative Care
  - Rest, physical therapy, workplace ergonomic assessment and modification
- Interventional Orthopedics
  - SCP and stem cell injections
- Surgical Repair
  - Followed by physical therapy

Failure Rates of Rotator Cuff Repairs

- Incidence of surgery to repair RTC increased by 238% in the US from 1995 to 2009 and 204% in Finland from 1998 to 2011
- Despite positive clinical results, reports of repair failure after surgery can range from 16% to 94%
- Those that do fail, or fail to heal, tend to do so within the first 3-6 months post-surgery

Failure Rates of Rotator Cuff Repairs (continued)

- 19/133 (17%) of arthroscopically repaired rotator cuff tears experienced retear within 1 year
  - Mean time to re-tear was 19.2 weeks
  - Linear increase in retears over the first 26 weeks after surgery
  - All patients in this study had a standardized arthroscopic repair of full-thickness tear of 1-4 cm (large rotator cuff tear)
- 9/22 (41%) of arthroscopically repaired rotator cuff tears demonstrated recurrent tears
  - 7/9 occurred within 3 months of surgery
  - 2/9 between 3-6 months
  - This study also looked at pt's with large tears of >3 cm

Rehabilitation of Post Surgical RTC Tears

- General Considerations
  - Pt job satisfaction
  - Pt comorbidities
  - Quality of tissue and integrity of repair
  - Acute vs Chronic duration of symptoms prior to repair
- Based on Phases of Healing
  - Inflammation: 0-2 weeks
  - Cell Proliferation or Repair: 2-4 weeks
  - Remodeling and Maturation: 4 weeks-1 year

Sample Post-Operative Protocol

- Early Phase (1-4 weeks post-op): PROM, pendulums, modalities for pain
- Middle Phase (5-8 weeks): AAROM first, AROM later, shoulder and RTC muscle isometrics
- Late Phase (8-12 weeks): Continue all ROM and stretching, isometrics at various arm angles
- Return to Work Phase (12-16 weeks): active strengthening with bands and weights, closed chain strengthening, work/sport related activities
  - Begin below shoulder height, progress to overhead strengthening

Clinical Observations of Causes of Possible Re-Tears

- Importance of viability of tissue
- Age of the pt
- Size of tear
- Type of Surgical repair performed
- Poor communication with the rehabilitation team
  - Surgeon, Case Manager, Risk Manager, Lawyers, and PT

Clinical Observations of Causes of Possible Re-Tears (continued)

- Pt compliance with sling use and post operative precautions
- Pt work satisfaction and motivation to return to full work duties
- Proper posture and joint arthrokinematics
- Pt personal habits
- Pt preexisting conditions and health status

Conclusion

Questions?

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