The Swimmer's Shoulder

- and related topics -

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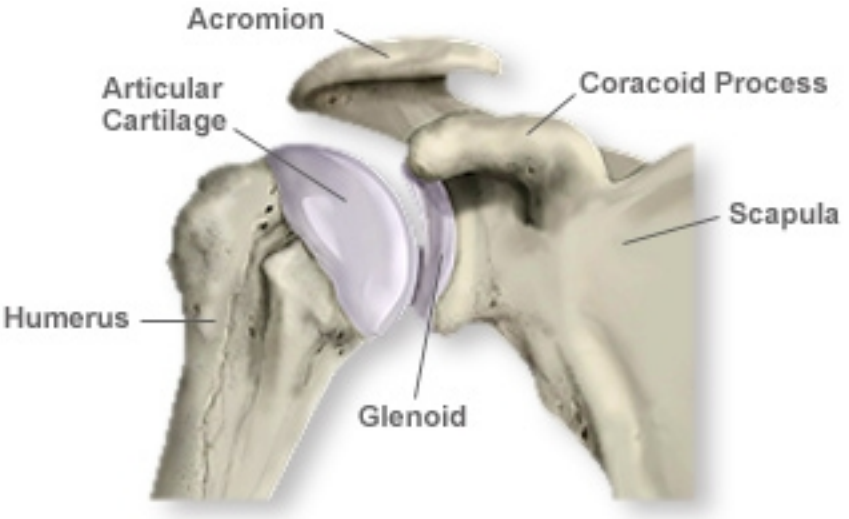
Background

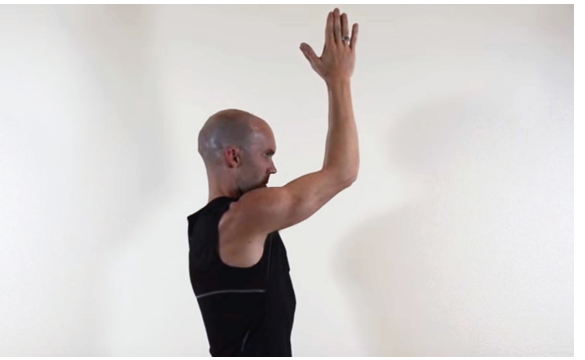
- #1 injury seen in swimmers
  - Shoulder – followed by back and knees (breaststrokers)
- Most likely to occur around adolescence (rapid growth) and at times of substantial increase in intensity/frequency of practice
  - Think freshman year of college
- Elite swimmers report higher frequency of pain than non-elites
  - Years of repetitive movement and high load
- It's not just the pool
  - 38% of injuries in collegiate swimmers were caused by team activities outside the pool – dryland/strength training

Shoulder Anatomy

- Ball (Humerus) and Socket (Glenoid)
  - Golf ball on tee
  - More mobility than any other joint in the body
- 100-120 deg of elevation in the shoulder itself
  - The rest comes from scapula, clavicle and spine



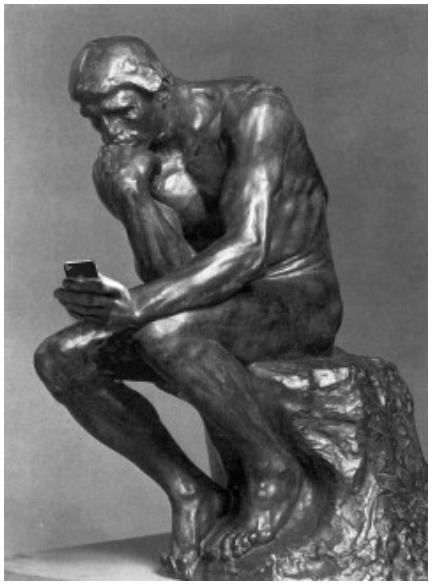
*test on yourself



Shoulder Anatomy

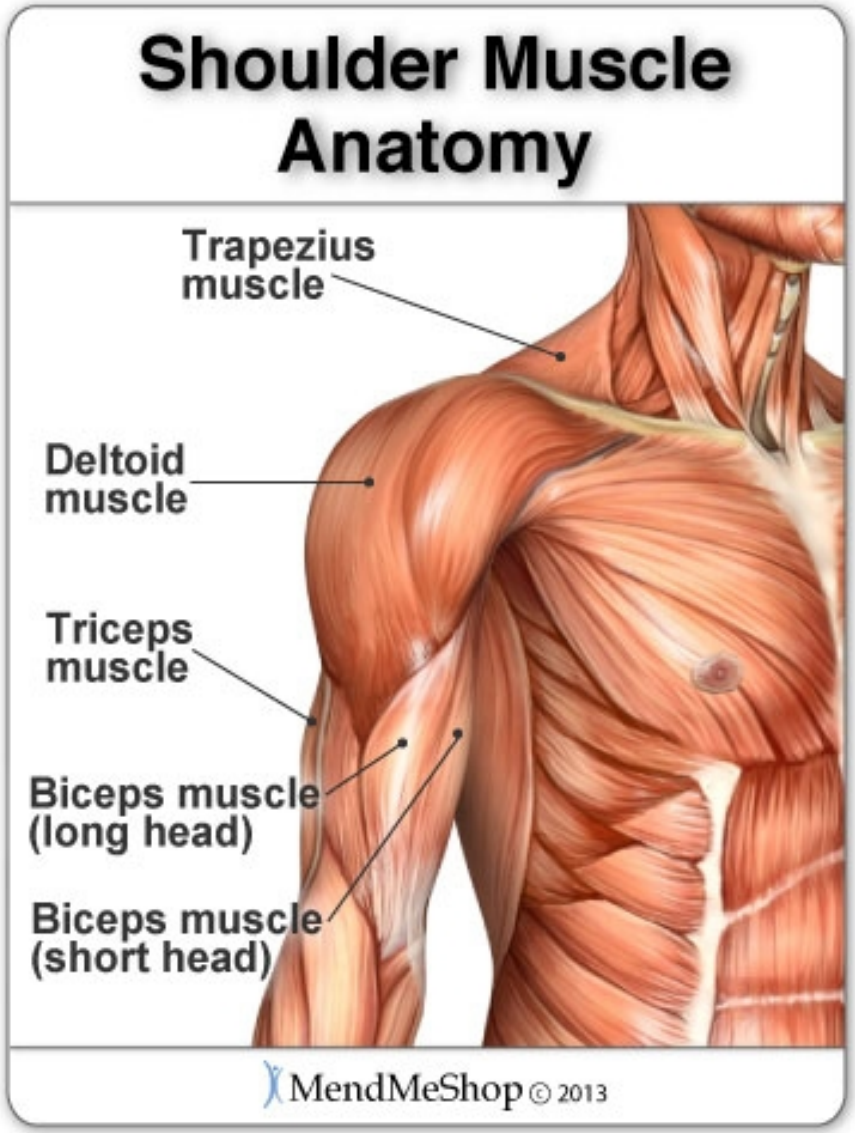
- FULL shoulder motion
  - Combination of shoulder, clavicle, scapula and spine

- How does posture affect shoulder mobility?
  - *test on yourself

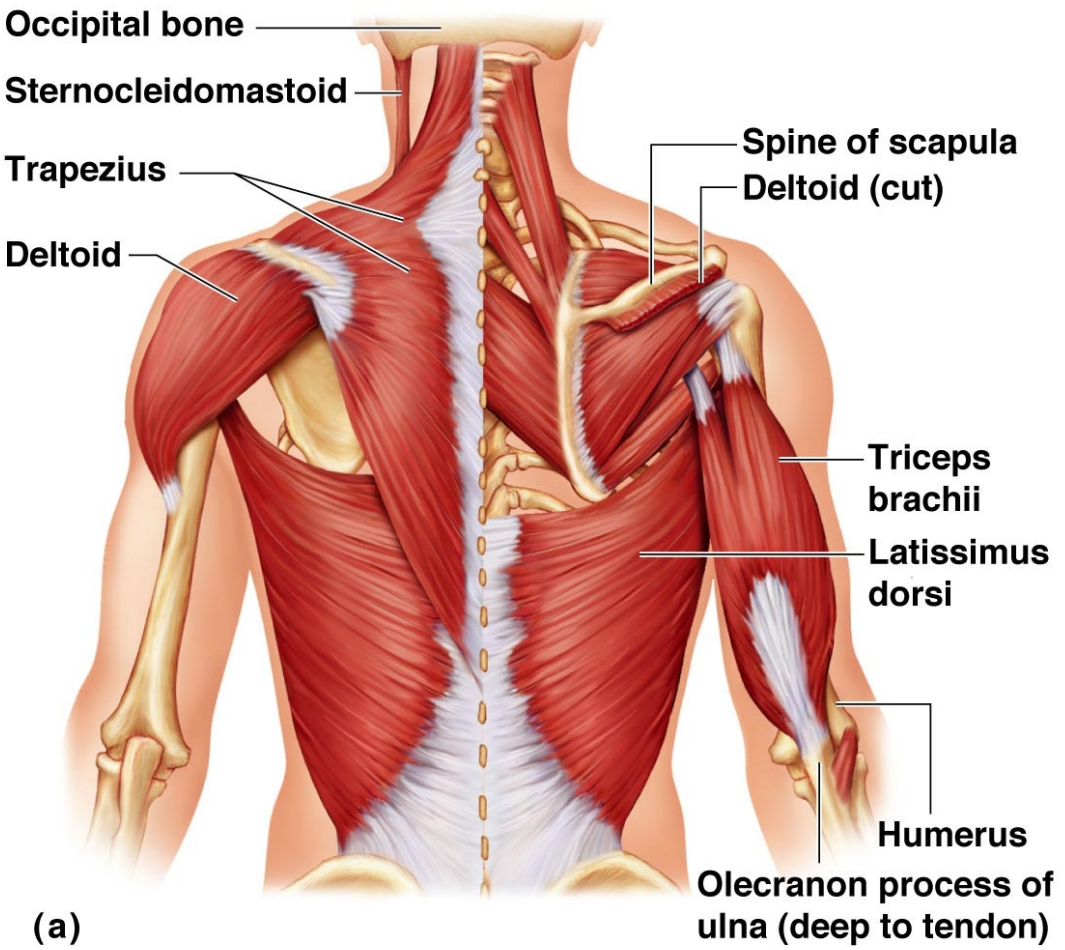


Shoulder Anatomy - “Big” Muscles

Front

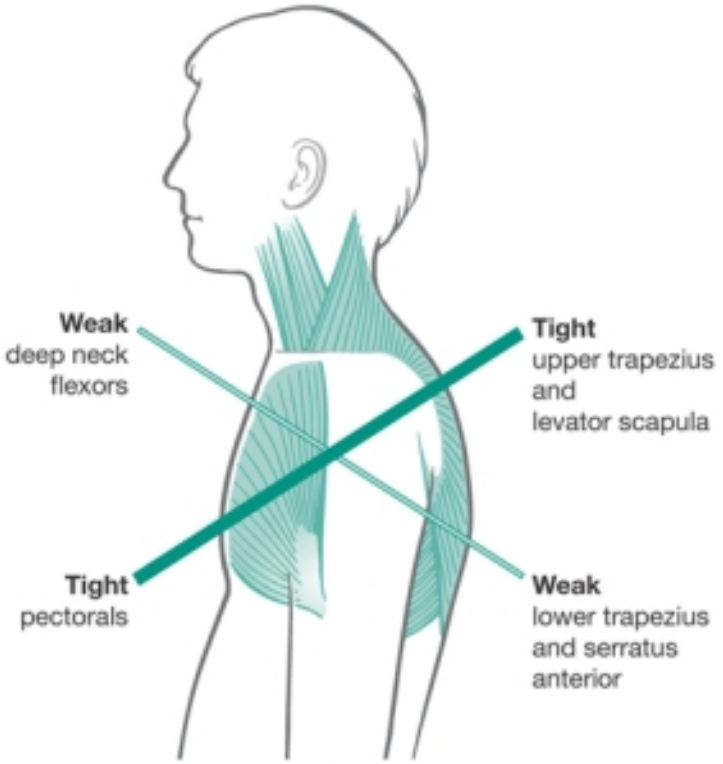


Back



Muscle Usage in Swimmers

- Swimmers are typically strong in the anterior chest and 'big' shoulder muscles – leading to muscle imbalances



You know you're a swimmer when...

people are constantly telling you to sit up straight.

More on Posture

- The muscles and postures used to become a fast swimmer do not necessarily create good posture when upright on land

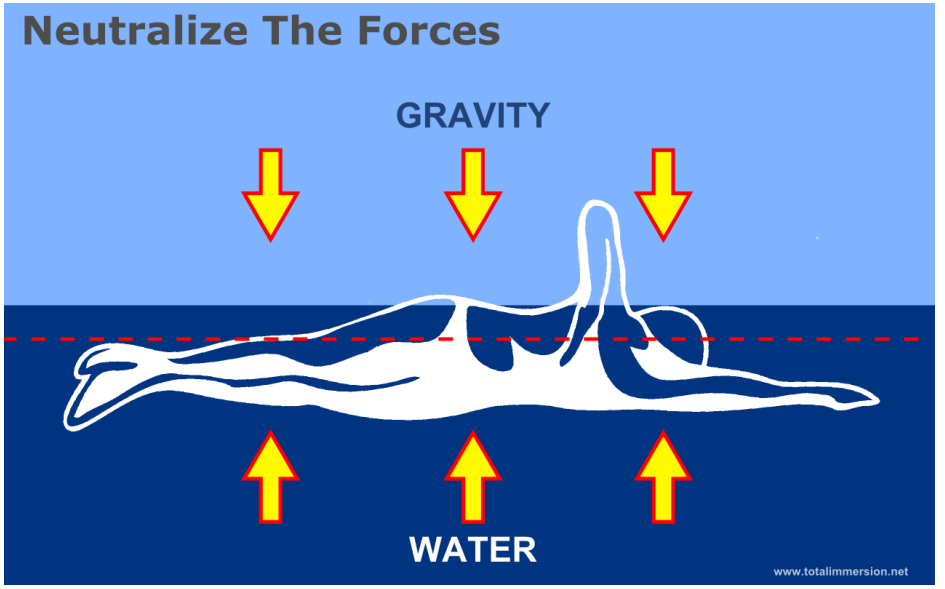
- It is not just a myth that swimmers are often not coordinated on land

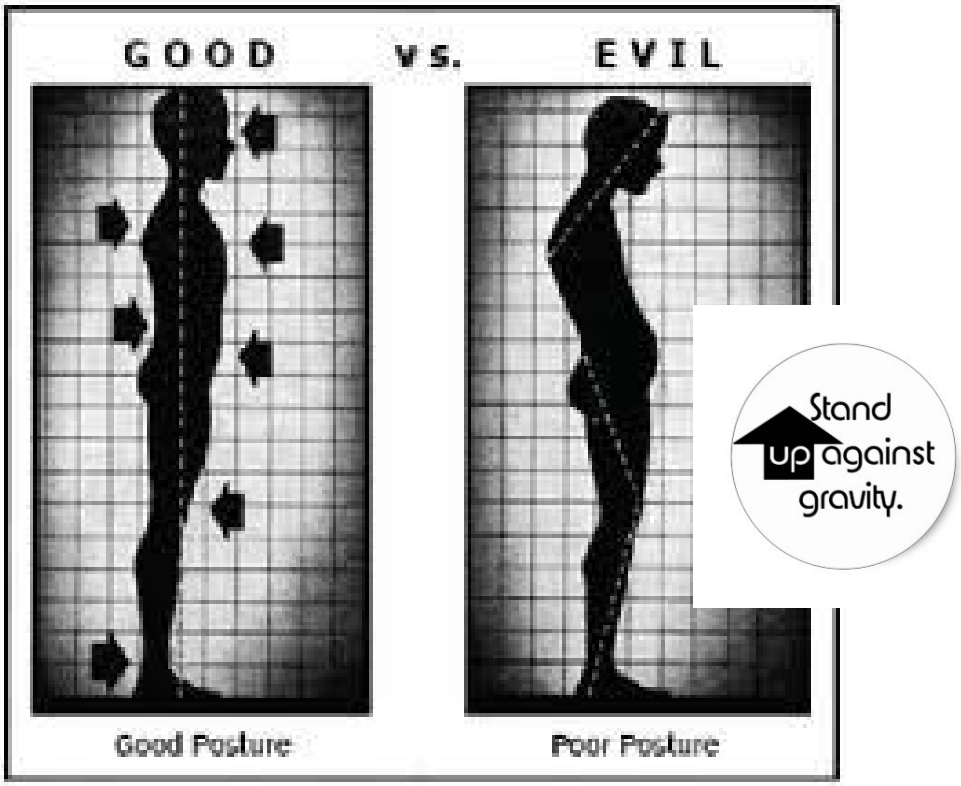
- Unless you are planning on spending all your time in the water until the end of time – you need to learn to be an amphibian

- Comfortable in water AND on land

→ Which means strengthening those underdeveloped muscles

→ And SITTING UP STRAIGHT!



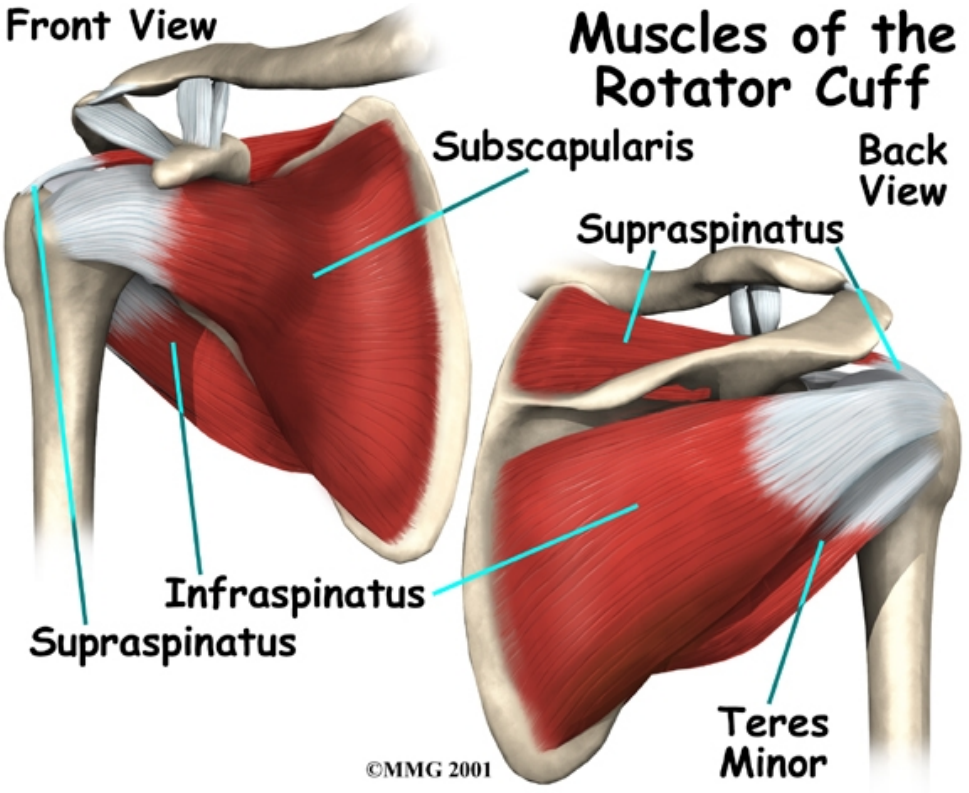


The Rotator Cuff – the "small" shoulder muscles

- Holds ball in the socket
  - Critical in providing stability to the shoulder joint
- Aids in elevating and rotating the shoulder/arm in all positions
  - External (away from body)
  - Internal (toward body)

When the RTC isn't strong enough to oppose the forces of the deltoid – the head of the humerus glides upward – putting pressure on….

1. RTC tendons
2. bursal sac
3. biceps tendon

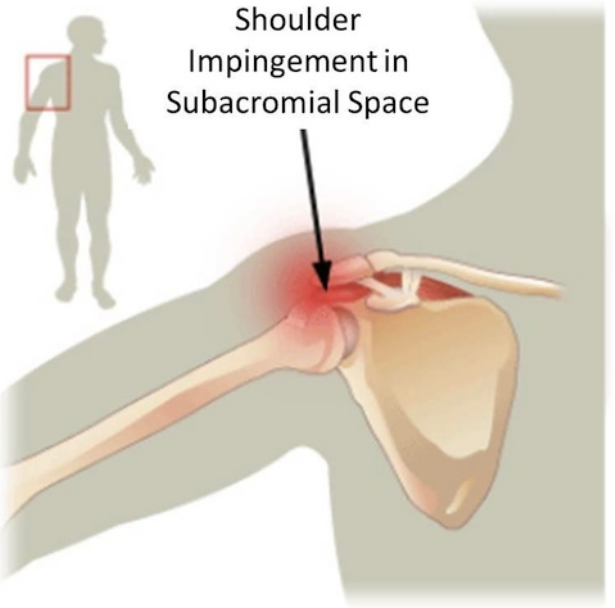


Shoulder Impingement Syndrome

- Medical definitions aside…

  Shoulder Impingement is pain in the shoulder caused by pinching/rubbing of RTC tendons at the top of the shoulder

- Common in overhead athletes – VERY common in swimmers due to the repetitive motions of the shoulder

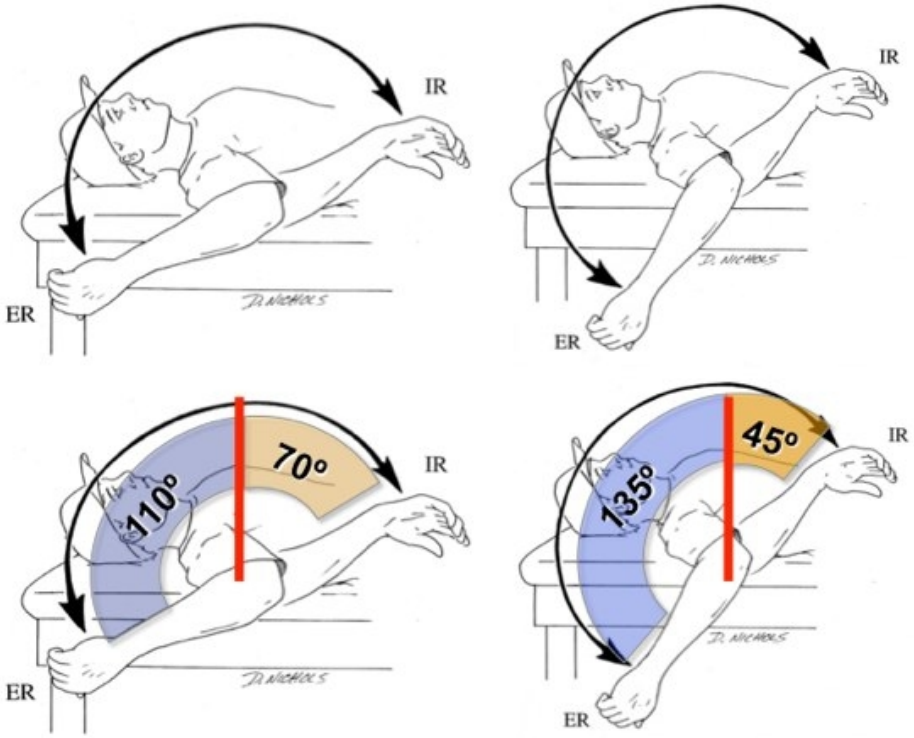


<u>How do I know if I have it?</u>

- Pain with reaching overhead and/or the catch/pull phase of the stroke
- A few other clinical tests: Let's screen for impingement!

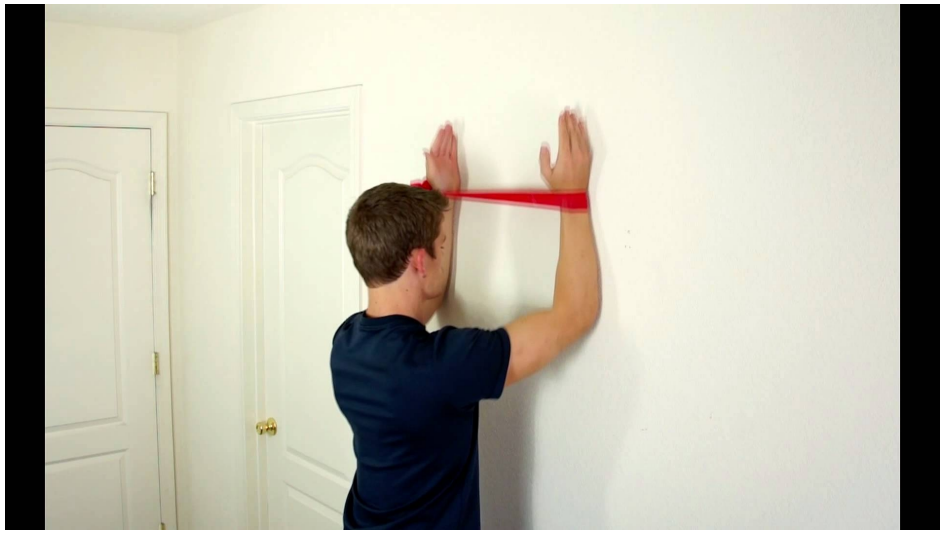
What increases my risk of impingement?

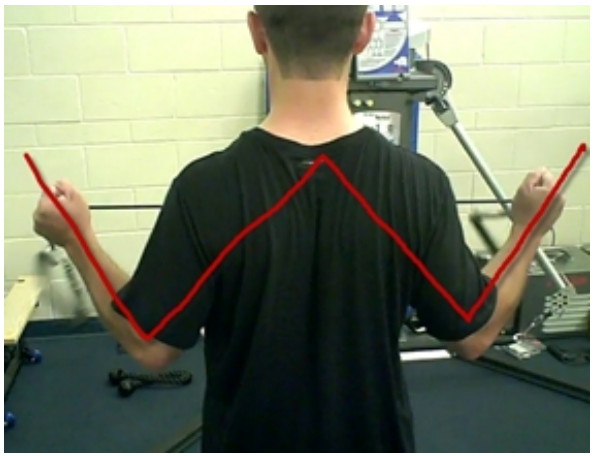
- Relative weakness of the rotator cuff muscles
- Relative weakness of the scapular muscles
- Relative weakness of the core (transfers more stress to the shoulder)
- Loss of mobility in the thoracic spine
- Tight pectoralis muscles
- Loss of shoulder internal rotation range
  - (let's test it!)
- Poor swimming form



Exercises to beef up the RTC and scapular stabilizers

- Partner Shoulder ER + Flexion
- Shoulder W's 3 angles
- Bent over ER
- 5x5 scapular training program
- Gunslinger wall slides





Exercises to improve mobility

- Chest stretch on foam roll
- Thoracic mobility/streamline on foam roll
- Thoracic rotation
- Door stretch
- Internal Rotation stretch

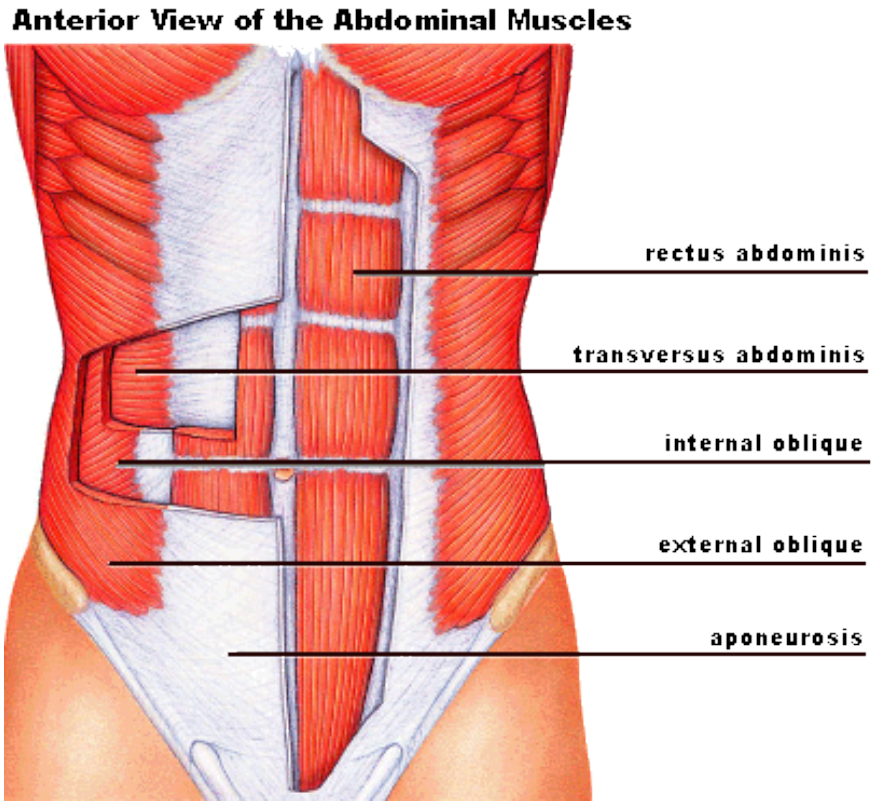
Careful not to crank!

Stretches NOT to do!

Kinetic Chain – It's not just about the shoulder

"You're only as strong as your weakest link"

- Power in the swim stroke flows from legs and core to upper body and back
  - If you lack strength, stability or coordination through the core and hips – it places more stress on other parts of the body (usually the shoulders) and increases injury risk
  - Cooked spaghetti vs uncooked spaghetti
  - How good is your 'rotary stability???' - Test it!! (2 ways)



Work the whole chain

- Curl up
- Plank → push-up
- Side plank progression
- Bridge progression
- Bicycle – band, foam roll

So…what do I do if I have shoulder pain?

- Green light –
  - Muscle ache that subsides with warm-up (never skip warm-up!)
  - Tired/heavy arms that subside with warm-up
  - Intermittent pain that goes away quickly and does not return
  - ***Continue Practice as Usual**
- Yellow light -
  - Soreness that takes longer to subside
  - Intermittent pain that comes/goes throughout practice
  - ***Take it easy through practice; avoid sprinting and high intensity swimming – see if pain subsides w/ easy effort
  - ***Temporary decrease in training load, restrict use of paddles, avoid upper body strength work that causes pain, alternative conditioning is OK
  - ***Continue with this plan for about 3-5 days before resuming practice as usual

What do I do if I have shoulder pain?

- Red Light
  - Soreness/pain that persists after practice and during daily activities
  - ***Take a break from full swimming if it hurts
    - Break it down into kicking/pulling drills that do not hurt
      - But be cautious about using kickboard
    - Avoid painful positions, exercises and activities
    - Discuss with coach regarding training techniques you can still do while taking a break
    - Cautiously return to swimming after a week or two of cross training and light swimming
    - If pain is still present – visit a health professional for an evaluation

How much does technique have to do with it?

- From a PT perspective – these are types of techniques that may put a swimmer at risk for shoulder injury
  - Pulling with a straight arm before having a proper 'catch'
  - Dropped elbow in pulling phase (pulling only with hand instead of whole arm)
  - Crossing over too far
  - Improper hand position at entry
  - Insufficient body roll
  - Poor control of postural muscles
    → poor 'balance' in the water
  - 4-beat kick – asymmetric kick
    → unbalanced stroke
  - Breathing dominance to one side

These things do not always lead to injury, but *can* increase risk

Key points

- Don't neglect the small muscles
- Work on improving posture and core strength
- Improve mobility where it is needed
- Work with coaches on improving technique for an efficient stroke
- Respect pain when you experience it

Any Questions???