

Swimmer's Shoulder

The Scientific Approach to the Shoulder

About me



Dr. G. John Mullen, DPT, CSCS

G. John Mullen received his Doctorate in Physical Therapy at the University of Southern California (USC). At USC, he was a clinical research assistant performing research on adolescent diabetes, lung adaptations to swimming and swimming biomechanics. G. John has been featured in Swimming World Magazine, Swimmer Magazine, and the International Society of Swim Coaches Journal.

G. John is currently the head strength and conditioning coach at Santa Clara Swim Club, owner of [Mullen Physical Therapy, Inc.](#), owner of the [Center of Optimal Restoration](#), dry-land consultant, and creator of the popular [Swimmer's Shoulder System](#).

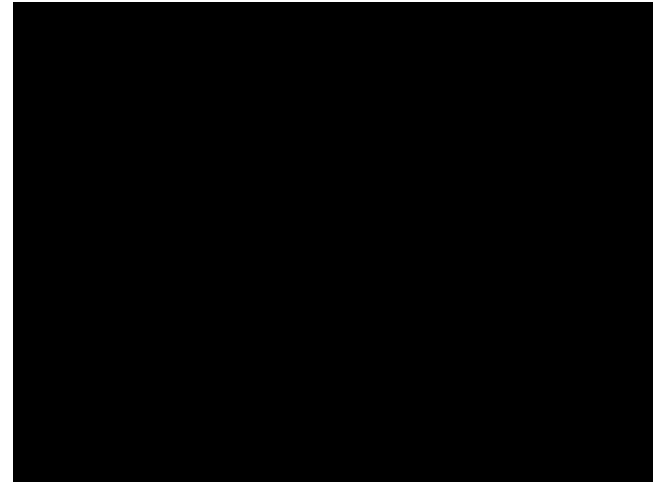
Before we go any further

1. Incorrect information
1. Different information
1. This may not work for you



Why is the shoulder the most common site of injury?

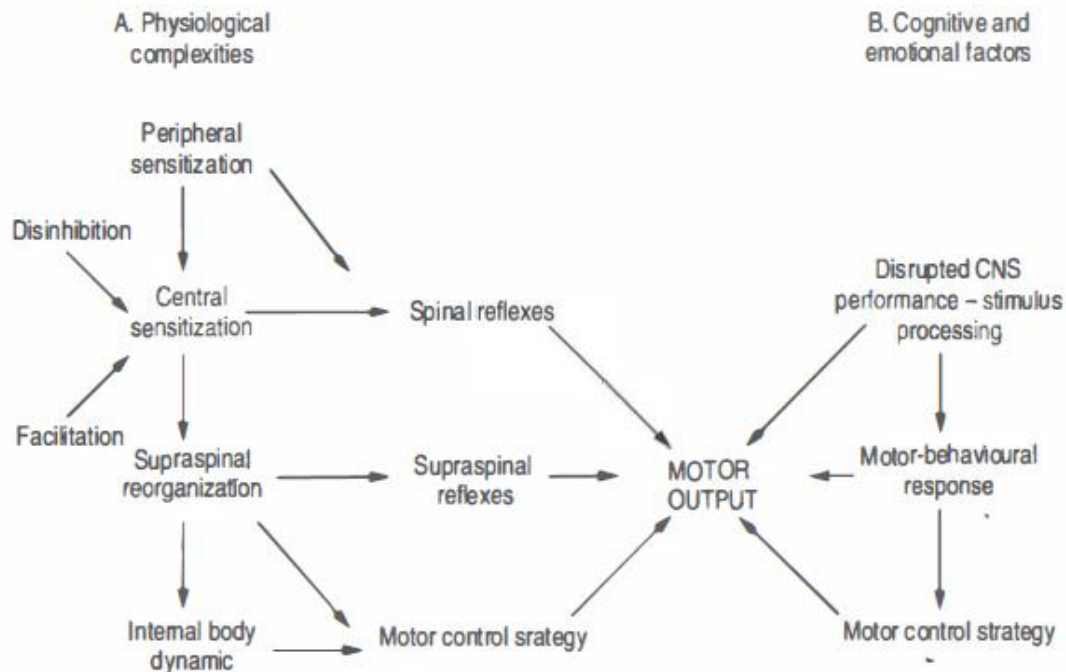
- Injury rates are estimated between 3 – 73% (Richardson 1980; Neer 1983; McMaster 1987; Allegrucci 1997; Bak 1996)
- On Average, injury rate about 50%
- Look at the math
 - 10 strokes per 25 – yard pool (5 each arm)
 - 320 laps per day (8,000 yards)
 - $5 \times 320 = 1,6000$ revolutions per arm each day!
 - $8 \times 1,600 = 12,800$ revolutions per arm each week!
 - $12,800 \times 50 = 640,000$ revolutions per arm each year!
 - $640,000 \times 15$ (years) = 9,600,000 revolutions per arm each age-group career!
 - $640,000 \times 80$ (years) = 51,200,000 revolutions per arm each Master's career!





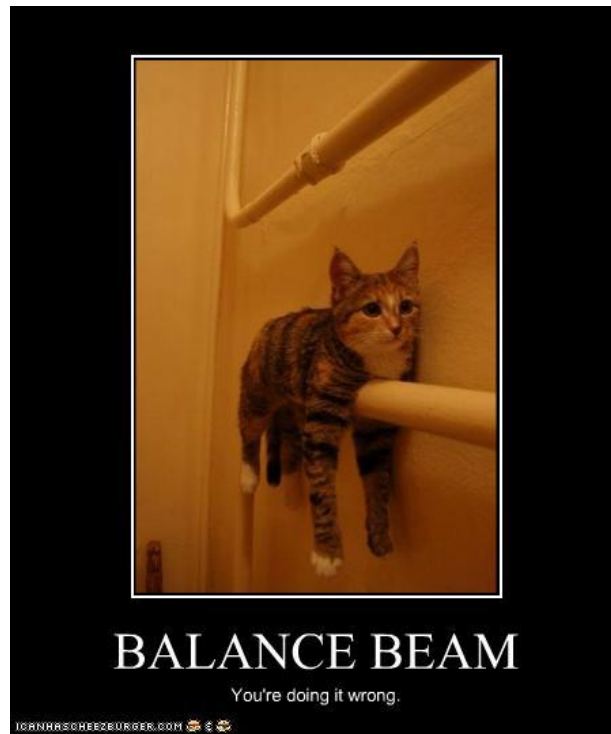
Injuries are not an Option!

- Shoulders transfer force ... duh!
- Shoulder injuries impede performance (Meister 2000)
- Shoulder pain (soreness or injury) alter biomechanics



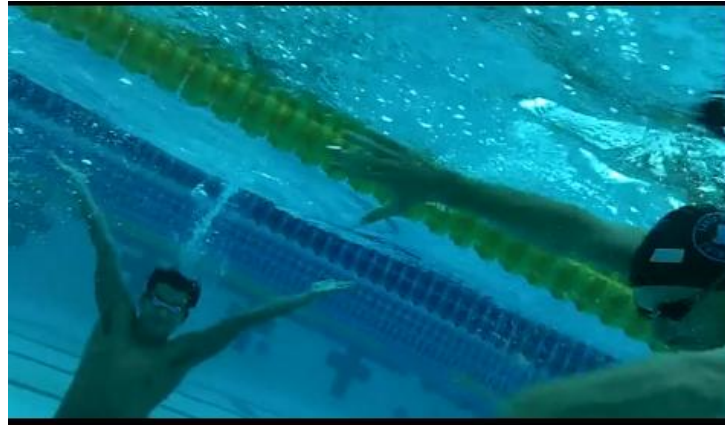
Healthy Shoulder Contains ...

- Balance
 - Length
 - Strength
 - Timing
- Imbalances seen as early as age 14 in competitive swimmers (Batalha 2012).



What Causes Imbalances?

- Biomechanics



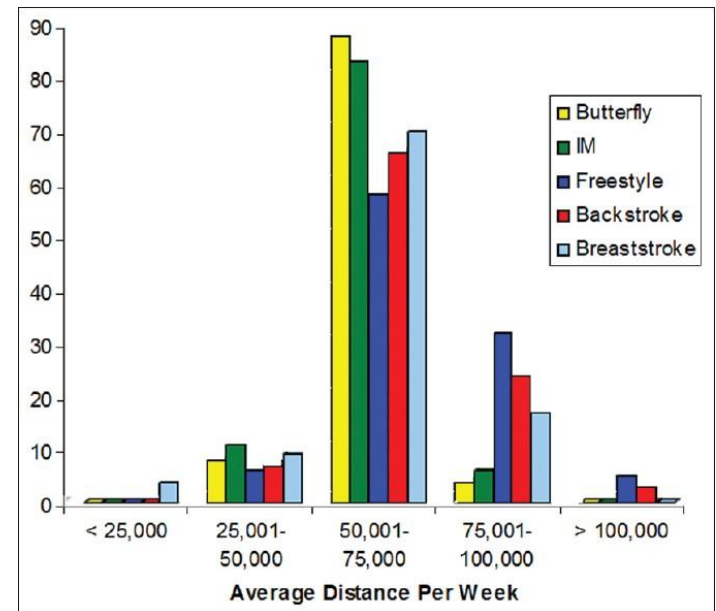
- Training Volume

TABLE.

Little League Baseball Pitch Count Regulations

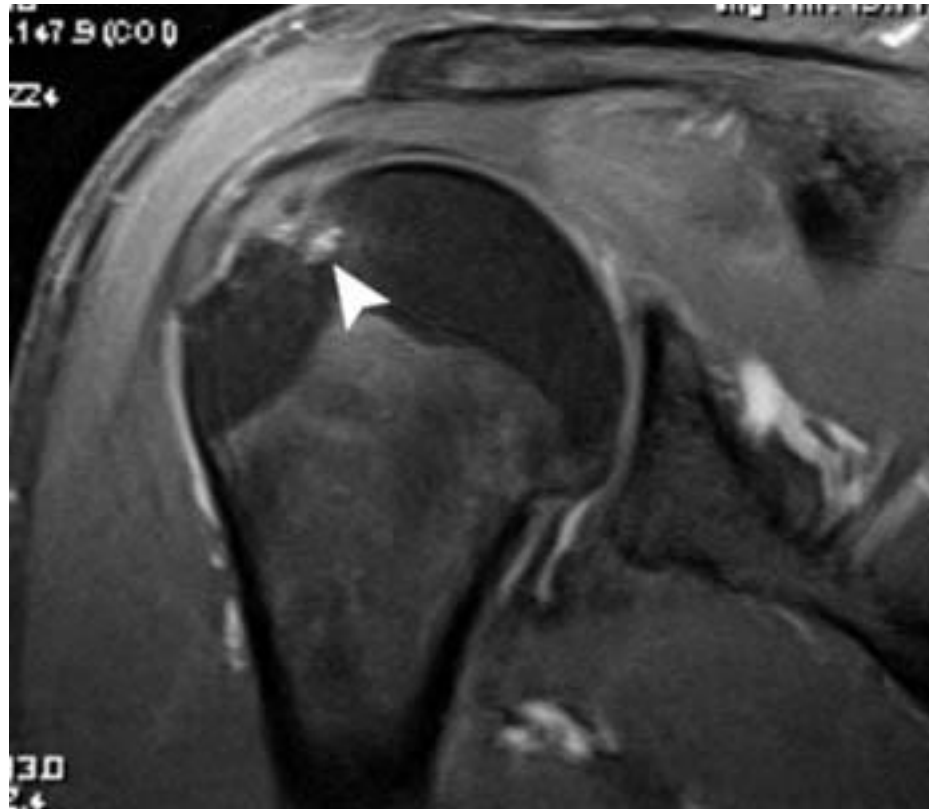
Age	Limits Per Game	Rest Requirements
17-18 years	105/day	76 or more pitches → 4 days rest
15-16 years	95/day	61-75 pitches → 3 days rest
		46-60 pitches → 2 days rest
		31-45 pitches → 1 day rest
		01-20 pitches → 0 days rest
13-14 years	95/day	66 or more pitches → 4 days rest
11-12 years	85/day	51-65 pitches → 3 days rest
9-10 years	75/day	36-50 pitches → 2 days rest
		21-35 pitches → 1 day rest
7-8 years	50/day	01-20 pitches → 0 days rest

From The Little League® Pitch Count Regulation Guide for Parents, Coaches and League Officials; with permission.



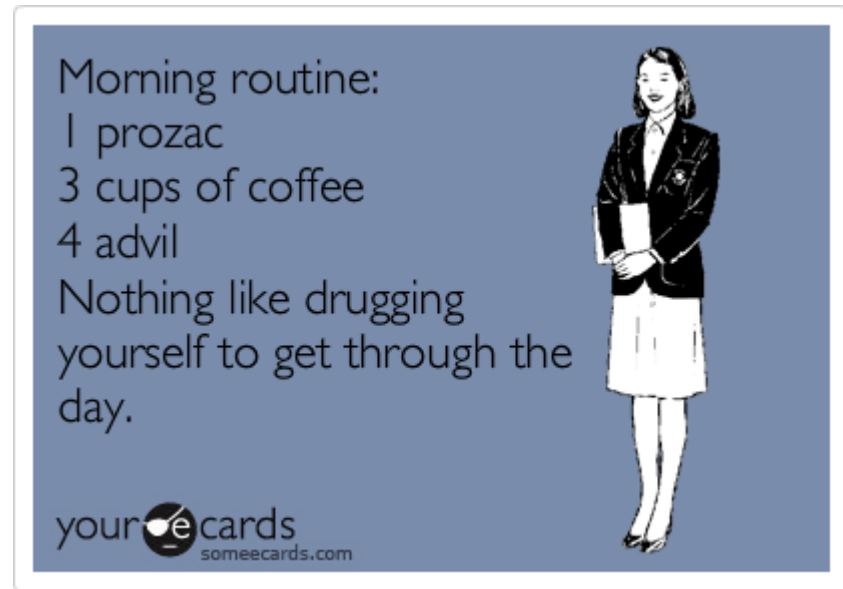
Structural Changes don't Equal Pain!

- Imaging doesn't always equal pain (Reuter 2008)!



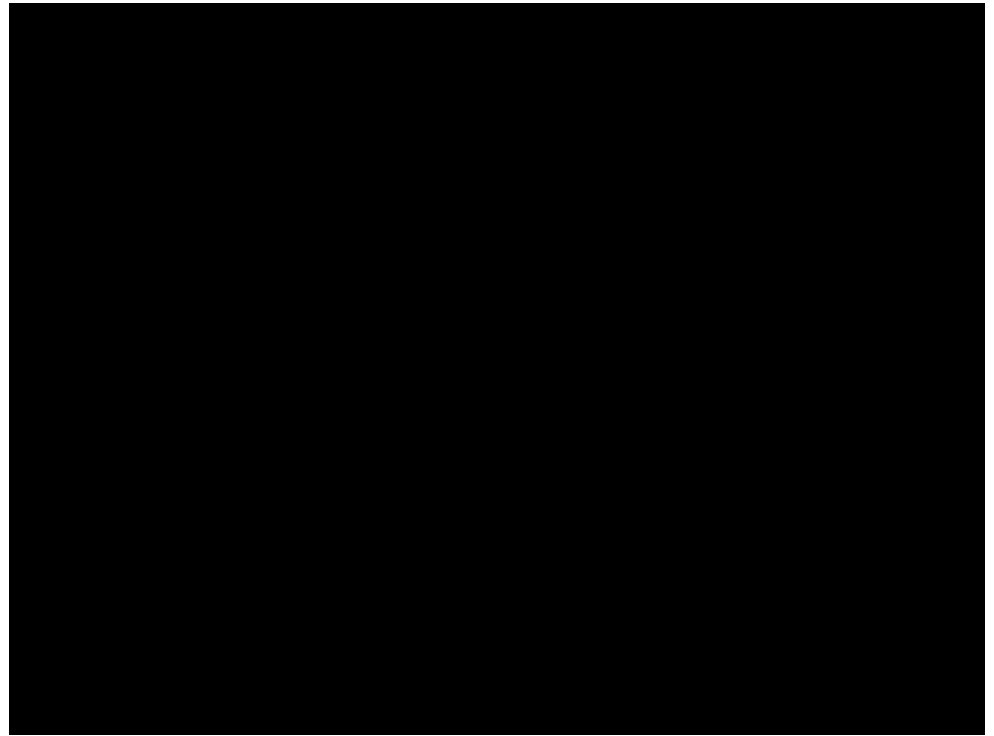
Inflammation

- Inflammation – Must resolve inflammation!
- Toxic soup!
- Anti-inflammatories
- Nutrition
- Ice



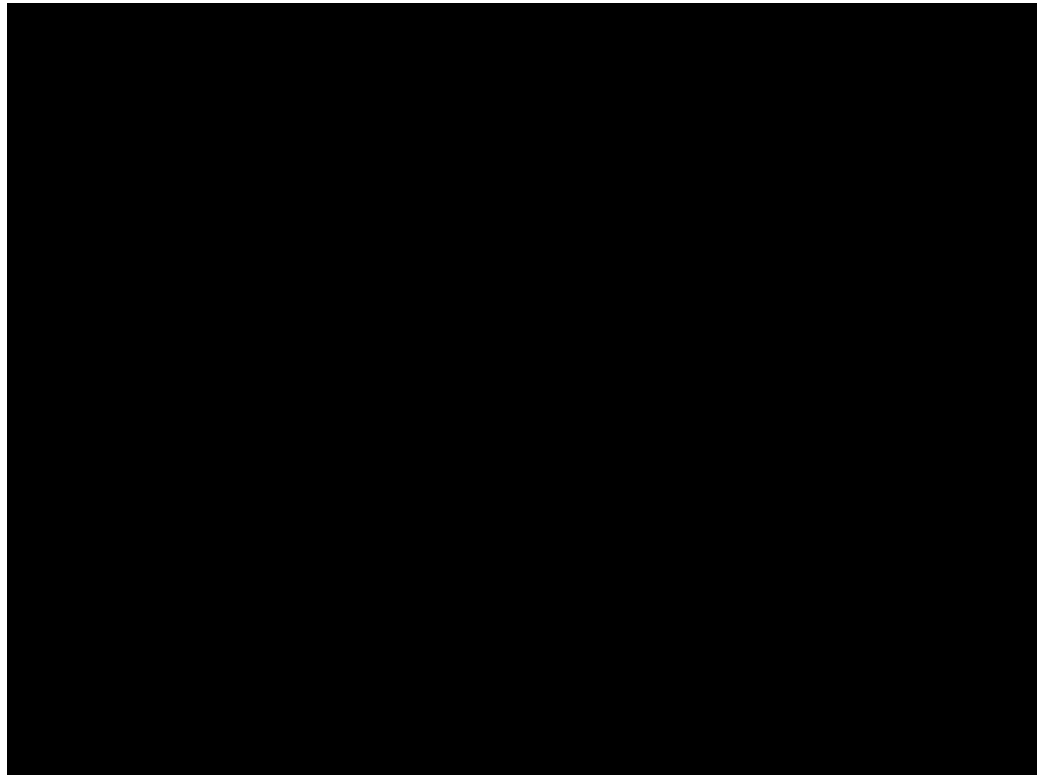
Repair

- Muscle Length
- Trigger points
- Common muscles
- Self soft tissue mobilization (STM)
- When, how, and how much?



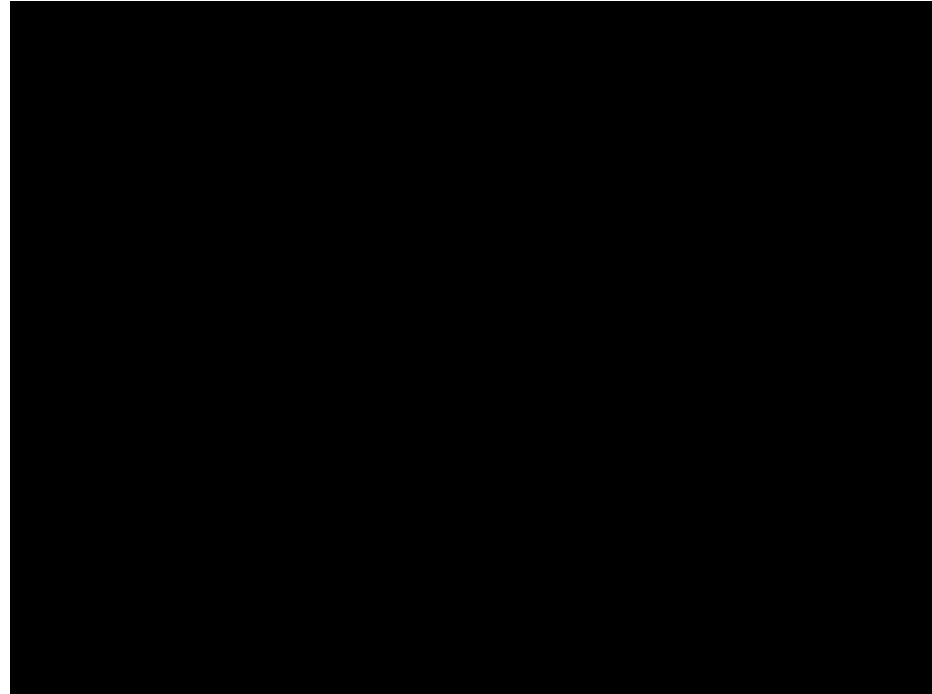
Repair Continued

- Strength
- Interaction with length
- Common muscles
- Rotator cuff?
- When, how, and how much?



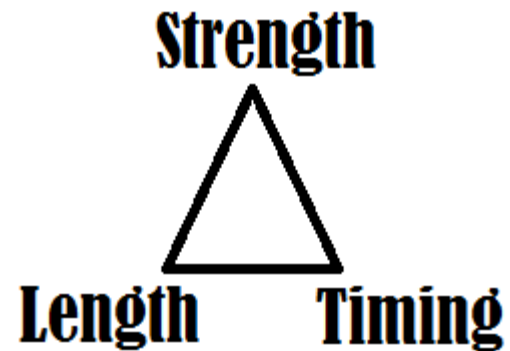
Repair Continued

- Timing
- Interaction with length and strength
- Common muscles
- When, how, and how much?



Practical Implication

- Assessing the stage of the injury
- Muscle Length
- Muscle Strength
- Muscle Timing
- Thank you!



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