



# 2020 NSCA COACHES CONFERENCE & LIVESTREAM



#Coaches20

# *CONFLICT OF INTEREST STATEMENT*

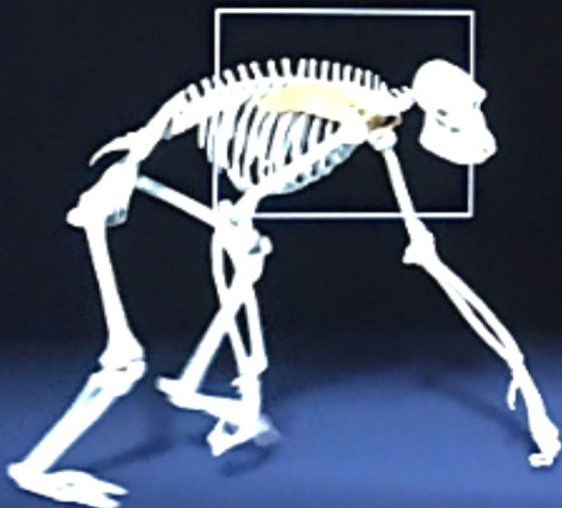
*I have no actual or potential conflict of interest in relation to this presentation.*

# *UPPER BODY TRAINING FOR OVERHEAD THROWING ATHLETES*

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# *DISCUSSION & TAKEAWAYS*

- OPTIMIZING UPPER BODY FUNCTION & SHOULDER HEALTH
- UNIVERSAL CONCEPTS – POSTURE & SCAPULAR STABILITY
- YEAR 2020: WHAT'S CHANGED IN THE LAST 20 YEARS?



**CHIMPANZEE**  
**CHIMPANCÉ**



**“LUCY”**  
*Australopithecus afarensis*

**Lucy and chimpanzees share:**

| Shoulder blades and joints suited for climbing trees

**Lucy y los chimpancés comparten:**

| Omóplatos y articulaciones apropiados para escalar árboles

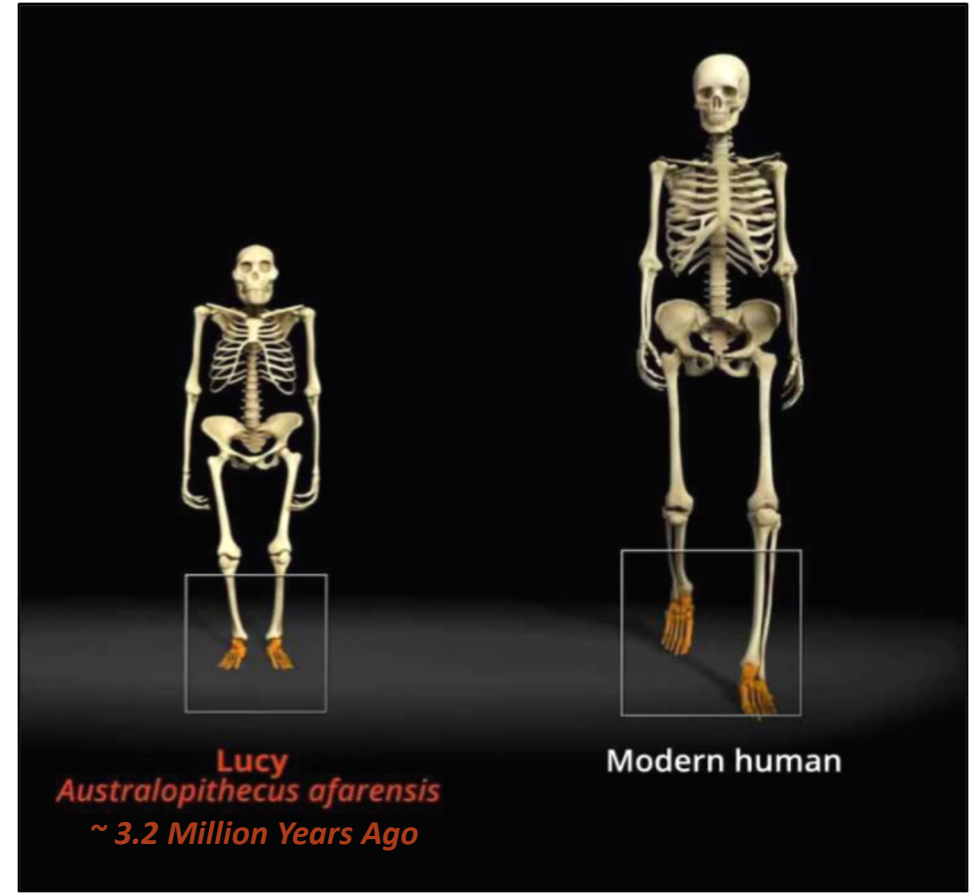
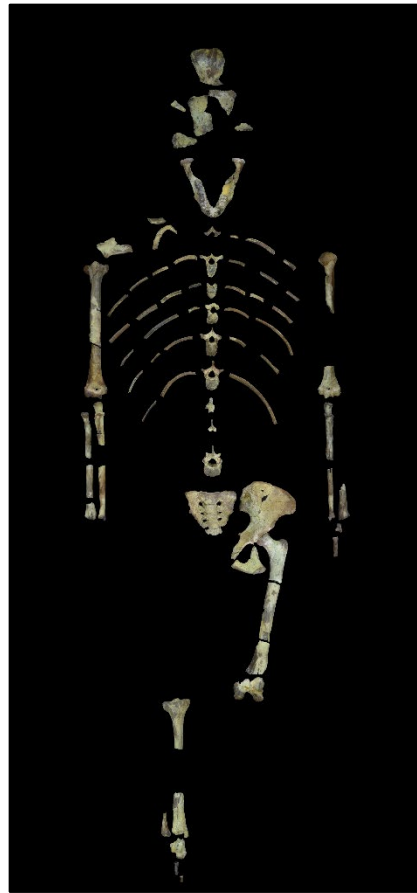


CALIFORNIA  
ACADEMY OF  
SCIENCES

# HUMAN ANCESTORS

Ruff et al. (2016):

- Evidence that early humans were to an extent tree dwelling
- Proficient climbers



Images: Ross Perot Museum of Nature & Science, Dallas, TX (Oct. 2019)

Citation: Ruff, C. B., Burgess, M. L., Ketcham, R. A., & Kappelman, J. (2016). Limb Bone Structural Proportions and Locomotor Behavior in A.L. 288-1 ("Lucy"). *PLoS one*, 11(11), e0166095. doi:10.1371/journal.pone.0166095



# How do you approach upper body training differently with throwers?



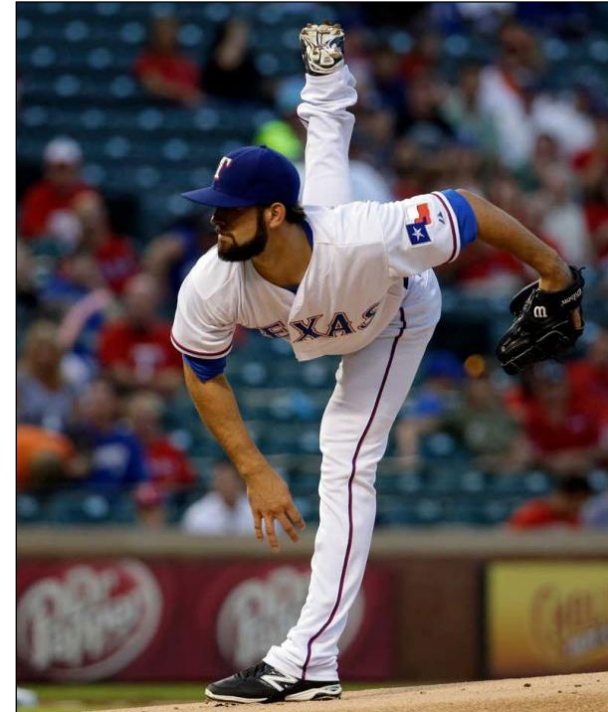
# *“DON'T TRAIN LIKE A BODYBUILDER”*



Athletes need full-body movements that can mimic the full-body movements used in sport...

# *“DON’T TRAIN LIKE A FOOTBALL PLAYER”*

Football requires greater muscle mass to absorb and stabilize against impact...



Throwing requires greater shoulder and trunk mobility...

*“... OR NINJA WARRIOR”*



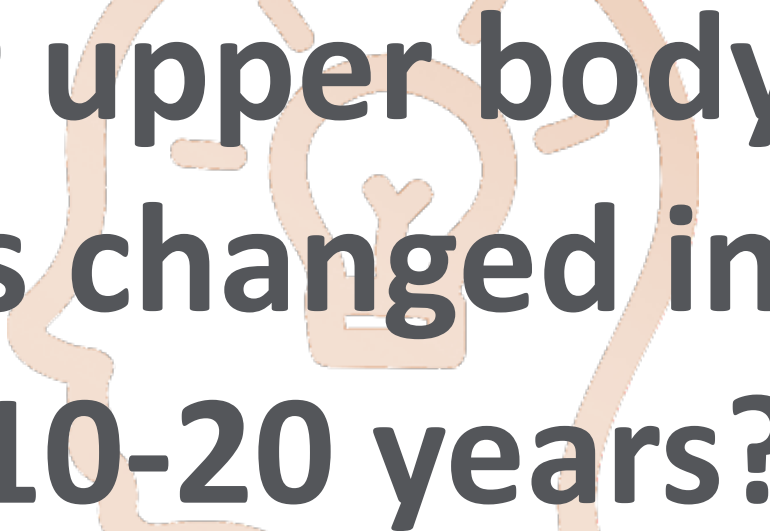
Risk vs. Reward?

# *OTHER OPINIONS:*

## Throwers Shouldn't...

- “Bench Press”
- “Do Anything Overhead”
- “Lift Heavy”



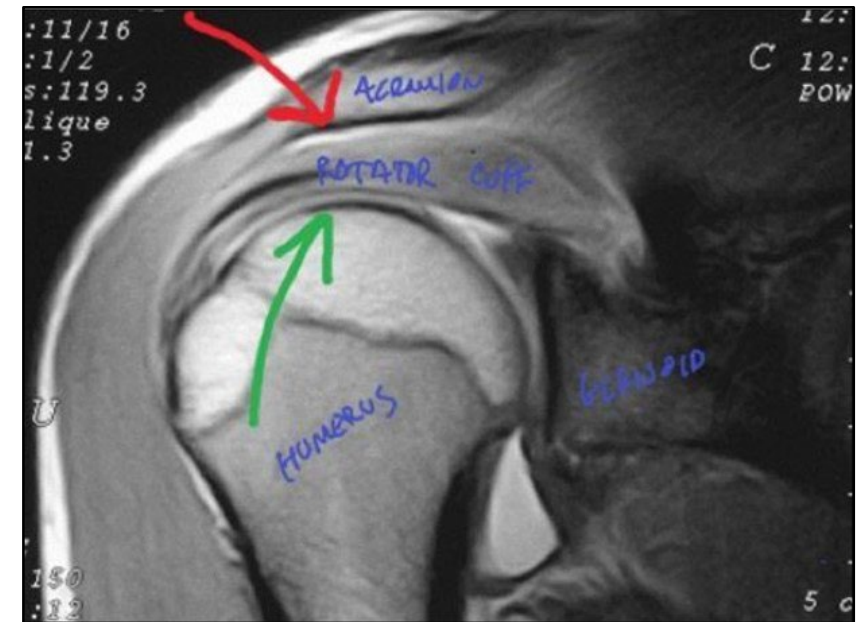


**Have our upper body training  
methods changed in the last  
10-20 years?**



# *WE DIDN'T TALK ABOUT 20 YEARS AGO...*

- “T-SPINE” or “THORACIC MOBILITY”
- “BREATHING” or “RIB CAGE”
- “LAT DOMINANT” ATHLETES
- “FREE SCAP PRESSING”
- “THORACIC OUTLET SYNDROME”



# *WHY UB STRENGTH TRAINING?*

Throwers need sufficient upper body strength to maintain posture and support the arm with repetitive throwing.

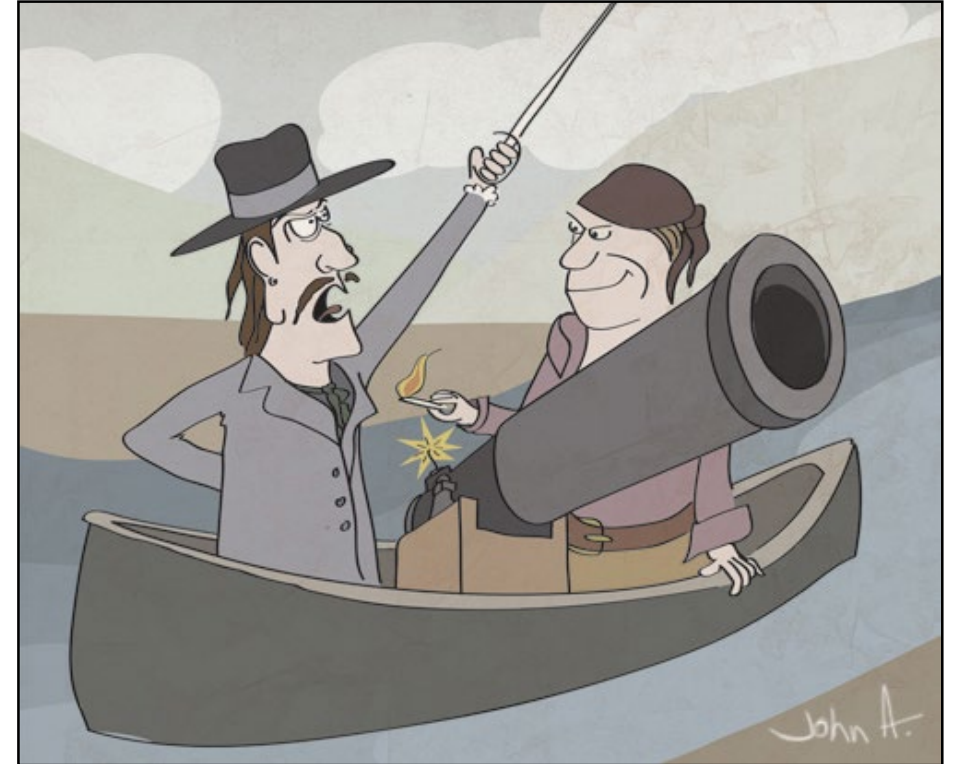


# *FOUNDATIONAL UPPER BODY CHECKLIST:*

- 1. ESTABLISH SCAPULAR STRENGTH*
- 2. MAINTAIN & SUPPORT OVERHEAD FUNCTION*
- 3. INTEGRATE COMPOUND & SPORT-SPECIFIC MOVEMENTS*
- 4. ADJUST TO POSTURE & INDIVIDUAL NEEDS*
- 5. INCORPORATE AS A SUSTAINABLE-REPEATABLE PROGRAM*

# ESTABLISHING SCAPULAR STRENGTH

- Foundational Component
  - Transfer of Force
  - Decelerate the Arm
- Progression
  - Prone to Upright
  - Proximal to Distal



*“Can’t shoot a cannon from a canoe.”*

# SUPPORT OVERHEAD FUNCTION

- Lower Trapezius & Serratus Anterior
  - Scapular Movement & Positioning
  - Convex (Ribs)-Concave (Scapula)
- Functional SCAP Movement
  - Upward Rotation
  - Posterior Tilt
  - External Rotation

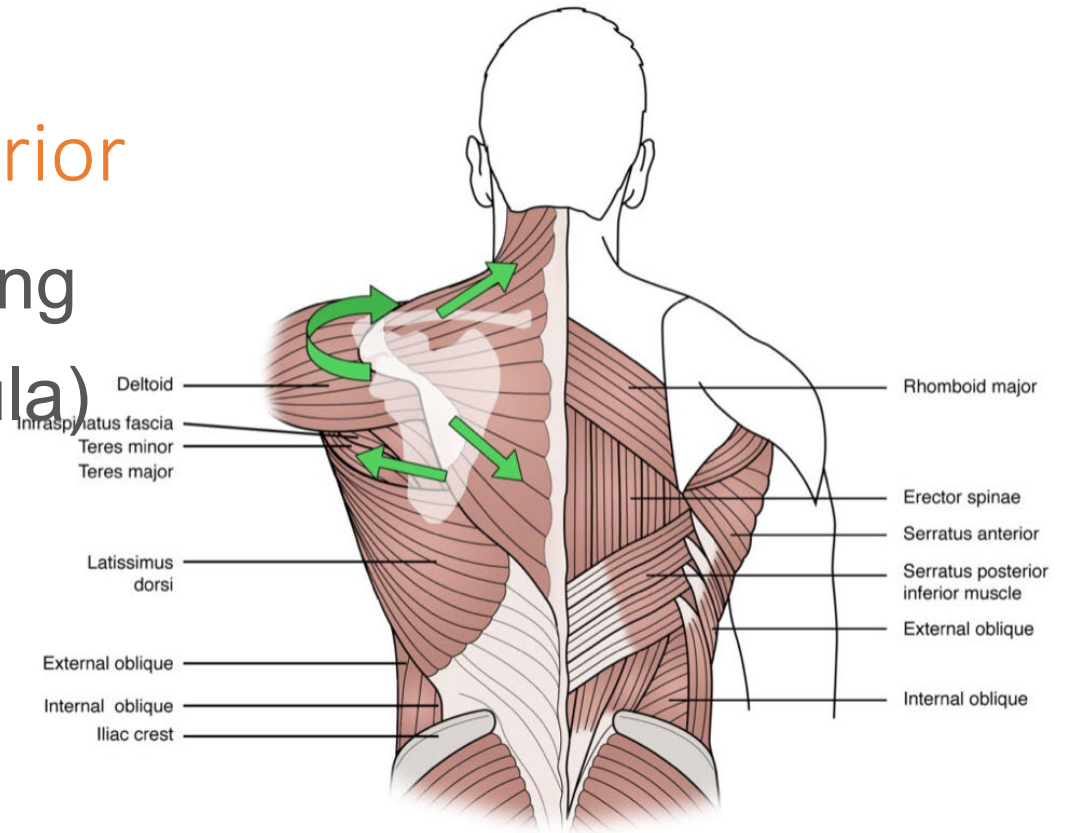


Figure: "Trapezius and Serratus Force Couple" – Citation: Page, P. (2011). Shoulder Muscle Imbalance and Subacromial Impingement Syndrome in Overhead Athletes. *IJSPT*, 6(1): 51-58.

# *PULLING MOVEMENTS*

- Errors of Our Time...
  - Down & Back?
  - 2-Pulls to 1-Push?
- Pulling Progressions:
  - Straight → Bent-Arm Pulldowns
  - Supported → Unsupported Rows
  - Bilateral → Unilateral



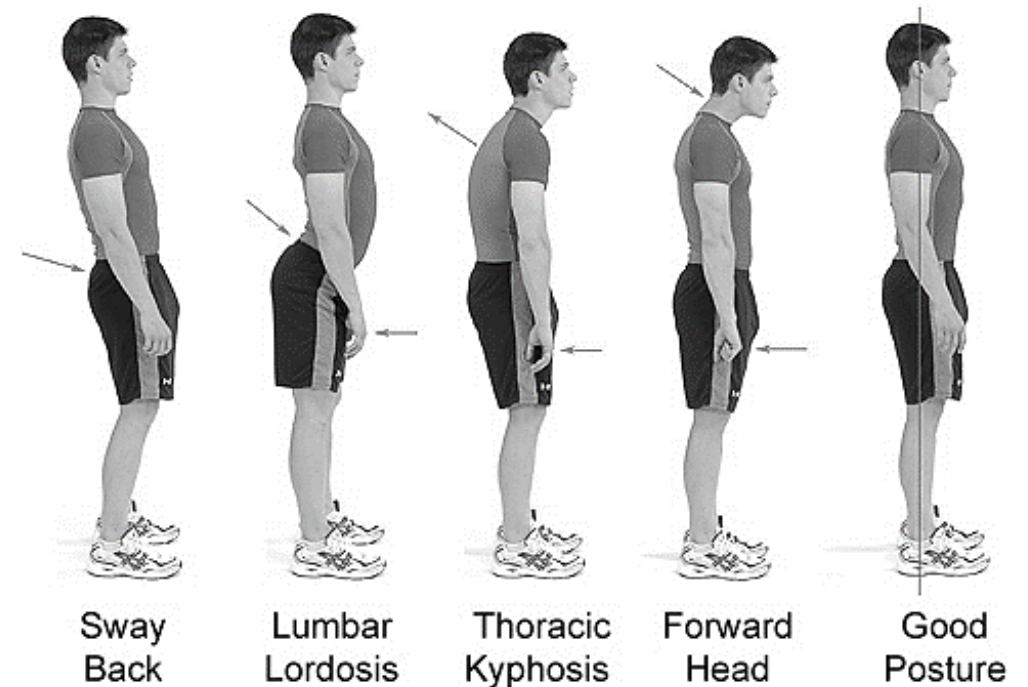
# CONSIDERING POSTURE

- Good Posture

- Head in Alignment
- Shoulders Back
- Chest-Up

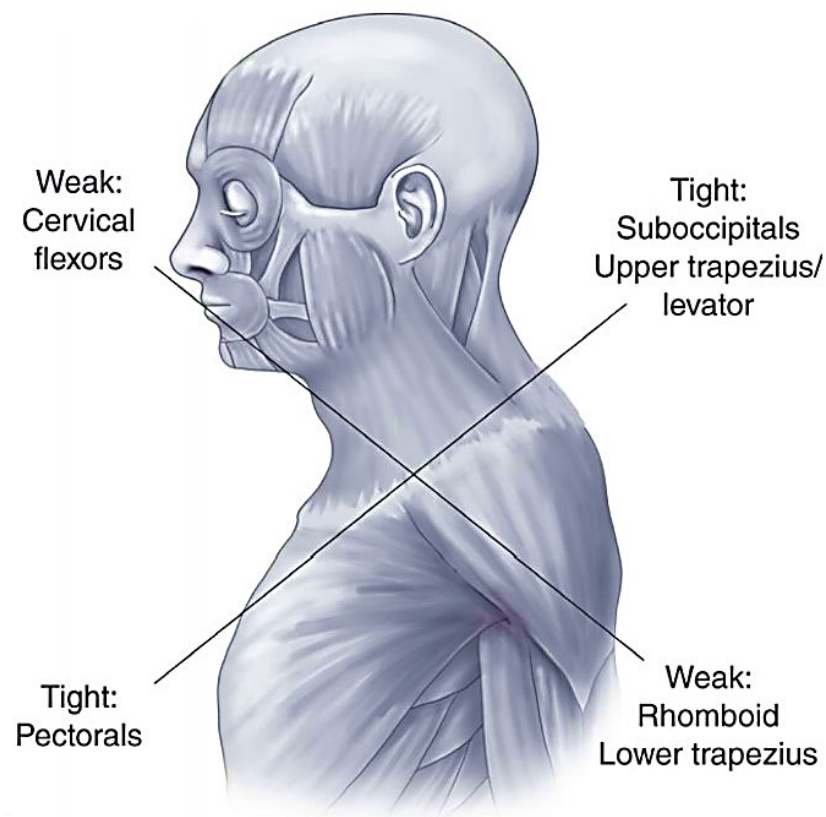
- Faulty Posture

- Limits Overhead ROM
- Leads to Impingement
- Impairs Circulation / Recovery



# TRADITIONAL POSTURE

- Upper Crossed Syndrome
  - Classic Example...
- Upper Trapezius Dominant:
  - High Shoulders
  - “No Neck”
  - Trap-Dominant Pulling

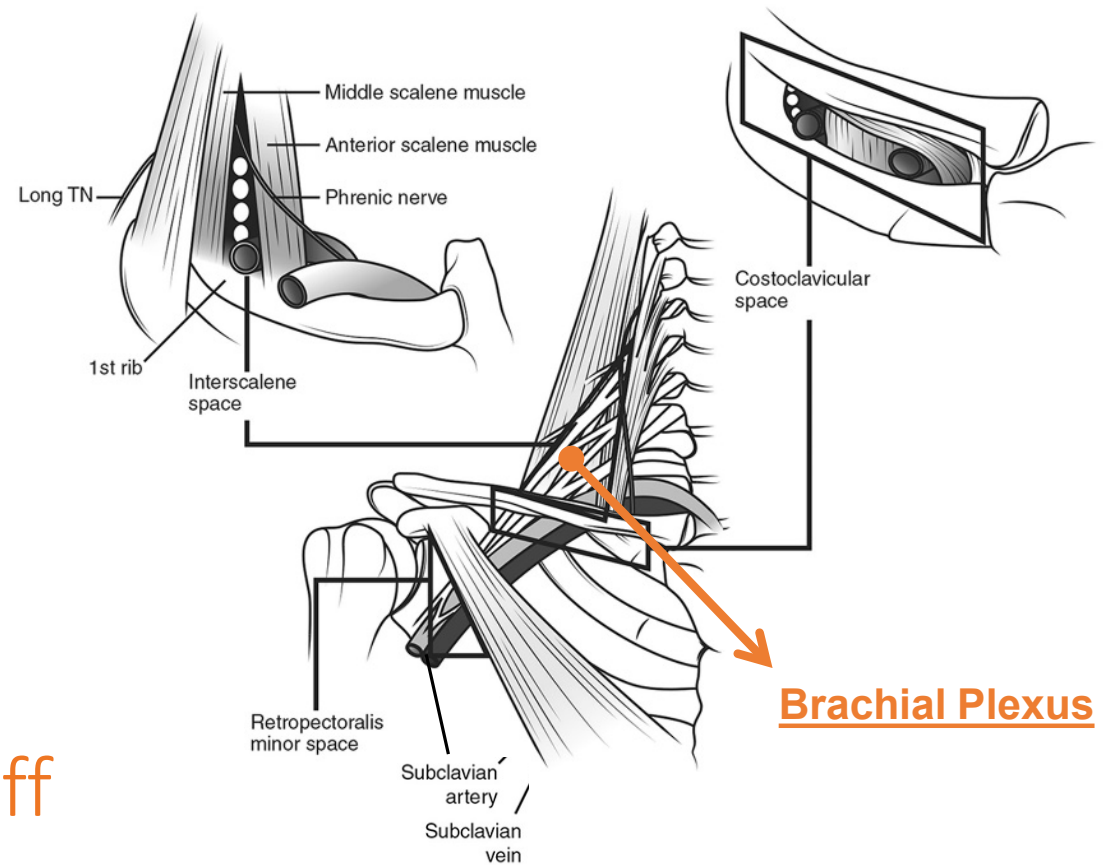


©Human Kinetics 2010

Figure: “Janda’s Upper Crossed Syndrome” – Citation: Page, P, Frank, C., & Lardner, R. (2010). *Assessment and Treatment of Muscle Imbalance: The Janda Approach*. Champaign, IL: Human Kinetics

# ALSO LOOK FOR...

- Extension Postures
  - Excessive Lordosis
  - Spondylolysis / Spondylolisthesis
- Sloped Shoulders:
  - Impingement / Thoracic Outlet
- Lats Overpowering Low Trap / Cuff
  - Scapular Dyskinesis / Tightness OH



Citation: Kuhn, J., Lebus, G., & Bible, J. (2015). *Thoracic Outlet Syndrome*. *J Am Acad Orthop Surg*, 23(4): 222-32, 25808686. doi: 10.5435/JAAOS-D-13-00215.

**What's your opinion on upper  
body pressing? Bench Press?**



# UPPER BODY PRESSING



**“The best ability in an athlete is AVAILABILITY, being able to participate in practices and games! This is why we don’t bench press our overhead athletes.”**

**“The Barbell Bench Press is the best pressing strength exercise when you consider loading, the amount of musculature involved, safe range of motion and joint stability.”**

**“Pressing and overhead are fine... As long as you keep movements shoulder friendly... Allowing the SCAP to move... Free vs. Fixed SCAP Pressing”**

**“I’ve always programed an even amount of SCAP Restricted Bench Press and SCAP Free Pushups and Landmine Presses - 1:1 Ratio”**

# *PRESSING MOVEMENTS*

- Build Protraction into Pressing
  1. Engage SA in a Support Role
  2. Add Stability Component w/ Movement
  3. Progress into Overhead / Upward Rotation
- Quadruped / Crawling Movements
  - e.g. Pushup Variations, Inch Worm, Planks, Body Saw, Shoulder Taps, Wall Slides, etc.



# NEXT...

- Progress to Compound Movements
  - BB / DB Bench Press
  - 1-Arm / Alternating Bench Press
  - Use Your Discretion
- Incorporate “Free Scapula” Pressing
  - e.g. Bottom-Up Carries, Walks, Push-Up Variations, 1-Arm Cable / Landmine Press
  - Applies to Pulling as well...



# *HOW DO YOU LIKE YOUR ARM TO FEEL?*

- Loose... “Whip”? Tight... “Strong”?
- If Pressing Isn’t an Option...
  - Injury / Preventative Purposes
  - Return to Foundational / Core-Focused Exercises
  - Don’t Neglect Posterior Shoulder & Scapular Awareness
  - Don’t Neglect Consistent Arm Care...

# BASEBALL “ARM CARE” ROUTINES?

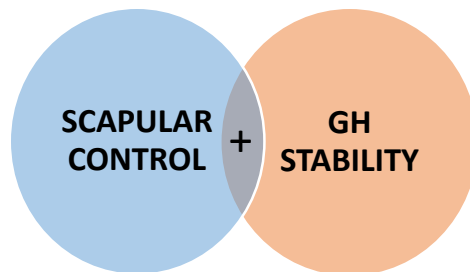
- Low Intensity Arm Exercises:
  - Increase Blood Flow (Flush)
  - Build Strength / Work Capacity
  - Increase Shoulder Stability
  - Maintain Posture / Muscle Balance
  - Promote Recovery



# ARM CARE ROUTINES...

- Focuses:

1. Shoulder Stability =



2. Cuff, Elbow, Forearm, & Grip Strength

3. Stability with Overhead Movement

## SAMPLE 5-DAY PITCHER ROUTINE:

<b>DAY 1</b>	<b>Light Arm Care:</b> <i>Ball Drops or Isometric Stabs</i>
<b>DAY 2</b>	<b>Throw Bull Pen:</b> <i> tubing / Dumbbells &amp; Forearm Manuals</i>
<b>DAY 3</b>	<b>Light Arm Care:</b> <i>Body Blade &amp; Ball on Wall Serratus</i>
<b>DAY 4</b>	<b>Off</b>
<b>DAY 5</b>	<b>Pitch In Game:</b> <i>Manuals or tubing w/ Isometric Stabs</i>

A large, light brown outline of a human head in profile, facing left. Inside the head, there is a smaller, solid light brown icon of a lit lightbulb, symbolizing an idea or thought.

**Are post-throwing “arm care”  
routines redundant to  
weightroom programs?**



# *BICEPS ACTIVITY IN THROWING*

- Jobe et al. (1984) – EMG Study:
  - Biceps Most Active at Ball Release – Antagonist / Eccentric Action

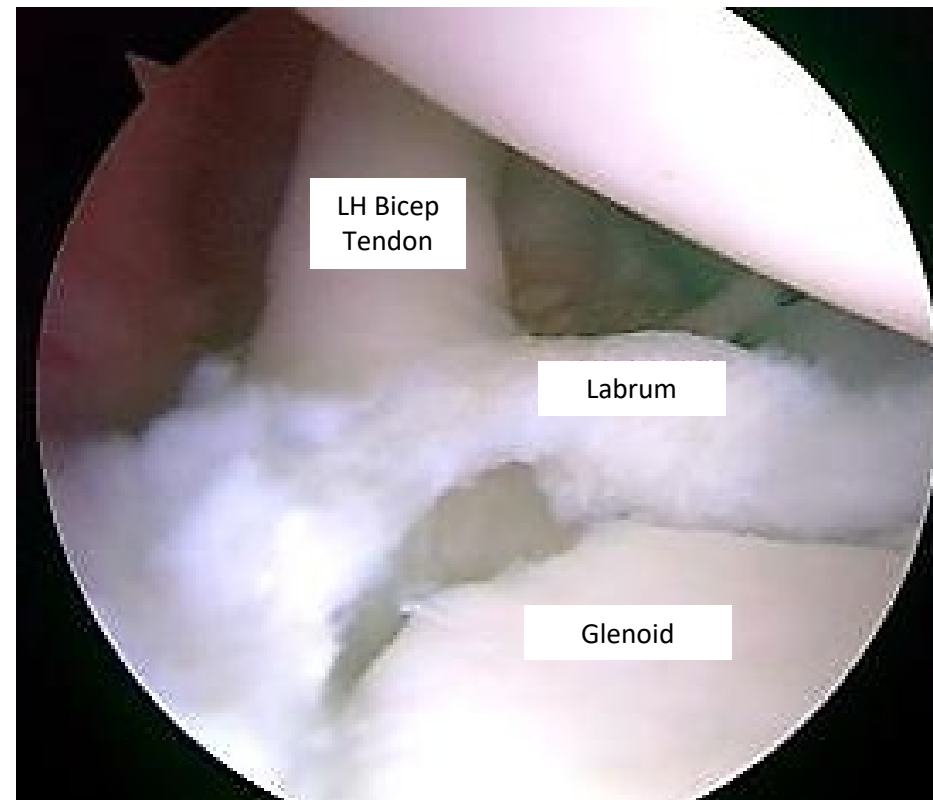


Citation: Jobe, FW., Moynes, DR., Tibone, JE., Perry, J. (1984). An EMG analysis of the shoulder in pitching. A second report. *Am J Sports Med*, 12(3): 218-20.

# *BICEPS TENDON*

- Biceps Tendon (Long Head)

- Frequent Stress / Soreness
- Attaches to Superior Labrum
- Can Lead to Labrum (SLAP) / UCL Injury
- Cause: Weak Periscapular Muscles !!!



# *MANAGING ECCENTRIC BICEPS STRESS*

- **Most Effective**
  - Strengthen the Posterior Cuff
  - Improve Scapular Control
- **Can Be Effective**
  - Adding Eccentric Bicep Work
  - Use Discretion... In-Season? Off-Season? Throwing Workload?
- **Also...**
  - Pronation (i.e. Eccentric Supination) – e.g. Zotman Curls

# FINISHING THE SEQUENCE...

- Triceps:

- Active in Acceleration Phase
- Yin et al. (2010):
  - *Bi-/Triceps Conc. Strength Ratio*  
*> 0.76 Predicted Elbow Injury*
- Post. Elbow Impingement?

- Forearms:

- As a Finisher...
- Flexion / Extension
- Pronation / Supination
- Radial / Ulnar Deviation
- Grip: Crush, Pinch, Carry

Citation: Lin YC., Thompson, A., Chieh, LH., Chou, SW., Lin, JC. (2010). Functional isokinetic strength ratios in baseball players with injured elbows. *J Sport Rehabil*, 19(1): 21-29.

# *CONSIDER...*

- You May Want to Avoid:

- Behind The Neck...
- OH Pressing (w/out Mobility)
- Chest Fly
- Power Shrugs / Plyo Pushups
- Kipping Pullups

- Use Your Judgment:

- Barbell Bench Press
- Shrugs / Upright Rows
- Pull-Ups / Pull-Downs / Rows
- Emphasis on Good Scapular Movement

# ***ALSO CONSIDER...***

- **Role of the Scapula in Lower Body Exercises:**
  - Front Squats - Too Much Anterior Tilt?
  - Back Squats – Sufficient Posterior Tilt?
  - Holding Weights – Excessive Depression-Downward Rotation?
- **Other Training Opportunities:**
  - Sled Pushes, Wall Drills, Core Work, Yoga, Daily Warm-Up...

# *WRAPPING UP...*

- *ELIMINATING RISK ISN'T ALWAYS THE BEST ANSWER*
- *OVERHEAD MOVEMENT IS A FUNDAMENTAL HUMAN TASK*
- *BUILDING A FOUNDATION OF DYNAMIC SCAPULAR STABILITY IS BENEFICIAL TO EVERY ATHLETE*

# *FOLLOWING UP*



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## *THANK YOU !!!*