Hip and Spine of the Athlete

Kyle Turner, ATC
Assistant Athletic Trainer Kansas City Royals

Sean Bardenett, DPT
Manual Therapist Kansas City Royals
Talk to DCs about spine.....
Outline

- Regional Interdependence Approach
  - Joint by Joint
- Hip mobility
- Thoracic mobility
  - Scapula
- Assessment
  - SFMA
  - TPI
- Pain Education
Regional Interdependence
Regional Interdependence
Regional Interdependence
Bottom Up vs. Top Down

http://www.exercisebiology.com/index.php/site/articles/what_should_fitness_professional_s_understand_about_pain_and_injury/
Joint by Joint Approach
Hip Mobility

  • Limited hip Flexion and IR at 90° related to elbow injury

  • Trail leg ER limitation significantly related to shoulder increase in motion needed during throwing.
# Hip Mobility/ROM

<table>
<thead>
<tr>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip ER @ 90</td>
</tr>
<tr>
<td>Hip IR @ 90</td>
</tr>
<tr>
<td>Gastrocnemius</td>
</tr>
<tr>
<td>Hip ER</td>
</tr>
<tr>
<td>Hip IR</td>
</tr>
<tr>
<td>Hamstring</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Left</th>
<th>Right</th>
<th>Hip TA (Seated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA=</td>
<td>TA=</td>
<td>D (72-95)</td>
</tr>
<tr>
<td>ND</td>
<td></td>
<td>ND (72-99)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hip TA (Prone)</td>
</tr>
<tr>
<td>TA=</td>
<td>TA=</td>
<td>D (67-88)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ND (68-90)</td>
</tr>
</tbody>
</table>
## Hip Strength/Stability

<table>
<thead>
<tr>
<th>Lower</th>
<th>Left #1</th>
<th>Left #2</th>
<th>Left #3</th>
<th>Right #1</th>
<th>Right #2</th>
<th>Right #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Hip ER</td>
<td>(34-50)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 Hip IR</td>
<td>(33-52)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90HER/90HIR</td>
<td>(.84-1.16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prone Hip ER</td>
<td>(36-50)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prone Hip IR</td>
<td>(30-45)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHER/PHIR</td>
<td>(1.00-1.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Core Stability/Postural Control
Core Stability
Thoracic Mobility

- Shoulder elevation: 12.8 degrees T-spine extension
Scapular Mobility Stability Conundrum

**Program 4: Scapula**

**Table Top Protraction / Retraction to the Front**
While sitting the table (or on the floor), sit up straight with your back straight and place your posterior hand behind your head to assist in maintaining proper positioning. Place your palm facing up and then fingers facing up, keeping your elbow straight. While maintaining your position, slide your elbow forward and then backward, while maintaining your elbow position. Perform until you get a motion to heavy burn in the muscle without weight.

**Table Top Protraction / Retraction to the Side**
While sitting the table (or as pictured), sit upright with your arm straight and place your posterior hand behind your head to assist in maintaining proper positioning. Place your palm facing up, keeping your elbow straight. While maintaining your position, slide your elbow forward and then backward while maintaining your elbow position. Perform until you get a motion to heavy burn in the muscle without weight.

**Thumb Tack**
Stand facing the wall with arms completely extended and thumb pressing into the wall. Stand facing the wall with your chest protruding forward. Hold your position for 30 seconds, then reverse and perform the opposite. Perform until you get a motion to heavy burn in the muscle.

**Standing Scapular Row with Tubing**
Standing facing a wall and holding tubes with hands on either side, push your shoulder blades down and back. Perform until you get a motion to heavy burn in the muscle.

**Prone Floor 4A With Hand Rotations**
Lying on the floor, pull your shirt off of the ground to elbow height (should be flat or slightly extended). Arms should be straight and at your sides with the hands flat off of the floor. Start with the hands facing forward and rotate the hands to facing forward and backward, keeping the hands flat for 30 seconds. Perform until you get a motion to heavy burn in the muscle. If you experience any neck tightness or other symptoms, use towel roll to rest your forehead on.

**Prone Floor 7 With Hand Rotations**
Lying on the floor, pull your shirt off of the ground to elbow height (should be flat or slightly extended). Arms should be straight and at your sides with the hands flat off of the floor. Start with the hands facing forward and rotate the hands to facing forward and backward, keeping the hands flat for 30 seconds. Perform until you get a motion to heavy burn in the muscle. If you experience any neck tightness or other symptoms, use towel roll to rest your forehead on.

**Prone Floor 9 With Hand Rotations**
Lying on the floor, pull your shirt off of the ground to elbow height (should be flat or slightly extended). Arms should be straight and at your sides with the hands flat off of the floor. Start with the hands facing forward and rotate the hands to facing forward and backward, keeping the hands flat for 30 seconds. Perform until you get a motion to heavy burn in the muscle. If you experience any neck tightness or other symptoms, use towel roll to rest your forehead on.

**Prone Floor 50/50 With Hand Rotations**
Lying on the floor, pull your shirt off of the ground to elbow height (should be flat or slightly extended). Arms should be straight and at your sides with the hands flat off of the floor. Start with the hands facing forward and rotate the hands to facing forward and backward, keeping the hands flat for 30 seconds. Perform until you get a motion to heavy burn in the muscle. If you experience any neck tightness or other symptoms, use towel roll to rest your forehead on.
What we do...

Don't look at how much an athlete can squat before looking at how well.
What we do...
SFMA Multisegmental Rotation

Contributing components:

• Tibial rotation
• Hip rotation
• Lumbar spine rotation
• Thoracic Rotation
Take out the hips & LE
Tibial Rotation
Hip Mobility or Motor Control?
Thoracic Mobility
Lumbar Mobility
Would You Fix This?
Should We Fix Everything?
Is Something Missing?
Bottom Up vs. Top Down

http://www.exercisebiology.com/index.php/site/articles/what_should_fitness_professionals_understand_about_pain_and_injury/
Pain fibers don’t exist...

• Eyes: light receptors, not vision receptors
• Ears: vibration receptors, not hearing receptors
• Tissue: nocioceptive/danger receptors, not pain receptors
Pain ≠ Tissue Damage

- WHY DON’T ALL SURGERIES WORK?
- Phantom limb pain? Eliminate painful segment….
- Ever get a random Bruise?
- 33.3% of Lumbar spine surgery patients have persistent pain, disability, function loss
- 40% of asymptomatic people have RTC tears
  - Reilly, Macleoad et al. 2006
The Normal Abnormal

MRI Findings in Lumbar spine of Asymptomatic, Adolescent Athletes

- 85% abnormal MRIs
- 30% pars lesion
- 70% early facet arthropathy
- 50% synovial cysts
- 40% disk bulging

Wording is Key

- Crumbling spine
- Wear and Tear
- Geriatric spine
- Deterioration
- Disc space loss
- Collapsing
- Bulging
- Unstable

- Normal changes
- Expected findings
- Age-related changes
- No direct correlation between abnormalities and symptoms
- Good potential for complete resolution of symptoms
- No indication for surgical intervention
Patient Education

• Traditionally we educate those in **PAIN** about anatomy or biomechanics....

• Why not educate them about **PAIN**?
Can Function Improve with Education Alone?

- Immediate Effect of Preoperative Neuroscience Education for Lumbar Radiculopathy: Case Series. Louw, Diener, Puentedura 2014
  - SLR inc 9°
  - Forward flexion increased 5 cm

  - 6/10 inc toe touch > MDC of 4.5 cm
  - 6/10 inc SLR > MDC of 5.7°
Would this hurt?
Would this still hurt?
Pain is an Interpretation
Fear Avoidance Model

- Increased fear, less active
- Emotional overload
- Irrational Thoughts
- Threatening and provocative words, imaging, WebMD...
Putting it all together…

- We don’t treat everything we see…adaptation
- Decrease the threat
- Educate
- Mobility, Stability
- Optimize Movement
- Don’t Load Dysfunction
- Pain is personal
- FDM
Questions?