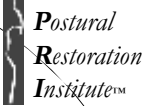


POSTURAL RESTORATION
Biomechanical Influences on the Athlete's Upper Half



Ron Hruska, MPA, PT
Jason Masek, MSPT, ATC, CSCS, PRC

Position Influences:


- Shoulder Impingement
- Exercise Induced Asthma
- Back Strain/Pain
- Scapular Instability

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Patterns:

- Posterior Exterior Chain (PEC)
- Right Brachial Chain (BC)

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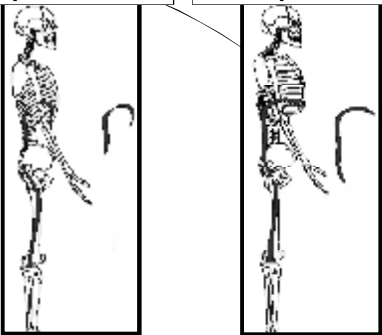


Brachial Chain (BC)
Anterior-Lateral Intercostals, Deltoid-Pectoral Muscle, Sibson's Fascia, Triangularis Sterni, Sternocleidomastoid, Scaleni, Diaphragm

Anterior Interior Chain (AIC)
Diaphragm, Iliacus, Psoas, TFL, Vastus Lateralis, Biceps Femoris

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Optimal ZOA **Sub-Optimal ZOA**



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Brachial Chain (BC)

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Brachial Chain (BC)

- Anterior – Lateral Intercostals
- Deltoid – Pectoral Muscle
- Sibson's Fascia
- Triangularis Sterni
- Sternocleidomastoid
- Scaleni
- Diaphragm

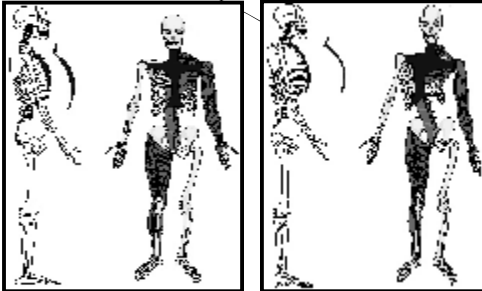
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Brachial Chain (BC)

- 1) Extends from sternum to rotator cuff, to the chin to the ZOA
- 2) Enhances chest wall concavity
- 3) Reduces lymphatic drainage through thoracic duct
- 4) Restricts anterior upper lobe expansion & promotes "belly breathing"
- 5) Usually contralateral AIC / PEC tightness
- 6) Limits trunk rotation to ipsilateral direction or lower half to contralateral direction
- 7) Limits ER of upper ribs & IR of lower ribs

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Optimal BC **Sub-Optimal BC**



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Posterior Exterior Chain (PEC)

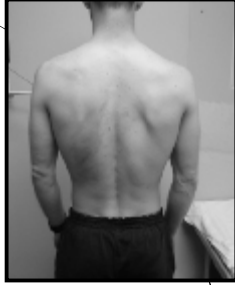
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Posterior Exterior Chain (PEC)

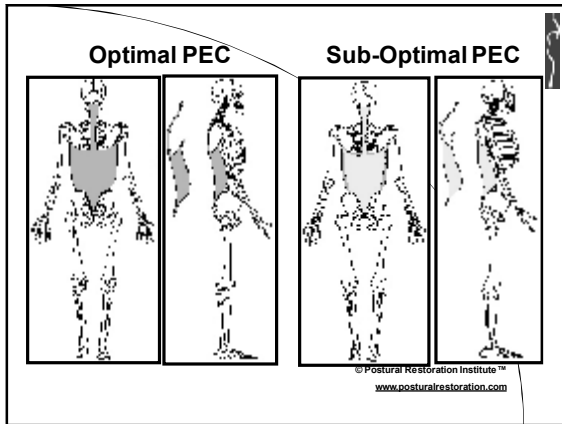
- Latissimus Dorsum
- Quadratus Lumborum
- Posterior Intercostals
- Serratus Posterior
- Iliocostalis Lumborum

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- Bilaterally lordotic
- Poorly positioned interscapular muscle
- Strong compensatory paravertebrals R > L



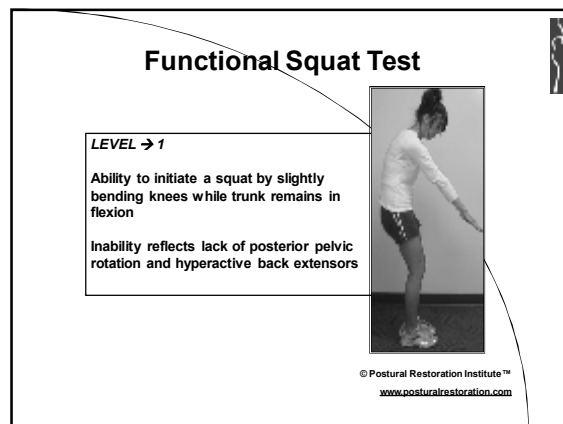
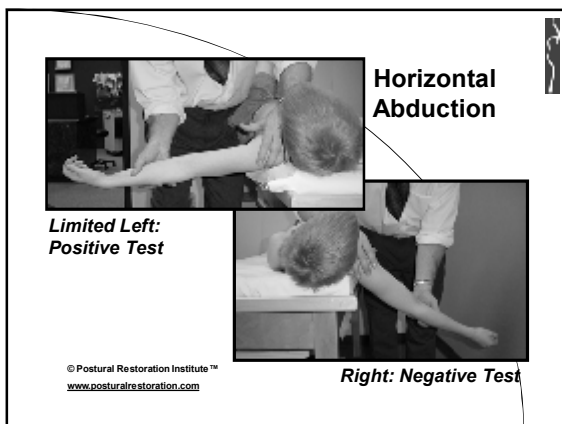
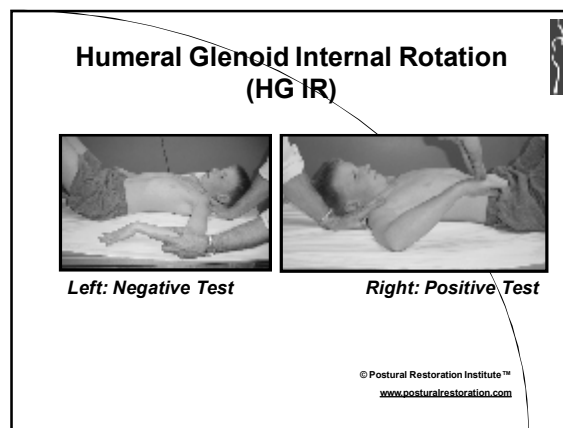
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Tests:

- Apical Expansion Test
- Humeral-Glenoid Internal Rotation (HG IR)
- Horizontal Abduction
- Functional Squat Test
- Standing Reach Test (SRT)


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LEVEL → 2

Ability to begin squatting, moving bottom back and knees forward while trunk remains in flexion

Inability reflects lack of femoral adduction, hyperactive hip flexors, and overactive FA ER's




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LEVEL → 3

Ability to squat bringing bottom below knee level while keeping heels down and trunk flexed

Inability reflects tight intercostals and hyperactive anterior / posterior tibialis




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LEVEL → 4

Ability to squat keeping heels down, trunk flexed and bottom to heels

Inability reflects hyperactive quads and gastroc-soleus




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LEVEL → 5

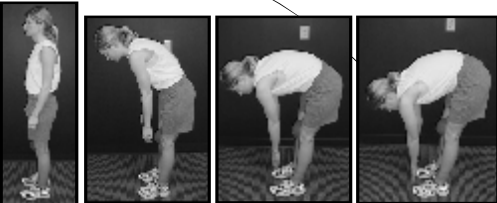
Ability to maximally squat keeping heels down and trunk flexed while keeping center of gravity through heels

Inability reflects lack of maximal AF IR and synchronized mechanics of diaphragm and pelvic floor respiration




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Standing Reach Test

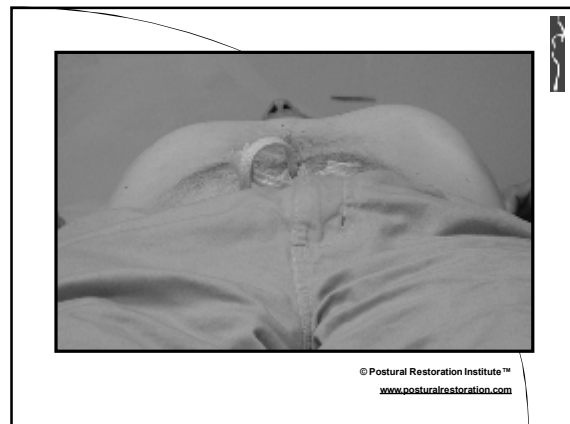
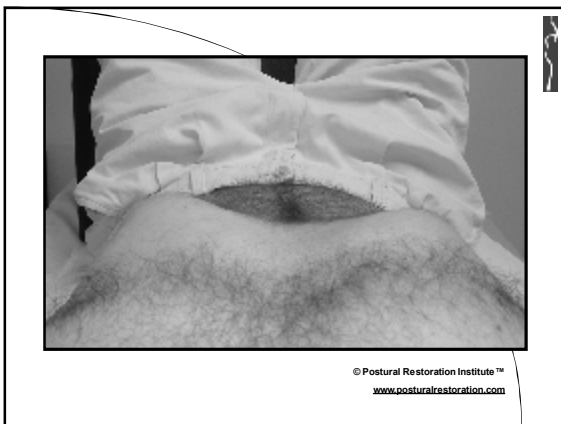
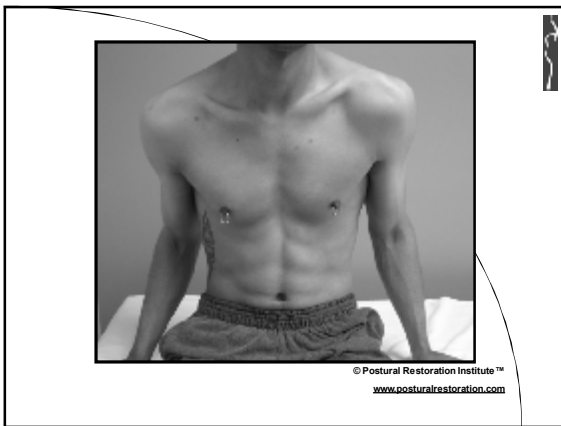


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Common Observations




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Considerations for Restoring Position:
PEC


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#1 Wall Reach with Balloon




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#2 Paraspinal Release




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#3 Reverse Squat



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#4 Retro Stairs



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Treatment Theme:
Activate internal obliques and transversus abdominis without hip flexion or back extension.

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Considerations for Restoring Position:
Right BC


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#1 Sidelying Intercostal Stretch




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#2 Swiss Ball Intercostal Stretch




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#3 Standing Passive Left AF IR with Right Trunk Rotation



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#4 Sidelying Trunk Lift



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Treatment Theme:
Right trunk rotation with left abdominal activation.

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