Using Movement System Diagnoses versus Pathoanatomic Diagnoses in everyday Clinical Decision Making

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Objectives

- Understand how MSI labels can direct treatment in the clinic
- Understand “secondary/correction tests” to help with MSI label
- Understand how MSI can aid in mentoring and reasoning with colleagues/residents/students
- ID and manage “pain dominant shoulder”

Vision Statement for the Physical Therapy Profession

- Transforming society by optimizing movement to improve health and participation in life
- “Movement is a key to optimal living and quality of life…for every person’s ability to participate in and contribute to society”
Tissue Source Still Important

- Pathoanatomical Dx Matters:
  - Post Fx stiffness vs. Adhesive Capsulitis vs. GH OA
  - Different presentations and prognosis
  - Same impairment: mobility

Incorporate best evidence

- Prognosis, testing, and impairments
- Surgery is gold standard to diagnosis
- MRI, MRA, US 90% Sensitivity full thickness RC tears

Diagnosis & Testing

- Rule out (-LR):
  - Painful arc, ER resistance, Neers
- Rule in (+LR):
  - Painful arc, ER resistance, Empty can
Diagnosis & Prognosis

- 2013 Cochran Review
  - Both groups improved with surgical repair
  - Less than 3 months to surgery:
    - Better Constant score
    - Better AROM

Diagnosis & Impairments

- Posterior and Inferior GH capsular stretching
- Scapular strengthening (MT, LT, SA)
Movement System Impairment

- Equally or more important
- Tissue source not always associated with pain/limitation
- Tissue source not always dictate treatment

Diagnosis ≠ Symptoms

Prevalence of symptomatic and asymptomatic rotator cuff tears in the general population: From mass-screening in one village

Hirono Minojawa, Nobuyuki Yarnamoto, [...], and Eiji Ito

- 65% with rotator cuff tears were Asymptomatic

“Shoulder Impingement”

- Vague diagnosis in clinic
- Multiple tissue etiologies
  - Non consistent among practitioners
- Multiple treatment options:
  - Which is best?
  - Do we treat everything?
The Grey Area

- Special tests: + or –
  - Black and white
  - Assist students and early clinicians decision making
- MSI:
  - Grey area
  - Difficulty understanding primary/secondary tests
  - Misunderstood labels

The Grey Area

- Positive provocative tests only partially tell us how to treat patients
- Secondary tests help guide treatment

Home Exercise Program Complaint

- Powerful for patients to experience a decrease in symptoms, through changing how they move
MSI Diagnosis

- Movement fault
  - Moves too much
  - Hyper mobile
  - Instability
  - Adhesive Capsulitis
- Moves too little
- Hypo mobile
- Poor timing/control
- Aberrant/faulty motion
- RC, Biceps, Labral

MSI Scapular Diagnosis

- Alignment and movement that best alleviate symptoms when corrected
- Insufficient scapular upward rotation
- Excessive scapular abduction

Secondary Test- Lacking Scapular Elevation
Secondary Test- Lacking Thoracic Extension

MSI and Pattern Recognition

- Mentoring staff, residents and students
- Overutilization of special tests
  - No time to treat
  - No guide to treatments
  - Disconnect from exam to treatment

MSI and Pattern Recognition

- Mentoring staff, residents and students
- Pattern recognition
  - Key impairments help form a pattern
  - Prove the fault/MSI
MSI and Pattern Recognition

- Improves clinical reasoning
- Interventions match key impairments
- Pull it all together
- Looks at the whole movement system

MSI and Pattern Recognition

- Subcategorizes patients based on tests/impairments
- Decrease pain vs. increase pain

MSI and Pattern Recognition

Subacromial Impingement Syndrome: The Effect of Changing Posture on Shoulder Range of Movement

- Thoracic extension or scapular retraction
- Significant increase in ROM
Guide to Treatment

- Test
- Related Impairments
- Intervention

Guide to Treatment

Labeling to Help the Clinician

- Shoulder impingement syndrome: ?
- Tissue: Rotator cuff tendinopathy?
- MSI: Humeral anterior glide?
- ICF model: Mobility, power, coordination?
Labeling to Help the Clinician

- Best of each world:
  - ICF, MSI, Tissue
- Re-orientate thought process throughout objective exam:
  - ID movement fault related to their pain
  - ID tissue source if able to
  - ID impairments related to both

Physical Therapists Diagnosis

- Pt presents with rotator cuff tendinopathy secondary to insufficient scapular upward rotation coordination deficit, with contributing factors of serratus anterior muscle weakness and rhomboid tightness

Physical Therapists Diagnosis

- Should be able to prove each component
  - Special tests, secondary tests, muscle length/strength
  - Consistent with APTA Vision
  - Human movement system
Case Study #1

- Anterior shoulder pain
- Posture: downward rotated scapula

Case Study #1

- AROM: painful arc elevation
- Limited upward rotation
- Decreased pain with secondary test with scapular upward rotation

Case Study #1

Special tests:
- + Neers
- + Hawkins Kennedy
- + External rotation resistance
Case Study #1

- Impairment tests:
  - Weakness in serratus anterior and lower trapezius
  - Stiffness in rhomboids length
  - Normal internal rotation length at 90 deg abduction

Case Study #2

- Anterior shoulder pain
- Posture: scapular depression

Case Study #2

- AROM
  - Painful arc with flexion and abduction
  - Decreased pain with secondary test with scapular elevation correction
Case Study #2

- Special tests:
  - + Neers, + Hawkins Kennedy, + External rotation resistance
- Impairment tests:
  - Weakness in serratus anterior and middle trapezius
  - Stiffness in pectoralis major

Case Study #3

- Anterior shoulder pain
- Posture: humeral internal rotation

Case Study #3

- AROM:
  - Painful arc with flexion and abduction with pain at EOR, stays in IR
  - Decreased pain with secondary test holding arm in ER
Case Study #3

- Special tests:
  - + Neers, + Hawkins Kennedy
- Impairment tests:
  - Stiffness in pectoralis major and latissimus dorsi
  - Weakness in infraspinatus and teres minor

Diagnosis

<table>
<thead>
<tr>
<th></th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
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<tbody>
<tr>
<td>Diagnosis:</td>
<td>Impingement</td>
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</tr>
<tr>
<td>MSI:</td>
<td>Insufficient scapular upward rotation</td>
<td>Scapular depression</td>
<td>Excessive humeral IR</td>
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<tr>
<td>Special tests:</td>
<td>Neers Arc of pain</td>
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</tr>
<tr>
<td>Primary Impairment:</td>
<td>Serratus Ant weakness</td>
<td>Pec major stiffness, MT weakness</td>
<td>Latissimus Dorsi Tightness</td>
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Diagnostic Label

- 1. Shoulder impingement with RC disease secondary to faulty insufficient scapular upward rotation coordination deficit, with serratus anterior weakness
- 2. Shoulder impingement with RC disease secondary to faulty excessive scapular depression coordination deficit, with pec major stiffness and MT weakness
- 3. Shoulder impingement with RC disease secondary to faulty humeral internal rotation coordination deficit, with latissimus dorsi tightness
### Case Studies Treatment

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<td>MSI</td>
<td>Insufficient scapular upward rotation</td>
<td>Scapular depression</td>
<td>Excessive humeral IR</td>
</tr>
<tr>
<td>Manual Rx</td>
<td>MWM scapular upward rotation with flexion</td>
<td>STM pectoralis major</td>
<td>CR stretching Lats</td>
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<tr>
<td>Ther ex</td>
<td>SA strengthening (push up plus position in quad)</td>
<td>Shoulder flexion on wall with shrug</td>
<td>B/L Shoulder flexion with humeral ER</td>
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<tr>
<td>Education</td>
<td>Avoid squeezing shoulder blades together</td>
<td>Unloading UE to elevate scapula</td>
<td>Maintain ER during shoulder movements</td>
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### Reimbursement

- Currently based on insurance provider
- Often look at diagnosis to deem amount of treatment
  - Different treatments/time/money
- Why not related to specific impairments
  - Post capsule stiffness
  - Lower trap weakness
“Pain Dominant” Shoulder

- High Irritability
  - Resting pain, night time pain
  - Empty end feels
- Diagnostic tests poor: false positives
- Unable to identify potential treatment category (mobility, power, coordination)

“Pain Dominant” Shoulder

- MSI beneficial
- Exam is based on decreasing pain
- Positions of comfort
- Taping into less painful positions (toward neutral)
- Modalities
- Gentle body on arm motions
- Survive to fight another day
- Place into specific treatment category when able

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THANK YOU!

♦ Questions?
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