Advanced Cervico-Thoracic & Shoulder Interventions for Upper Limb Symptoms

APTA Combined Sections Meeting
Feb 22, 2018, 11:00AM-1:00PM
New Orleans, LA

THANK YOU for inviting us!

• Michael Wong, PT, DPT, OCS, FAAOMPT
• Emmanuel Yung, PT, DPT, OCS, FAAOMPT
• Stephania Bell, PT, OCS, CSCS
• Major Jeremiah Samson, PT, Dsc (C), OCS, COMT, FAAOMPT

DISCLOSURE
Emmanuel Yung, PT, DPT, MA, OCS, FAAOMPT
NIOSH/NIH Grant for PhD coursework in Ergonomics and Biomechanics at New York University. The funding was through the New York University School of Medicine

Michael Wong, PT, DPT, OCS, FAAOMPT
Emmanuel Yung, PT, DPT, OCS, FAAOMPT

Session Learning Objectives
1. Validate fast track treatment decisions regarding contributions of the cervical spine, thorax, and shoulder complex in UE symptoms.
2. Fast track systematic exam the most clinically salient impairments-
3. Real-time assessment of neck, thorax and the shoulder- manual and movement system interventions become self-evident
4. Conclude scientific progression of advanced cervico-thoracic and shoulder interventions

Clinical pattern recognition concepts to fast track treatment decisions and scientific progression of advanced interventions

Michael Wong, PT, DPT, OCS, FAAOMPT
Associate Professor

Advanced interventions are wasted on irrelevant impairments!
Quick screen for associated impairments:

Clinical Examination:

Staging pathology - reactivity and chronicity

Clinical examination:

Staging pathology - reactivity and chronicity

Management of Lateral Elbow Tendinopathy
One Size Does Not Fit All

- ROM of the adjacent joints
- Evaluation of cervical and thoracic spine
- Neurodynamic contributions

- Reactive tendinopathy
  - Occurs as response to unaccustomed or increased activity
  - Requires rest or reduced loads for healing

- Degenerative tendinopathy
  - Evidence of local tissue pathology
  - Fibrofatty infiltrate
  - Neovascularization

- Interventions
  - Eccentric exercises
  - Prolotherapy injections
    - Stimulate collagen or ground substance production
    - Restructure tendon matrix
What challenging conditions might this apply to?

- DeQuervain’s
- Trigger finger
- Lateral epicondylalgia
- Medial epicondylalgia
- Carpal tunnel syndrome
- Guyon’s canal syndrome
- Cubital tunnel syndrome

Severity of Pain and Disability- Lateral epicondylalgia

- Greater baseline pain and disability
- Poorer long term prognosis
- More pronounced sensory disturbances

Interventions:
- Pharmacological therapies
- Rest and splint
- Counterforce strap
- Diamond taping

Concomitant neck or shoulder pain

- Neck pain is more common in patients with LET than age matched healthy controls
- Physical impairments at C4-C7 segmental levels
- Self-report of shoulder and neck pain in patients with LET indicative of poorer short- or long-term prognosis

Similar associated impairments in Carpal Tunnel Syndrome

- (+) correlation between function, pain intensity, depression and duration of symptoms
- (-) correlation between function and:
  - Pinch grip force of index and little finger
  - Cervical flexion, lateral flexion

- Pressure pain threshold over C5-6, Carpal tunnel, tibialis anterior muscle

Associated neuromuscular impairments

- Reduced pain free grip force
- Wrist flexion with gripping
- Widespread muscle weakness in the affected limb
- Weakness of ECRB but not finger extensors
- Bilateral deficits in reaction time and speed of movement

Central Sensitization

- Heightened nociceptive withdrawal reflex
- Wide spread mechanical hypersalgesia
- A subgroup of patients: reporting severe levels of pain/disability
  - Cold hypalgesia
  - Increased risk of persistent pain
Clinical pearl:
• Apply ice to local tissue pain region
• Pain >5/10
• 90% likelihood of cold hyperalgesia

Taking a step back....
• Of the common upper quarter conditions?
• Duration >3 months?
• Have you seen many patients with widespread pain?
• Sensitivity to cold?
• Decreased pain free grip strength?
• Complaints of neck and shoulder pain?
• High levels of pain and disability leading to poor prognosis and persistent pain?
• Involved limb weakness?
• Altered motor control?
• Scapular weakness?

How to I get there?

Central sensitization
• An increased responsiveness of nociceptive neurons in the central nervous system to normal or subthreshold afferent input leading to hyperalgesia
• Lateral epicondylalgia (Fernández-Carnero 2009)
• Carpal tunnel syndrome (Fernández-de-las-Peñas 2009)
• Thumb osteoarthritis (CMC OA) (Chiarotto 2013)
• Shoulder impingement (Swamy 2011)
• Whiplash associated disorders (WAD) (Sterling 2008)
• Headache (Palacios Cena 2016)
• Low-back pain (Sanzarello 2016)
• Osteoarthritis (knee) (Courtney 2009)
• Patellofemoral joint pain (Pazzianato 2016, Ianz 2016)

Central sensitization → Contralateral sensitized structures
• Lateral epicondylalgia (Fernández-Carnero 2009)
• Carpal tunnel syndrome (Fernández-de-las-Peñas 2009)
• Carpometacarpal Osteoarthritis (Farrell 2000)
Central sensitization:

- Increased spread of symptomatic area (decreased pressure pain threshold - PPT)
- Hyperalgesia in the region of injury or inflammation

Quantitative Sensory Testing: Pressure Pain Threshold

Quantitative Sensory Testing: Allodynia

Specific Mechanical Pain Hypersensitivity Over Peripheral Nerve Trunks in Women With Either Unilateral Epicondylalgia or Carpal Tunnel Syndrome

Control

Pressure Pain Thresholds over Median Nerve

- CTS
- LE
Pressure Pain Thresholds over Ulnar Nerve

Pressure Pain Thresholds over Radial Nerve

Pressure Pain Thresholds over C5-C6 Zygapophyseal joint

FIGURE 2. Pressure pain thresholds over the ulnar nerve. The horizontal line represents the mean value. The error bars represent the standard deviation. The data points are the individual subject. Vertical lines indicate significant difference between patients and controls. Indicates significant difference between control patients and healthy controls.

FIGURE 3. Pressure pain thresholds over the radial nerve. The horizontal line represents the mean value. The error bars represent the standard deviation. The data points are the individual subject. Vertical lines indicate significant difference between control patients and healthy controls.

FIGURE 4. Pressure pain thresholds over the C5-C6 zygapophyseal joint. The horizontal line represents the mean value. The error bars represent the standard deviation. The data points are the individual subject. Vertical lines indicate significant difference between control patients and healthy controls.
Key points:

- Decrease in PPT over 3 main nerve trunks in CTS and LE
- Previous studies demonstrating widespread pain (decreased PPT over anterior tibialis in CTS and LE)
  - [Fernandez-Camero 2009]
  - [Fernandez-de-las-Penas 2009]
- In CTS, median nerve was more sensitized
- In LE, radial nerve and ulnar nerve were more sensitized
- The longer the pain duration, the lower the PPT

What does this say to you?

- Peripheral nerve sensitization
- Central mechanisms maybe at work
- Nerve sliders must be considered
- Pain education should be considered

Why might this central sensitization occur?

- "The development of central sensitization in local pain syndromes suggests that sustained peripheral noxious inputs to the central nervous system can play a role in the initiation and/or maintenance of this sensitization process"

Modulating pain

Masterclass

Lateral epicondylalgia: a musculoskeletal physiotherapy perspective

B. Vicenzino

Department of Physiotherapy, University of Queensland, Australia

• 15 healthy subjects
• 3 treatments sessions
• Manipulation: C5-C6 level
• Placebo
• Control
• Assessment via Pain pressure threshold or PPT

Supporting evidence
• Vincenzino et al: Lateral glide of cervical spine → immediate increase in PPT with lateral epicondylalgia
• Paungmali et al, Vicenzino et al: MWM (mobilization with movement) → immediate increase in PPT with lateral epicondylalgia

Immediate Effects on Pressure Pain Threshold Following a Single Cervical Spine Manipulation in Healthy Subjects

Post manipulation change in pressure pain threshold demonstrates mechanical hypoalgesic effect

A meta-analytic review of the hypoalgesic effects of exercise
Kathy W. Neugebauer, Roger R. Pilates, and Jewett L. Mayo III
Comprehensive Center for Pain Research, University of Florida

J Pain. 2012 December; 13(12): 1139–1150
In healthy participants, mean effect sizes for isometric exercise ($d_{thr}=1.02$, $d_{int}=0.72$) and dynamic resistance exercise ($d_{thr}=0.83$, $d_{int}=0.75$) were large. Meeus et al. – Cycle ergometry had increased PPTs at multiple body sites. Hoffman et al. demonstrated large effect even 30 minutes post-exercise. Isometric quadriceps had large hypoalgesic effects for shoulder myalgia.

Contra lateral Attenuation of Pain After Short-Duration Submaximal Isometric Exercise

What dosage?
- First use dominant hand to determine maximum hand grip contraction strength
- 5 second max contraction
- 1 minute rest
- 40-50% of max contraction for 2 minutes
- 1 minute rest
- 40-50% of max contraction for 2 minutes

Decrease in pain ratings...

Increase in pain threshold bilaterally...
Clinical implications:

- What are your thoughts?
- Use of low level isometrics... in non-painful extremity
- As a precursor to daily function
- As a precursor to therapy

Joint mobilizations for Pain modulation?

Overall demographics of patients very similar

Elevated systolic blood pressure in impaired group

Larger duration of pain in impaired group

Conditioned pain modulation enhanced!

<table>
<thead>
<tr>
<th>Measure</th>
<th>Control Group</th>
<th>Impaired Group</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>75.8 ± 15.7</td>
<td>78.0 ± 13.6</td>
<td>NS</td>
</tr>
<tr>
<td>Test</td>
<td>73.5 ± 14.2</td>
<td>79.0 ± 14.7</td>
<td>P &lt; 0.05</td>
</tr>
<tr>
<td>Stat. Sig</td>
<td>NS</td>
<td>NS</td>
<td>P &lt; 0.05</td>
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</tbody>
</table>

Musculoskeletal Science and Practice
Advanced manual and movement approaches of the neck-thorax, shoulder region to augment local interventions

Emmanuel Yung, PT, DPT, OCS, FAAOMPT
Clinical Assistant Professor

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Screening for Head, Neck, and Shoulder Pathology in Patients with Upper Extremity Signs and Symptoms

Emmanuel Yung, PT, DPT, OCS, FAAOMPT
Clinical Assistant Professor, Sacred Heart University, Fairfield, Connecticut, and Orthopaedic Physical Therapy Residency Program, Kaiser Permanente Southern California, Los Angeles, California

ABSTRACT

The consistent theme physicians and practitioners alike cannot afford to overlook is the need for identifying the adverse effects of a patient with signs and symptoms of thoracic, cervical, and shoulder pathology. These conditions of the upper extremity (UE) musculoskeletal disorder. Consider the adverse effects of a patient with signs and symptoms of thoracic, cervical, or shoulder pathology. The long duration pain correlates with decreased PPT and impaired conditioned pain modulation. Modulating wide spread pain and pain sensitivity via mobilization, isometric exercises, manipulation, neural mobilization, dynamic exercise. Early focus on modulating pain?

• Duration > 3 months
• Have you seen many patients with widespread pain?
• High levels of pain and disability leading to poor prognosis and persistent pain?
• Sensitivity to cold?
• Decreased pain free grip strength?
• Complaints of neck and shoulder pain?
• The longer duration pain correlates with decreased PPT and impaired conditioned pain modulation
• Modulating wide spread pain and pain sensitivity via mobilization, isometric exercises, manipulation, neural mobilization, dynamic exercise
• Early focus on modulating pain?

• Involved limb weakness?
• Altered motor control?
• Scapular weakness?
• Movement retraining
• Focus on proximal stability for distal mobility

Pathology in Patients with Upper Extremity Signs and Symptoms

Correspondence and reprint requests to Emmanuel Yung, PT, DPT, OCS, FAAOMPT, Orthopaedic Physical Therapy Residency Program, Kaiser Permanente Southern California, Los Angeles, California, e-mail: yung@kp.org.
Chronic pain conditions are associated with abnormalities in brain structure and function. Moreover, some studies indicate that brain activity related to the subjective perception of chronic pain may be distinct from activity for acute pain. However, the latter are based on observations from cross-sectional studies. How brain activity reorganizes with transition from acute to chronic pain has remained unexplored. Here we study this transition by examining brain activity for rating fluctuations of back pain magnitude in patients who were reassessed longitudinally at four visits. To identify brain regions associated with pain intensity at a given visit, we performed voxel-based morphometry analysis of the whole brain with an independent-samples t-test between patients with acute pain and those with chronic pain. Back pain intensity at each visit was derived from patient self-reporting using the visual analog scale. Using a machine learning approach, we classified patients into acute and chronic pain groups based on back pain intensity at each visit. Patients with acute/sub-acute pain showed decreased activity in regions associated with nociceptive processing and increased activity in regions associated with reward circuitry. In contrast, patients with chronic pain showed increased activity in regions associated with nociceptive processing and decreased activity in regions associated with reward circuitry. These observations suggest that brain representation from nociceptive to emotional circuits shifts brain activity from nociceptive to emotional circuits when patients transition from acute to chronic back pain.
Psychosocial Influences on Low Back Pain: Why Should You Care?

Many PT’s would argue that they recognize psychosocial factors...

Evidence suggests that healthcare practitioners are POOR at identifying psychological factors associated with LBP

Foster, & Foster, 2005

O’Sullivan & Lin, 2014

STart Back Screening Tool

Hill et al, 2008 (Keele University)

“A 9-item screening tool to subgroup patients with LBP based on physical or psychosocial factors useful in matching patients with targeted interventions (Beneciuk et al, 2013).”


*Risk-stratified care vs standard care

Cost savings of £34 (US $57.67) in the UK

O’Sullivan & Lin, 2014
Acute low back pain
Beyond drug therapies

Reassuring patients: primary care
- About bio-psychosocial nature of acute LBP
- Self care booklet or verbal education
- Evidence-based clinical practice guidelines
- Benign nature
- Generally favorable prognosis
- Advice to stay active
- Graded return to usual activity
- Self-management

How to classify brachialgia (arm pain)?
Consider Sciatica

It is cost effective to identify patients who may become chronic early: Central Sensitization

The Hartford Institute for Geriatric Nursing
New York University College of Nursing 2009
Local and UE treatment may NOT be enough!

Conclusion:

• Local and Cervical Manual Therapy had high self-reported long term outcome
• Local therapy combined with Cervical manual therapy group took fewer visits to get better 5.6 vs 9.7 visits
Thoracic Outlet Syndrome

Postural Function of the Diaphragm in Persons With and Without Chronic Low Back Pain

CLBP: Altered Breathing Pattern

TABLE 2

<table>
<thead>
<tr>
<th>Condition</th>
<th>% Decrease (1)</th>
<th>% Decrease (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Diabetic</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Asthma</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>40%</td>
<td>45%</td>
</tr>
</tbody>
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Suggest sympatho-inhibition

May be useful for chronic pain + high blood pressure

? Impaired BP-related hypoalgesia, PPT, and CPM?
Summary: Diaphragmatic breathing for central sensitization

- In patients with high level of disability and pain
- Focus their attention away from the UE (primary source of pain)

- Diaphragmatic breathing helps them to reduce muscle tone in accessory respiratory muscles known to induce nerve entrapment
- Relaxation: ↓ psychosocial factors (added benefits)

Managing associated impairments

Local tissues vs. Associated impairments

- C/S & T/S mobility impairments (Fernandez-de-las-penas 2010)
- Neurodynamics & STM (De la Llave-Rincon 2012, Biolosky 2009)
- Central sensitization - breathing (Cagnie 2008, Yeampattanaporn 2014)

- Scapular impairments (Bhatt et al 2013, Day et al 2015)

Managing neurodynamics

- Acute
- Sub-acute
- Chronic

Patient education in positions that reduce strain or compression to the involved nerves
- Manual traction
- Entrapment reduction

Acute Low Back Pain

Acute Radiating Pain

Subacute Low Back Pain with Radiating Pain

Chronic Low Back Pain with Radiating Pain
Thoracic Outlet Syndrome
Urschel 2007

A Normal

Depressed shoulder tension
Clavicle/first rib compress
Pectoralis minor compress
Humeral head compress,
Ant/Mid scalenes compress

Watson 2010

Decreased elbow extension range of motion with scapular depression (5 degrees less)

Increased upper trapezius activity with scapular depression (>50%)

Earlier sensory responses and broader sensory responses with scapular depression

Clinical implications of scapular depression:
- May strain nervous tissues
- Increases sensitivity of the nervous system
- Reduces ROM
- Muscle guarding
Managing Acute radiating pain: via scapula

- Unload the depressed scapula
- Decrease muscle guarding
- Decrease sensory responses
- Unwind the brain’s expectations of movement and pain/paresthesias

Use of Cyriax Release Maneuver: Reduce tension or compression

Scapular associated impairments:
**Integrated exam: movement + manual therapy**

Differential: c/s, t/s, first rib

Manipulation: mid T/S and C/T rotation

Movement correction: FHP and T/S kyphosis

Differential: Serratus anterior, Mid/Lower trapezius
Progression of mid/lower trapezius: NWB to WB

Optimize: Precise Movement
- Point of Instantaneous Center of Rotation (PICR)
- Centered GHJ: eccentric ER (w/stable scapula)

Stabilize scapula: differential rotator cuff

Concentric neutral ER (scapula freely moving): traditional vs lead w/fingers “scooping”

Emphasizing ER w/shoulder elevation
Centered GHJ: concentric ER w/scapula moves freely

Summary

1. Stratifying patients according to central sensitization (LANSS) and psychosocial risks (mSTarT Back Tool)
2. Focus attention away from local tissue (i.e. diaphragmatic breathing, proximal scapular strengthening)
3. Neck AP mobilization not only addresses nerve entrapment sites, may affect sympathetic nervous system (i.e. lowers SBP/HR)
4. Nerve mobilization & STM reduce pain sensitivity
5. Manual and movement approaches to optimize movement

Acknowledgement

Advanced cervico-thoracic and shoulder movement and injury analysis - professional sports (NFL and/or MLB) case examples

Stephanie Bell, PT, MPT, OCS, CSCS
Senior Injury Analyst

Stephania Bell, PT, MPT, OCS, CSCS
Senior Injury Analyst

Physical Therapy Management of a Patient With Long-Standing Wrist and Elbow Pain

What Does A Physical Therapist Do?

- Treat Movement Dysfunction
**Targeted Tissue Specific Treatment**
- Ultrasound
- Laser
- Cross Friction Massage
- Ice Massage
- Local Injection

**Regional Interdependence**
- Treat areas away from the identified tissue source have been shown to be beneficial

**The Short-Term Effects of Thoracic Spine Thrust Manipulation on Patients With Shoulder Impingement Syndrome**

*Findings:*
- Decrease in self-reported pain measures
- Reduction in level of disability (SPADI)

**Upper Quarter**
*Decrease in Elbow Flexor Inhibition After Cervical Spine Manipulation in Patients with Chronic Neck Pain*

*Findings:*
- Decreased muscle inhibition
- Increased elbow flexor strength

**Lower Quarter**
*Decrease in Quadriceps Inhibition After Sacroiliac Joint Manipulation in Patients with Anterior Knee Pain*

*Findings:*
- Decrease in muscle inhibition
- Increase in knee extensor torque and activation

**Patient**
- 45 y/o female
- VA Medical Coder
- Referred to PT by Occupational Therapist providing treatment to her R wrist
- Receiving concurrent Physical Therapy intervention for R shoulder pain
Occupational Therapy Intervention (R wrist pain)

- Paraffin
- Fluidotherapy
- Moist heat
- Soft tissue mobilizations of carpal tunnel canal

DASH (6 Wks OT treatment) – 50%

Physical Therapy Intervention (R shoulder pain)

- AC joint mobilizations
- 1st rib mobilizations
- Median nerve glides

DASH (Initial Eval) – 51/80

- RTP strengthening
- Resisted Scapular retraction
- R scalene stretch
- R SCM stretch

DASH (6 Wks OT treatment) – N/A

Why med screen

- R/O red/yellow flag conditions

• Insight from START Back Tool

Patient

- UGS/Med Screen requested by OT
  - no trend for improvement after 6 wks of intervention
    - DASH (Initial Eval) – 50%
    - DASH (6 Wks OT Treatment) – 50%

  • Worsening symptoms

Screening Conclusions

- R/O cervical myelopathy/Central Nervous System
  - Negative TIC
  - Reports declining function
  - Limited cervical motions
  - Palpation findings

  • Questionable history regarding relationship to wrist/UE symptoms
  • Altered/Reproduced distal symptoms

  * Will require detailed PT Examination

Body Chart

- R UE pain
- R wrist/hand paresthesia
- R shoulder/Scapular pain
- Neck Pain
- Worsening headaches

• Body Chart Clarification – All symptoms related
History/Subjective

- Chief Complaint: Right upper extremity numbness and tingling with pain along right arm down to the wrist.
- NPRS: 8/10
- Onset - Sudden (lifting a bag)
  - ER/ED visit
  - Wrist Sprain
- Duration - 2 yrs
- Trend – Worsening

Worst in AM
- Cough/Sneeze – positive for symptom provocation
- Balance/Fine Motor – positive for difficulty holding on to light objects with RUE
- Sitting > Standing
- Intermittent PCM visits

Medical Interventions

- ER visit – Hydrocodone
- Renew/Continuation of opioid pain medication
- Received 2nd prednisone taper x 2 wks prior to detailed c-spine evaluation

Physical Exam Findings

- Observation – fwd head/rounded shoulders/thoracic kyphosis
- Cervical AROM – limited R rotation with symptom provocation
- All motions reproduced RUE symptoms at end range

Physical Exam Findings (contd)

- AROM - Pain and limited R arm abduction to approx. 135 degrees
- PROM – WNL’s B shoulders
- Hypomobility/Symptom provocation with CPA’s/R UPA’s: C4-T4

Physical Exam Findings (contd)

- Positive Spurling’s, limited rotation to R, Positive Cervical Distraction Test
Revised Treatment Plan

- PA mobilizations to affected levels of thoracic spine
- Cervical side glides to affected levels of cervical spine
- Scapular AROM/Isometrics
- Gravity Eliminated Shoulder AROM/AROM
- ICT
- Pain Education

Response to Treatment

- NPRS – 4/10
- Cervical Rotation – ROM unchanged, pain remains 4/10 at end range
- Shoulder Abduction – AROM prior to onset of pain unchanged, pain remains 4/10 at first onset of AROM
- Pain location: most dominant in area of axilla and C/T junction

Response to Treatment

- Symptoms in RUE primarily paresthesias, no longer classify as pain
- Improved function with ADL's
- Has not taken opioid medication

Thoughts/Questions to Ponder

- > 1 yr before inclusion of pain education and treatment to the proximal segments/axial skeleton!
- treat for the cervico-thoracic region sooner?
- include pain education sooner?
- evidence intervention directed at/around the spine?
- evidence for inclusion of pain education?
- evidence on how to address specific impairments/movement dysfunction?

Treatment for the cervico-thoracic region

The initial effects of a cervical spine manipulative physiotherapy treatment on the pain and dysfunction of lateral epicondylalgia
Bill Vicenzino, David Collins, Anthony Wright
- Improved PPT
- Improved PFG
- Improved neurodynamics and pain scores

Immediate Hypalgesic and Motor Effects After a Single Cervical Spine Manipulation in Subjects With Lateral Epicondylalgia
Josue Fernandez-Carnero, Oscar Fernandez-de-la-Pena, Joshua A. Cleland
- Increased PPT
- Increased PFG force

Pain Education

Identification
- START Back Tool: 8
LANISS Pain Scale: 16
- Hyperalgesia
- High Fear/Anxiety Level
- Physical contact to cervicothoracic spine provokes distal symptoms
Pain Education
Long Term: Physical functioning, vitality, mental health, general health perception
Van Oosterwijck et al, 2013
Positive effect on pain, disability, catastrophization, and physical performance
Louw et al, 2011

Proposed Algorithm
- Med Screen (rule out potential serious conditions)
- Eval
  - ID pathology when possible
  - ID impairments/movement dysfunction or factors leading to movement dysfunction
- Review available evidence for best treatment for ID’d impairment
- Continuously monitor response to treatment by rechecking impairments to determine if you are on the right track

Yung et al

Closing Thoughts
- Check proximal segments all the way to the spine
- Dismiss need for further PT given that the patient was receiving PT and OT
- Much credit to our hand therapist (OT), recognized the need for screening
- We can do a better job of identifying those patients who would benefit from proximal treatment and pain education

Questions

Thank you!
- Videos available at
  - Youtube.com: PhysioU
  - Playlist: CSM 2017 Advanced Interventions
  - https://www.youtube.com/playlist?list=PL8wUa2CZ-5fK2oaaVcyh1_o5f6xRncud
Reference


