Upper & Lower Extremity Musculoskeletal Exam Techniques: PBL

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Anthony Beutler, MD, FAAFP

Professor, Department of Family Medicine/Program Director, National Capital Consortium (NCC) Primary Care Sports Medicine Fellowship/Medical Director, Injury Prevention Research Laboratory, Uniformed Services University (USU) of the Health Sciences, Bethesda, Maryland

Dr. Beutler practices family medicine and comprehensive primary care sports medicine for the U.S. Air Force, caring for active-duty service members, retirees, and their families in the Washington, DC, area. He is an award-winning educator and teacher, and he and his team recently developed and implemented a new musculoskeletal curriculum for USU's medical school. The author of numerous articles and a textbook, Dr. Beutler has lectured throughout the world. One of his favorite activities is helping family physicians make their musculoskeletal practices more rewarding and profitable.
Jeff Leggit, MD, CAQSM

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Dr. Leggit earned his medical degree from USU and completed his family medicine residency at DeWitt Army Community Hospital, Fort Belvoir, Virginia. He is a retired Army Colonel with more than 25 years of active service in a variety of capacities, and he earned the Bronze Star Medal in Operation Iraqi Freedom. An active educator, researcher, and clinician, Dr. Leggit is a board-certified family physician with a certificate of added qualifications (CAQ) in sports medicine. In addition, he is a key faculty member for the National Capital Consortium’s Military Primary Care Sports Medicine Fellowship and he directs USU’s musculoskeletal module.
Learning Objectives

1. Practice applying new knowledge and skills gained from Upper and Lower Extremity Musculoskeletal Exam Techniques sessions, through collaborative learning with peers and expert faculty.

2. Identify strategies that foster optimal management of upper and lower extremity injuries, within the context of professional practice.

3. Formulate an action plan to implement practice changes, aimed at improving patient care.
Associated Sessions

• Upper Extremity Musculoskeletal Exam Techniques: Evidence-Based Treatment of Common Upper-Extremity Injuries

• Lower Extremity Musculoskeletal Exam techniques: Evidence-Based Treatment of Common Lower-Extremity Injuries
Audience Engagement System

Step 1

Step 2

CME001 Acute Coronary Syndromes: Broken Hearts and Spare Parts
9:15 AM - 10:15 AM
Room 214AB

Step 3

CME001 Acute Coronary Syndromes: Broken Hearts and Spare Parts

Location: Room 214AB
Date: Wednesday, Sep 13 0:15 AM
Duration: 1 hour
Credit Hrs.: 1

1. Implement evidence-based secondary prevention recommendations in post-ACS patients.
2. Use evidence-based criteria in determining safe and effective medications to prescribe at discharge post-ACS.
3. Counsel patient to address concerns in the period immediately following discharge for ACS, with an emphasis on assessing and monitoring for psychosocial issues that may impact post-
Musculoskeletal Injury PBL

- Case 1
- Case 2
- Questions
Chief Complaint

• “My Shoulder Hurts...”
History of Present Illness

“Bob”

• 48 yo M c/o R shoulder pain
• Sharp pain with overhead movements; “dull ache” after activity; diffuse lateral deltoid location
• No acute trauma
• Started 4 weeks ago and getting worse
• Doing a lot of home improvement projects recently, but no idea how he injured it
Past Medical History

• PMHx: HTN

• Remote PSx: Appendectomy, no shoulder/neck/ortho surgeries
Social History

• Recently retired military
  – Now working as govt contractor (desk job)
  – But real passion is woodworking/carpentry

• Enjoys sports, plays rec softball, occasional basketball when he gets the chance

• Remote tobacco, quit 15 years ago, 2-3 beers per weekend, No drugs
• What is your differential diagnosis of likely causes for Bob’s shoulder pain?
Differential Diagnosis

- Rotator cuff tendinopathy
- Degenerative rotator cuff tear
- Subacromial bursitis
- Biceps tendinopathy
- Degenerative labral tear
- Early adhesive capsulitis
• What physical exam tests will be critical in narrowing or correctly ordering your DDx?
Physical Examination

- WN, WN male, NAD

- Normal inspection, no atrophy/deformity
- Painful arc of motion, but full AROM
- No TTP clavicle or AC joint
- 4/5 full can and external resistance strength
- No Ext or Int Rotation lag
• Do you need to order x-rays?
  – Yes or No

• Do you need to order an MRI?
  – Yes or No
• What is Bob’s likely diagnosis?

• So what is the “Victim” in this case? What anatomic structure is “being injured/victimized?”
• What is the likely culprit causing Bob’s rotator cuff pain?
Assessment

**Victim:** Rotator Cuff
– That’s the easy part

**Find the Culprit** – Where you Earn the $$
• Rotator Cuff
  – When victim = culprit, then we have a suicide!
• Discuss the relative importance of each of the following treatment recommendations for Bob:
  – Motrin 800mg PO TID for 28 days
  – Rest, ice, compression, and elevation BID
  – Sling for comfort
  – Subacromial steroid injection
  – Rotator cuff and scapular stabilizer strengthening program
  – Acupuncture
  – Massage therapy
Returning to Differential Diagnosis – What Else Could This Be???

- Rotator cuff tendinopathy – Rot cuff strengthening
- Degenerative rotator cuff tear - ??
- Subacromial bursitis
- Biceps tendinopathy - ??
- Degenerative labral tear - ??
- Early adhesive capsulitis
Plan

• Attack most likely Culprit:
  – Rotator cuff and scapular stabilizer strength

• Rotator cuff strengthening program
  – PT referral or Strength Coach or YouTube

• Consider Injection/Acupuncture/Pain relief

• Do NOT order an MRI
  – unless you are considering surgery
http://hprc-online.org/physical-fitness/rehab

an open source rehab program
Musculoskeletal Injury PBL

• Case 1

• Case 2

• Questions
Case #2 - Chief Complaint

• “My knees hurt when I run...”
History of Present Illness

“Laura”

• 28 yo F c/o B knee pain during/after runs
• Pain is sharp when running and a “dull ache” after activity
• No trauma
• Has a 60 min drive to work and increased pain while driving and feels like she needs to straighten her knee out
• Hurst going up and down stairs
Past Medical History

- No significant PMHx
- G1P1
  - First baby via C-section 1 year ago
- No medications
Social History

• Paralegal
  – works 30 hours/week now after baby

• Started running regularly 6 weeks ago to get in shape and loose weight

• Never tobacco, 1-2 glasses wine/wk, No drugs (to include OTCs)
Review of Systems

• No swelling, locking of knees
• No other joint complaints
• No unusual fatigue
• No nausea, vomiting, night pain

• She gained 42 lbs with pregnancy and has lost 22 lbs since delivery
What is your differential diagnosis for Laura’s knee pain?
Differential Diagnosis

- Patellofemoral pain syndrome/Anterior knee pain
- Patellar tendonitis/tendinopathy
- Pes anserine bursitis
- Iliotibial band syndrome
- Chondral Injury → Osteoarthritis
- Inflammatory Arthropathies
• What physical exam findings and tests will aid in narrowing your DDx and creating a treatment plan?
Physical Examination

- BMI 29
- Valgus (Knock kneed) Lower Extremity alignment
- B knees no effusion, erythema, no gross atrophy
- No joint line TTP
- + retropatellar TTP
- + increased pain with patellar shrug/Clarke’s
- No ligamentous laxity/instability to include patella
- Negative McMurray but some pain under kneecap with Thessaly
• Do you need to order x-rays?
  – Yes or No
• If you said yes, which x-rays and what are you looking for?
• Do you need to order an MRI?
• What is Laura’s likely diagnosis?

• So what is the “Victim” in this case? What anatomic structure is “being injured/victimized?”
Assessment

Victim: Patellofemoral Pain Syndrome (PFPS)
– What is PFPS?

*PFPS is defined as anterior knee pain in the absence of any other pathologic condition*
• What are the three major categories of biomechanical culprits that usually cause patellofemoral pain?
Assessment

Victim: Patellofemoral Pain Syndrome
  – That’s the easy part

Find the Culprit – Where you Earn the $$
• Assess 3 major biomechanical culprits:
  – Muscular weakness
  – Muscular tightness
  – Skeletal malalignment
• Discuss the relative importance of each of the following treatment recommendations for Laura:
  – Rest, ice, compression, and elevation BID
  – Motrin 800mg PO TID for 28 days
  – Knee brace/taping
  – Stop running and switch to elliptical trainer
  – Get new running shoes
  – Hamstring, quadriceps and calf stretching
  – Quadriceps and Core strengthening program
Plan

• Attack most likely Culprit:
  – Muscular strength

• Quadriceps strengthening program
  – Bike or elliptical (forward & backward)

• Core strengthening program
  – PT referral or Yoga, Pilates, Strength Coach etc

• Load Management
Rx3 is a guide to help service members recover from and prevent common musculoskeletal injuries, ultimately improving service members’ overall physical fitness.
Practice Recommendations

• Strengthening of the core & kinetic chain is key for rehab/prevention of overuse injury

• Most patients with overuse injury need good rehabilitation program, not surgery
Questions