

# (PBL) Musculoskeletal Exam Techniques: Evidence-Based Treatment for Upper & Lower Extremity Injuries

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## Anthony Beutler, MD, FAAFP

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In Dr. Beutler's current positions at Intermountain Healthcare, his job is to reimagine sports medicine care, practice state-of-the-art sports medicine, and train the next generation of sports medicine physicians. A Hoosier by birth, he spent 21 years in the U.S. Air Force practicing family medicine and comprehensive primary care sports medicine for active-duty service members, retirees, and their families. He is an award-winning educator and teacher on the team that developed and implemented a new musculoskeletal curriculum for the Uniformed Services University of the Health Sciences' medical school. The author of numerous articles and a sports medicine 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.

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## 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 musculoskeletal injuries within the context of professional practice.
3. Formulate an action plan to implement practice changes, aimed at improving patient care.

**FMX**

## Associated Sessions

- Musculoskeletal Exam Techniques: Evidence-Based Treatment for Lower Extremity Injuries
- Musculoskeletal Exam Techniques: Evidence-Based Treatment for Upper Extremity Injuries

**FMX**

# Audience Engagement System



## 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
- Hurts 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 3-4 physical exam findings will aid in narrowing your DDX and creating a treatment plan?



## Physical Examination

- B knees no effusion, erythema, no gross atrophy
- No joint line TTP
- + retropatellar TTP
- + increased pain with patellar shrug/Clarke's

- 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

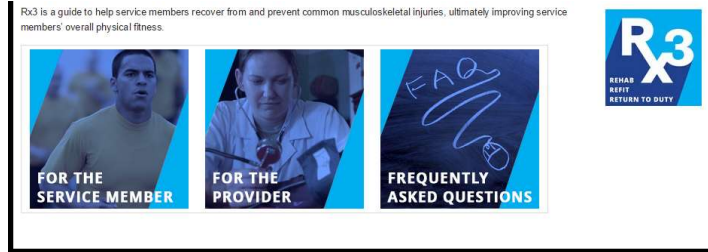
- Discuss the relative importance of each of the following treatment recommendations for Laura:
  - Rest, ice, compression, and elevation BID
  - Motrin 800mg PO TID for 28 days
  - Knee brace/taping
  - Stop running and switch to elliptical trainer
  - Get new running shoes
  - Hamstring, quadriceps 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

<http://hprc-online.org/physical-fitness/rehab>

an open source rehab program



## 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

- 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 xrays?

- 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

## Returning Patient – What if Bob Doesn't Get Better???

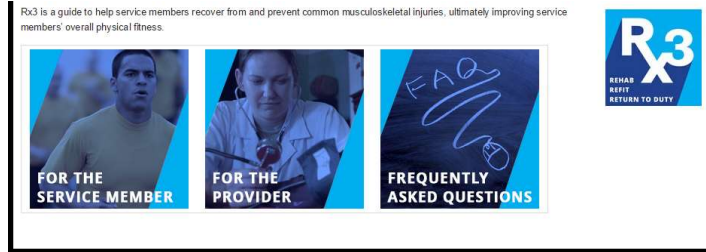
- Bob returns to your office after 3 months. Shoulder is “some better,” but still wakes him up at night and he still has pain with simple activities through the day.
- He says he is trying to do his rehab exercises, but he is discouraged at lack of progress.
- What are your:
  - 2 key messages?
  - 3 key physical exam findings?

## 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



## 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
- Organize your physical exam to 3-4 key findings to get you to correct diagnosis!

## Contact Information

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## Questions

