Practical Approach to Musculoskeletal Medicine

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Objectives

- Discuss common musculoskeletal complaints and how to manage them through case-based studies
- Demonstrate simple physical exam maneuvers to help diagnose common musculoskeletal complaints
- Identify indications for imaging
- Review 2019 American College of Rheumatology Guidelines for management of osteoarthritis
- Recap practice changing articles in musculoskeletal medicine
A 70M is evaluated for a 5-year history of L knee stiffness. He reports daily pain and stiffness for 10 min in the morning and when he sits for an extended period. He reports no swelling, knee buckling or locking. On exam, crepitus and medial joint line tenderness to palpation are noted. There is no redness, effusion, or signs of knee instability. Left knee radiograph shows mild medial joint space narrowing.
Tibiofemoral Osteoarthritis

- Degradation and wear of articular cartilage
- Exam: joint swelling, stiffness, tenderness to palpation along joint lines, and even warmth. Specific to OA: presence of severe angular deformities.
- Imaging: Usually not needed, but can be useful in radiographic grading of OA, if patient failed conservative management, or if there are red flags – effusion, trauma
  - Weight-bearing AP view
  - Weight-bearing, flexed knee, posterior anterior view (Rosenberg or weight-bearing notch view)
Advantages of Rosenberg view

Figure 1-21. A knee with normal articular cartilage surfaces weight bearing in extension. B. A knee in the same position, complete loss of tibial cartilage and loss of the cartilage on the tibia and posterior part of the femur. C. The knee shown in B weight bearing flexed knee position.

Figure 1-22. The same knee x-rayed using the weight-bearing AP technique (A) and the weight-bearing flexed knee PA technique (B). Note the area of bone-on-bone wear visible on the flexed knee view (arrow) that is not visible on the view taken with the knee extended.

Source: Edward (Ted) Parks
Practical Office Orthopedics
### 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee

#### Physical, Psychological, and Mind-Body Approaches

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### Arthritic knee with Unloading Bracing

- Medial (inside) with Unloading knee
58M with history of obesity presents with 3-week history of lateral left hip pain that started after an increase in activity. Patient reports he was previously sedentary but has started to walk in order to lose weight. He states that pain is worse at night. Exam is notable for negative windshield wiper test, +tenderness to palpation over left greater trochanter.
Windshield wiper test
Greater Trochanteric Pain Syndrome

- IT becomes less elastic and rubs against the greater trochanter with too much friction
- Lateral sided hip pain that is typically worse at night. Rarely, the IT band will catch or snap on the trochanter creating a palpable, or even audible, “clunk,” called coxa saltans
- Exam: little to no pain or stiffness on the windshield wiper test, tenderness to palpation over the greater trochanter
- Imaging: Not needed
- Treatment: IT band stretches and NSAIDs, steroid injection
Algorithm for Hip Pain

1. **Pain and stiffness on windshield wiper test?**
   - No
     - **Tender over trochanter?**
       - Yes → **Diagnosis: trochanteric bursitis**
       - No → **Low back pain, radicular signs and symptoms?**
         - Yes → **Diagnosis: hip pain from lower back**
         - No → **MRI with intra-articular contrast to rule out AVN or FAI/labral tear**
   - Yes → **X-rays = arthritis**
     - Yes → **Diagnosis: arthritis**
     - No → **Diagnosis: arthritis**
Shoulder: Physical Exam

- Key elements of the exam

  ROM

  Inspection/Palpation

  +/- Rotator cuff function assessment

  +/- Special tests for subacromial impingement

- Remember that the diagnostic accuracy of provocative/special tests is limited

NOTE: In patients with acute shoulder pain, multiple exam maneuvers may yield positive results
Physical Exam- Range of Motion

- **Flexion**
- **Abduction:** 0-30° = Supraspinatus, 30-90° = Deltoid, >90° = Trapezius + Serratus anterior + Scapula
- **Adduction**
- **Internal rotation (IR):** Subscapularis
- **External rotation (ER):** Infraspinatus

***Always perform ROM bilaterally***

***If active ROM is abnormal proceed to passive ROM***
Physical Exam - Range of Motion

Limited passive IR/ER narrows the differential to: Adhesive capsulitis and glenohumeral OA
Physical Exam - Inspection/Palpation

- Cervical spine, paraspinal muscles
- Scapular spine and adjacent musculature
- Acromioclavicular (AC) joint
- Bicipital groove
- Greater tuberosity of the humerus
  - Insertion site for supraspinatus/infraspinatus
Case #3

72M presents with 3 weeks of left shoulder pain radiating to mid-upper arm. A few days before pain onset he was taking down Christmas lights. He also reports that the pain wakes him up from sleep.

History of chronic left shoulder pain exacerbated by overhead activities.

ROM intact, pain with active abduction.

TTP over greater tuberosity of the proximal humerus.

Empty can is positive for pain, no weakness.
Physical Exam - Rotator Cuff Function

External rotation test

Weakness suggests infraspinatus tendon tear

Strength testing should be performed with the arms low

Push off or Gerber’s test

Weakness suggests supraspinatus tendon tear

Weakness suggests subscapularis tendon tear

Remember that pain can affect exam yield
Physical Exam - Shoulder Impingement

Hawkins Kennedy test for shoulder impingement
Positive if pain is elicited
Sensitivity for impingement 70-90%

Passive painful arc (Neer) test
Pain is a sign of subacromial impingement
Sensitivity for impingement 70-80%
Shoulder Pathology: Subacromial Impingement

- Continuum of conditions ranging from bursitis to cuff tear arthropathy.
- Chronic impingement of the rotator cuff against the acromion causes the rotator cuff to fray and eventually tear.
- Patients typically present with overhead pain that radiates to mid-humerus.
Subacromial impingement- GRASP Trial

RCT assessing the effects of exercise interventions, with or without subacromial corticosteroid injection in patients with shoulder pain attributable to a rotator cuff disorder.

Takeaways

❖ Subacromial corticosteroid injection provides modest short-term but no long-term benefit.

❖ Single face-to-face session with a physiotherapist is not significantly different in terms of clinical outcomes when compared with a comprehensive physiotherapy intervention of up to six face-to-face sessions.
Shoulder Imaging: Indications

Plain radiographs indicated when:

- History of trauma/injury
- ROM is limited
- Pain limiting exam yield
Shoulder Imaging: Views

Routine AP view vs Proper AP

Routine AP view

Proper AP view

Posterior glenoid rim
Anterior glenoid rim
Anterior and posterior glenoid rims superimposed
Case #4

36 year-old right-handed Male with history notable for UC presenting with right elbow pain for at least 4 weeks

Works in water utilities
"Use hands a lot for work"

Exam notable for TTP over lateral epicondyle, especially with resisted wrist extension
Lateral/Medial epicondylitis

- Association with workplace ergonomics or overuse
- Tasks that require prolonged wrist extension = Lateral epicondylitis
- Tasks that require prolonged wrist flexion = Medial epicondylitis
- PEX:
  - TTP over affected epicondyle
  - Pain with resisted wrist motion
    - Elbow/wrist/fingers should be straight in full extension
Lateral/Medial epicondylitis: Treatment

- Stretching (to restore tendon flexibility)
- NSAIDs
- Counterforce brace
  - Per 2020 systematic review and meta-analysis of RCTs, counterforce bracing may have better effects on pain in younger people (<45 years old) over the short term (<6 weeks)
  - “Tennis elbow” strap will work for both conditions
- Corticosteroid injection—Proceed with caution
What if your patient can’t go to physical therapy?

Knee Conditioning Program
STRETCHING EXERCISES

1. Heel Cord Stretch

**Repetitions**
- 2 sets of 4

**Days per week**
- 6 to 7

**Main muscles worked:** Gastrocnemius-soleus complex
You should feel this stretch in your calf and into your heel

**Equipment needed:** None

**Step-by-step directions**
- Stand facing a wall with your unaffected leg forward with a slight bend at the knee. Your affected leg is straight and behind you, with the heel flat and the toes pointed in slightly.
- Keep both heels flat on the floor and press your hips forward toward the wall.
- Hold this stretch for 30 seconds and then relax for 30 seconds. Repeat.

**Tip:** Do not arch your back.