The Diagnosis-Driven Physical Exam of the Knee and Shoulder

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[Image of a building]
[Image of a football field with players]
[UCSF logo]
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Outline

• Knee exam slides
• Knee cases and hands on exam practice
• Shoulder exam slides
• Shoulder cases and hands on exam practice
Musculoskeletal work-up

• History
• Inspection
• Palpation
• Range of motion
• Other Tests

• Strength
• Neurovascular
Knee Anatomy
The quadriceps muscles extend the knee
The quadriceps muscles merge to form the quadriceps tendon... patellar tendon
The hamstrings flex the knee
Pes anserine bursa

http://meded.ucsd.edu/clinicalmed/joints.htm
There are 4 main ligaments in the knee.
Meniscus
Common Causes of Knee Pain by Location of Symptoms

• Anterior:
  - Patellofemoral syndrome
  - Quadriceps tendinitis
  - Patellar tendinitis

• Lateral:
  - Lateral jointline: meniscus tear or OA
  - IT band syndrome
  - LCL sprain (rare)
  - Fibular head: fracture (rare)

• Medial
  - Medial joint-line: meniscus tear or OA
  - MCL sprain
  - Pes anserine bursitis

• Posterior
  - Hamstring tendinitis
  - Gastrocnemius strain
  - OA, meniscus tears, effusion, popliteal cyst....
Knee exam
Inspection

VALGUS

Permission for use provided by Dr. Charles Goldberg, UCSD
Palpation of joint line seated or supine

Permission for use provided by Dr. Charles Goldberg, UCSD
Evaluating for an Effusion

Permission for use provided by Dr. Charles Goldberg, UCSD

Milking & Ballotment
Patellar grind

Permission for use provided by Dr. Charles Goldberg, UCSD
Knee range of motion

• ROM: normal 0-135
  – Determine if knee is locking or if ROM is limited due to effusion
  – Locking: think bucket handle meniscus.
    • Urgent xrays, MRI
    • Urgent referral to sports surgeon for arthroscopy
Other Tests: Lachman to evaluate ACL

Sensitivity 75-100%  Specificity 95-100%
ACL: Anterior Drawer
Sensitivity 22-41%, Specificity 97%

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PCL: Posterior Drawer

Video used with permission from Anthony Luke, MD.
MCL and LCL

Video used with permission from Anthony Luke, MD.
Meniscus: McMurray

Sensitivity medial 65%, Specificity medial 93%

Meniscus: Thessaly

Video used with permission from Anthony Luke, MD.
Meniscus: Squat
Ober’s Test for IT Band
Functional Alignment: Single Leg Squat
Knee Exam Hands On

• Standing: inspection
  – Varus or valgus

• Sitting: palpation
  – Joint line
  – Femoral condyles
  – Tibial plateau
  – Fibular head

• Supine
  – Patellar facets
  – Patellar grind
  – ROM

• Special tests
  • Milking (effusion)
  • Ballotment (effusion)
  • Patellar grind (patellofemoral syndrome)
  • Anterior drawer (ACL)
  • Lachmans (ACL)
  • Posterior drawer (PCL)
  • Valgus (MCL)
  • Varus (LCL)
  • McMurray’s (meniscus)
  • Ober’s (IT Band)
  • Thessaly’s (meniscus)
  • Squat test (meniscus)
Shoulder exam
Neck examination

- Inspection
- Palpate CS
- FF and extension
- Spurlings
Cervical Spine
Spurling’s Maneuver

• Neck extended
• Head rotated toward affected shoulder
• Axial load placed on the cervical spine
• Reproduction of patient’s shoulder/arm pain indicates possible nerve root compression
Shoulder examination

- **Inspection**
- Palpation
- ROM
- Strength
  - Supra
  - Infra and teres minor
  - Subscapularis
- Other tests

http://meded.ucsd.edu/clinicalmed/joints2.htm, permission granted by Dr. Charles Goldberg, UCSD SOM
Shoulder examination

• Inspection
• Palpation
• ROM
• Strength
  – Supraspinatus
  – Infraspinatus & Teres minor
  – Subscapularis
• Other tests

http://meded.ucsd.edu/clinicalmed/joints2.htm, permission granted by Dr. Charles Goldberg, UCSD SOM
Range of motion
Range of motion

External rotation

Internal rotation
Supraspinatus = abduction
Infraspinatus and Teres minor = external rotation

Photo from Dr. Christina Allen, UCSF
Subscapularis = internal rotation

Lift-Off

Photos from Dr. Christina Allen
Subscapularis = internal rotation

Belly press

Photos from Dr. Christina Allen
Impingement syndrome

• Inflammation of the subacromial space
  – The area under the acromion and above the glenohumeral joint
  – Structures in this space
    • Supraspinatus
    • Subacromial/subdeltoid bursa
Impingement signs

Hawkin’s

Neer’s

Photos from Dr. Christina Allen
Biceps Tests: Speeds

Tests for biceps pathology (tendinitis, tendinopathy, tear)

Palms up, patient pushes up against resistance (resisted elbow flexion)

+Test is pain at proximal biceps tendon

Sens = 54%, Spec = 81%
Biceps Tests: Yergason's

Tests for biceps pathology (tendinitis, tendinopathy, tear)

Patient supinates (twists out) against resistance

+Test is pain at proximal biceps tendon

Sens = 41%, Spec = 79%
O’Brien’s Test

To r/o Labral Tear

- Arm forward flexed to 90°
- Elbow fully extended
- Arm adducted 10° to 15° with thumb down
- Downward pressure
- Repeat with thumb up

- Suggestive of labral tear if more pain with thumb down

- Sens = 59-94%, Spec = 28-92%
Testing the AC Joint:
AC Crossover

Tests for AC joint osteoarthritis or sprain

Can be done passively by patient or physician

+Test is pain at AC joint
Shoulder Exam Hands On

**Key Components of the Shoulder Exam:**
- Inspection
- Palpation
- Range of Motion:
  - abduction, flexion, ER, IR
- Strength
- Neurovascular
- Special tests

**Special Tests:**
- Spurling’s (cervical spine radiculopathy)
- Job’s, aka Empty-can (supraspinatus)
- Lift-off test (subscapularis)
- Belly press (subscapularis)
- Resisted external rotation (infraspinatus)
- Hawkins (impingement sign)
- Neers (impingement sign)
- Speeds (biceps)
- Yergason’s (biceps)
- O’briens (SLAP tear)
- AC crossover (AC joint OA or sprain)