American College of Physicians - Internal Medicine Meeting 2026
San Francisco, CA

Diagnosis-Driven Examination of the Knee

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Diagnosis-Driven Physical Examination of the Knee

ACP Musculoskeletal Medicine Teaching Group

ACP National Conference

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ACP Knee Exam Clinical Skills Workshop Faculty

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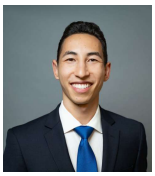

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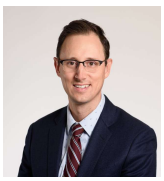

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Disclosure of Financial Relationships

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Objectives

1. Organize the knee musculoskeletal exam
2. Identify key historical factors in a patient with knee pain
3. Palpate key anatomical structures of the knee
4. Perform key provocative maneuvers of the knee exam and interpret towards likely diagnosis

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Musculoskeletal organizational scheme

- History
- Inspection
- Palpation
- Range of motion
- Provocative tests

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Common Primary care Knee conditions

- Essential
  - Patellofemoral syndrome (PFPS)
  - Meniscus tear
  - Osteoarthritis (OA)
- Bonus
  - Anterior cruciate ligament (ACL) tear
  - Medial collateral ligament (MCL) tear
  - Pes anserine bursitis
  - Iliotibial band (ITB) syndrome

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Key knee history: most common diagnoses in PC

	Patellofemoral pain syndrome (PFPS)	Meniscus tear	OA
Demographic	Younger/female	Young- middle age	Older
Activity	Overuse injury	Acute or degenerative	Acute or overuse
Swelling	Soft tissue (no effusion)	+/- effusion	+/- effusion
Locking	May endorse but usually crepitus	If bucket handle tear	May endorse but usually crepitus
Instability	Pain may lead to this esp. down hills/ stairs	Not usually	Preceded by pain

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Bonus conditions

	ACL tear	MCL tear	Pes anserine bursitis	ITB syndrome
Demographic	Usually under 40	Any age	Middle/Upper age	Any age
Mechanism of injury	Traumatic/twisting injury (noncontact)	Valgus force to the knee	Overuse/limping	Running, overuse
Swelling	Yes, within an hour	Yes, medially	Yes	No
Locking	No, unless concomitant bucket handle meniscal tear	No	No	No
Location of pain	Nonlocalizable, possibly lateral	Medial knee	Anteromedial aspect of the proximal tibia	Lateral knee
Instability	Yes	No, unless high grade tear	No	No

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Knee Anatomy – 4 ligaments

1. ACL
2. PCL
3. MCL
4. LCL

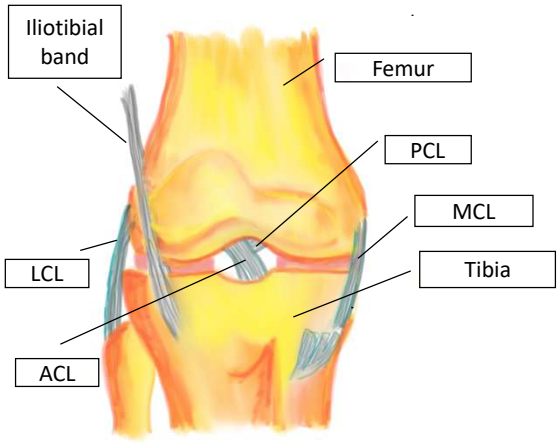

Illustration by Carlin Senter

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Knee Anatomy –3 Surfaces

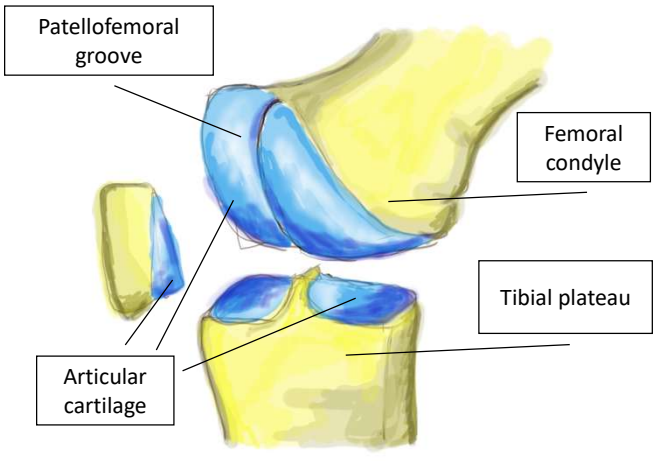

Illustration by Carlin Senter

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Knee Anatomy – Meniscus

- Medial and lateral
- Shock absorber
- Stabilizer

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Knee Anatomy – Bursae

1. Suprapatellar bursa
2. Prepatellar bursa - *"housemaids knee"*
3. Infrapatellar bursa
4. Pes Anserine bursa

http://www.aidmybursa.com/_img/prepatellar-bursitis.jpg

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Knee exam

- **Inspection**
  - Abnormal gait
  - Alignment: Varus, valgus, neutral
  - Bony abnormalities
  - Quad atrophy
  - Erythema
- **Palpation with knee extended**
  - Evaluate for effusion
  - Quad, patellar tendons, tibial tubercle
  - Patellar facets
  - Patellar grind test
- **Range of motion**
- **Crepitus**
- **Palpation with knee flexed 90 degrees**
  - Joint lines, bony prominences
  - MCL, LCL tenderness
  - ITB, Gerdy's tubercle
  - Pes anserine bursa
- **Provocative Tests**
  - Ligaments
    - Anterior/Posterior drawer (ACL/PCL) – 90 degrees
    - Lachman (ACL) – 30 degrees
    - Varus stress (MCL)
    - Valgus stress (LCL)
  - Meniscus
    - McMurray
    - Thessaly** - standing
    - Squat** - standing

** Standing tests done if suspect meniscal tear and patient doesn't have significant knee OA

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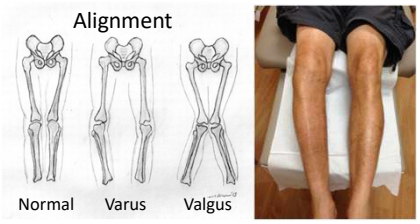
Inspection



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Palpation with knee extended

- Evaluate for effusion
- Quad, patellar tendons, tibial tubercle
- Patellar facets
- Patellar grind test

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Effusion

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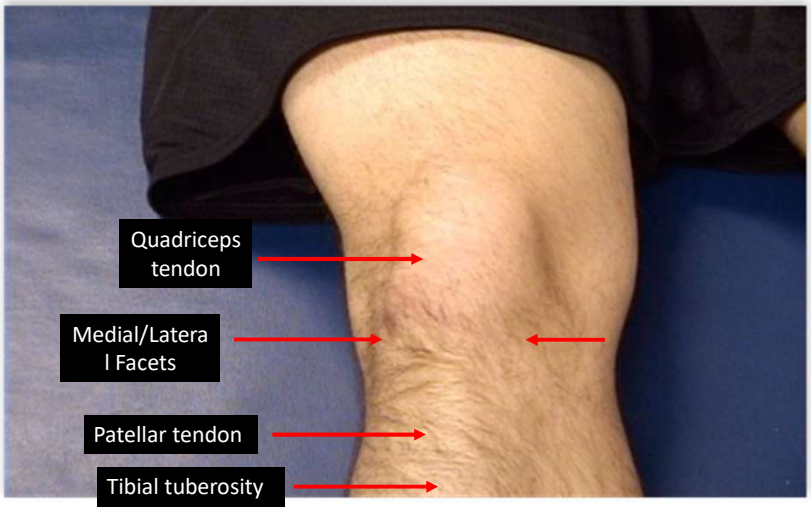
Patella



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Palpation of patellar facets

Note: There is no audio accompanying this video

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Patellar grind test

Examiner positions hand at superior pole of patella to 'trap' patella then asks patient to gradually and gently contract the quadriceps muscle. Anterior knee pain with this motion is (+) patellar grind test indicating patellofemoral joint pathology.

Note: There is no audio accompanying this video

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Knee range of motion

- ROM: normal 0-135
  - Feel for crepitus
  - Determine if knee is locking or if ROM is limited due to:
    - effusion
    - pain/guarding/stiffness
  - Locking: think bucket handle meniscal tear
    - Urgent xrays, MRI
    - Urgent referral to sports surgeon for arthroscopy

Knee Flexion (Left) and Extension (Right)

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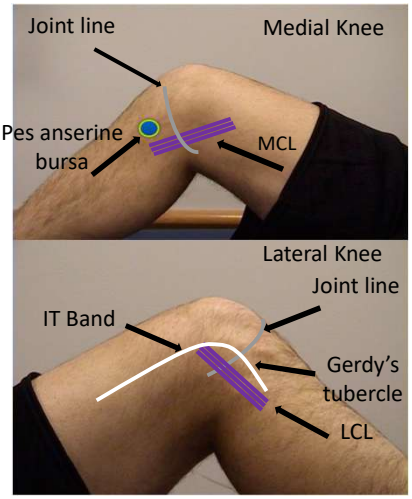
Palpation with knee flexed 90 degrees

- Joint lines, bony prominences
- MCL, LCL tenderness
- ITB, Gerdy's tubercle
- Pes anserine bursa



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Provocative tests

- Ligaments
  - Anterior/Posterior drawer (ACL/PCL) – 90 degrees
  - Lachman (ACL) – 30 degrees
  - Varus stress (MCL)
  - Valgus stress (LCL)
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Anterior Drawer for ACL

This is a normal exam (no laxity)

Low sensitivity 48% and specificity 87% compared to Lachman's test for ACL

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Posterior Drawer for PCL

This is a normal exam (no laxity)

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Lachman Test for ACL

This is a negative Lachman test: there is an endpoint to the anterior tibial translation.

Note: There is no audio accompanying this video

Sensitivity 75-100%, Specificity 95-100% Magee, DJ. Orthopaedic Physical Assessment, 5th ed. 2008.

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Positive Lachman Test

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Valgus stress for MCL and Varus stress for LCL

This is a normal exam (no laxity)

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Meniscus: McMurray test

Lateral meniscus:
Internally rotate the tibia and extend

Medial meniscus:
Externally rotate the tibia and extend

Pain and/or snap/click at the joint line = concerning for meniscus tear

Sensitivity medial 65%, Specificity medial 93%

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Meniscus: Thessaly test

Medial Meniscus:
Pain medially when pivot medially

Lateral Meniscus: Pain laterally when pivot laterally

Note: There is no audio accompanying this video

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Meniscus: Squat test

Deep squat increases compression on posterior horn meniscus.
Patient stands flat-footed while examiner holds their hands for balance, and the patient goes as low as possible.
(+) if knee medial or posterior joint line pain reproduced or feeling of locking during knee flexion (while knees are bent).

FIGURE 4. Deep squat test.

Sensitivity 75-77%%, Specificity 36-42%
(Snoeker BAM et al. JOSPT, 2015)

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