

## Knee Examination

This examination requires you to have the patient in several positions and it is important not to forget any of them. It is a case of learning the sequence and practicing.

- Ensure adequate exposure of the patient at the appropriate time
- Look at the patients hands – e.g., clues of osteoarthritis in the form of nodes
- Ask the patient to walk for you, looking at the gait (good idea to do this at the beginning to ensure that you don't miss it out)
  
- **Standing**
  - Inspection
    - From front looking at symmetry of the knees, obvious swelling, erythema, deformity of the joint, varus/valgus deformity
    - From the side looking for any fixed flexion deformity, obvious abnormalities
    - From the back looking for any swelling such as a bakers cyst, semi-membranous cyst. Assess if the iliac crests are level
  
- **Sitting**
  - Inspection
    - Closer look at the knee joint itself, better able to see any swelling, erythema, quadriceps wasting (some even suggest you could offer to measure the circumference of the thigh to comment upon quadriceps muscle bulk)
  - Palpation
    - Ask the patient to extend and flex the knee against resistance as a test of quadriceps and hamstring power
    - Passively extend and flex the knee palpating over the patella for crepitus
  
- **Lying**
  - Inspection
    - Final chance to inspect the knee joint! Again just looking for a moment to make sure there is nothing obvious that you have missed such as arthroscopy scars, vertical midline scar of previous replacement etc.
    - Inspect the hip region, as pain can be referred to the knee
  - Palpation
    - Apparent and true leg length is something that could be measured – some say do it others don't, so best to offer.
    - With the back of your hand, feel over the knee joint to assess the temperature, commenting on any warmth
    - Palpate for any effusion in the knee
    - Palpate for bony tenderness
    - Palpate along the joint line (make sure you know where this is as it is a way the examiner will know if you know what you are doing as is not where you may first think) – look at the patients

face all the while - feeling for tenderness (comment on medial/lateral compartment involvement)

- Palpate around the patella for tenderness
- Palpate the tibial tuberosity for the traction apophysitis: Osgood-Schlatters disease!
- Movement
  - Assess for fixed flexion deformity by passively lifting the leg at the heel to see if there is complete extension
  - Ask the patient to fully flex the knee, one side at a time
  - At the full active flexion ask the patient what is preventing further flexion: pain, stiffness etc. if not pain, assess if further passive flexion is possible
  - With the knee flexed, take the leg and internally and externally rotate the hip, as pain can be referred from the hip
  - Observe active extension of the knee from flexed position
  - Repeat each movement for the opposite leg at the same time comparing symmetry – like with like
- **Special tests**
  - These special tests are for assessing the integrity of the ligamentous supports of the knee joint
    - Cruciate ligaments
      - Anterior drawer test requires the knee to be flexed to 90 degrees. Sit on the patients foot – warn them of what you are about to do, and pull the proximal tibia forwards, assessing for abnormal anterior movement
      - Posterior test – with the knee flexed inspect for ‘posterior sag’ where the tibia is displaced posteriorly in relation to the femur. Abnormal posterior movement can be assessed
      - Lachman test – an alternative test for cruciate ligament integrity. This involves firmly holding the thigh with your left hand from underneath, and then with the right hand, firmly holding the upper tibia anteriorly. Slightly flex the knee and firmly assess for abnormal antero/posterior movement of the tibia on the femur. This test needs practice, so don’t attempt for the first time in an exam!
    - Medial collateral ligaments
      - This requires you to take the leg in a similar manner to the Lachman test, with the thigh being supported with the left hand, and the lower leg with the right hand. Slightly flex the knee to unlock it, and attempt to force the knee joint into valgus (by moving the tibia laterally) for assessing medial collateral ligament and varus (by moving the tibia medially) for assessing the lateral collateral ligament
    - Menisci
      - McMurrays test. Flex the knee, then taking the foot with your right hand, internally rotate the leg and passively

extend the knee, supporting the joint with the left hand to ensure a controlled extension, whilst maintaining the internal rotation. This manoeuvre may be accompanied with lateral compartment pain, or a 'click' in the knee, both of which suggest lateral meniscal injury. The test is repeated with an externally rotated leg, and this assesses the medial meniscus. Again, this is a test to practice many times to look slick. You may not be required to conduct this test as it can be painful, so make sure that you are able to accurately describe what you would do.

---

In a knee station it is unlikely that you will see anything other than osteoarthritis, so make sure you are aware of the management of this condition (see hip examination scheme). Also make sure you know some details of total knee replacement. Surgical talk has a good description of this procedure.