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**Holly
Parmenter**
Registered Nurse

Orthopaedic Workshop - Pre-Conference Workshop Repeated

Thursday, 20 June 2013

Start 2:00pm
Start 4:30pm

Duration: 120mins
Duration: 120mins

Sovereign
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Rotorua GP CME 2013
NZMA
New Zealand Medical Association

General Practice Conference & Medical Exhibition

20-23 June 2013 | Energy Events Centre | Rotorua

Knee injuries – A guide to diagnosis for GPs

AUCKLAND HIP AND KNEE SURGERY



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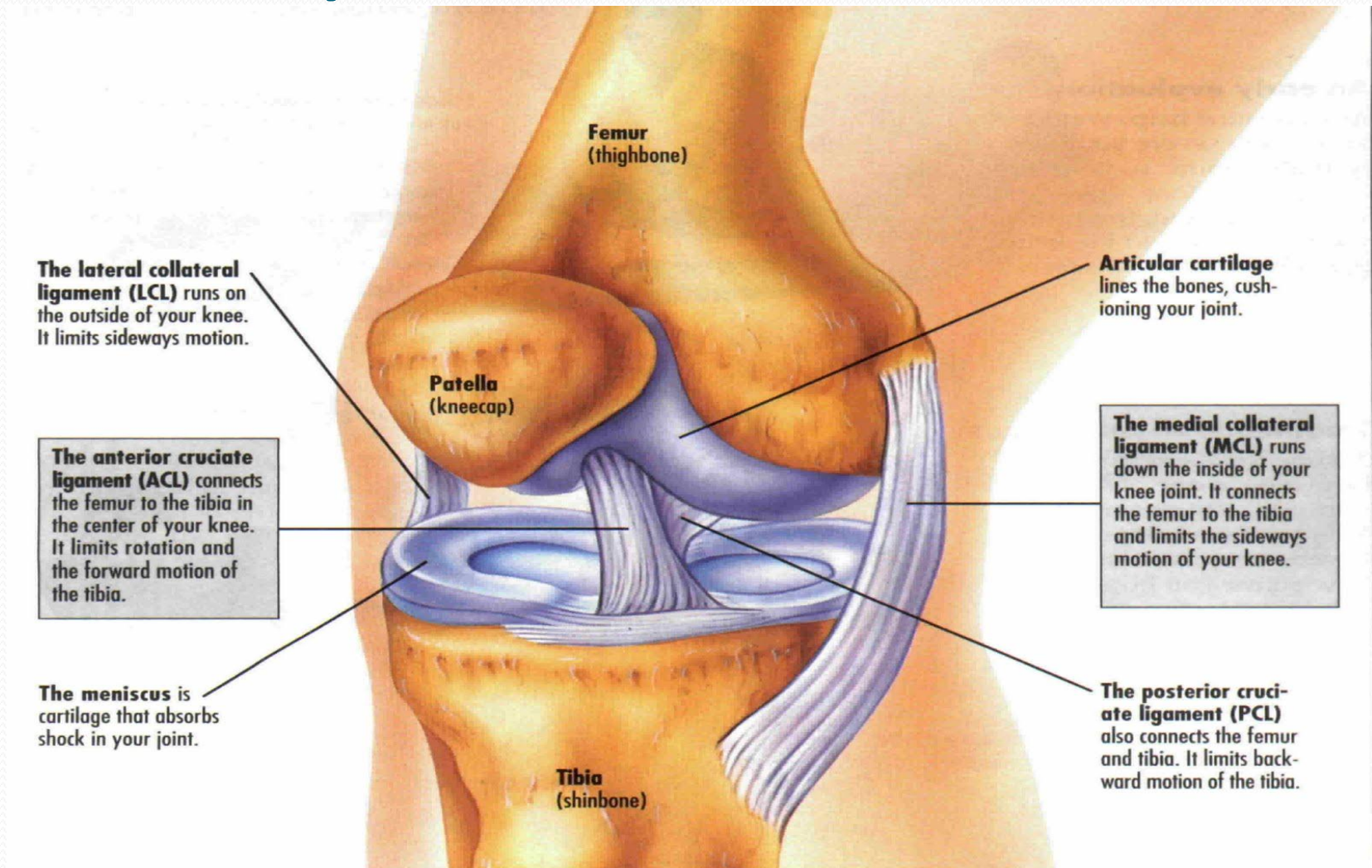
Disclosures

- I have no commercial interest disclosures to declare.

Knee injuries talk

- Anatomy
- History
- Examination
 - Quads, effusion, range of motion
 - Collateral ligaments
 - ACL
 - PCL
 - Meniscal tear
 - Patella dislocation
- Imaging : Xrays/ultrasound/MRI
- Demonstration of knee examination
- Traps in diagnosis
- What and when to refer to a Knee Specialist

Anatomy



History

- Acutely injured knees are painful and swollen, making examination difficult
- A good history is key to diagnosis

Important questions 1

- Mechanism of injury – contact v non-contact? 2/3 of ACL rupture are non-contact
- Did the patient hear a snap or pop?
- Did the knee or patella feel as if it gave way or dislocated?
- Did the patient try and walk on the knee? Did it feel unstable?

Important questions 2

- Did the knee swell immediately?
 - >Haemarthrosis
 - Major ligament injury
 - Fracture
 - Patella dislocation
- Does the knee lock? = Unable to extend the knee.
Is there something moving in the joint which is catching?

Examination

- Anatomy focussed
- Ligaments
 - MCL/LCL
 - ACL
 - PCL
- Menisci
- Patella stability

Examination

Alignment – normal,

- Varus



- Valgus



Quad wasting

Occurs very early

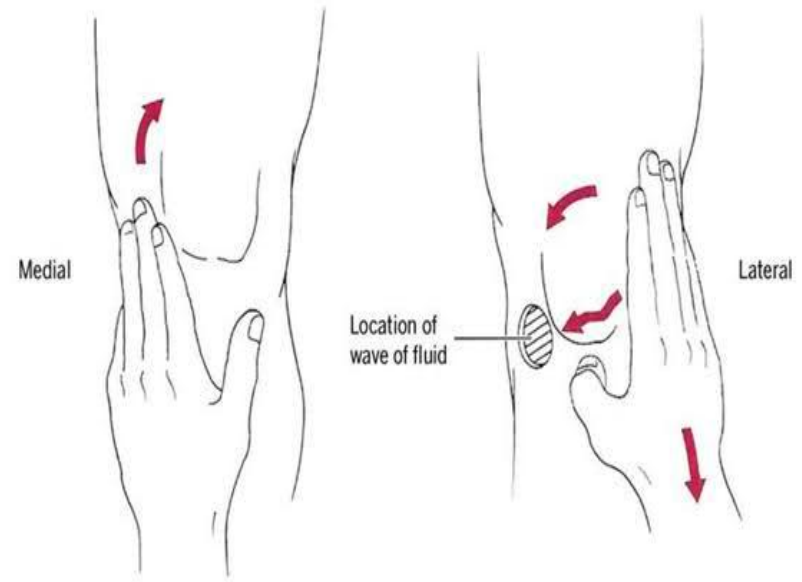
Up to 5% loss of muscle bulk per day

Very sensitive for an injury, but not very specific for a diagnosis



Effusion

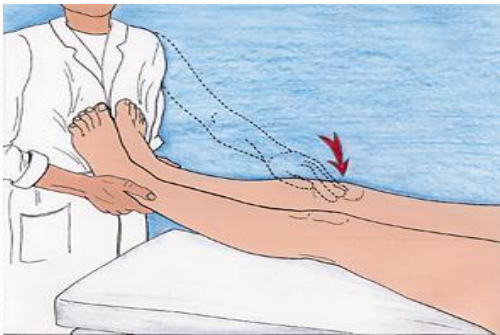
- Tense effusion is easily seen
- Moderate effusion - patella tap
- Mild effusion – swipe test



Range of motion

- Is there a springy block to full extension ?soft tissue impingement – meniscus v ACL stump
- Patellofemoral crepitus throughout ROM?
- Can patient straight leg raise ? -> if ok then extensor mechanism grossly intact.

Extension



Flexion



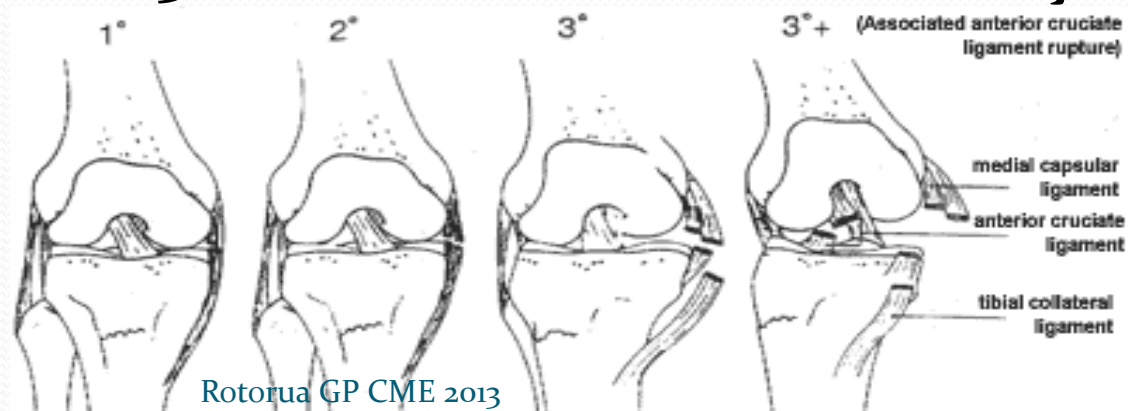
Ligament examination

- The grading is determined by the increase in laxity, compared to the normal contralateral knee
- AOSSM classification:

Grade 1 – 0 – 5 mm increase in laxity

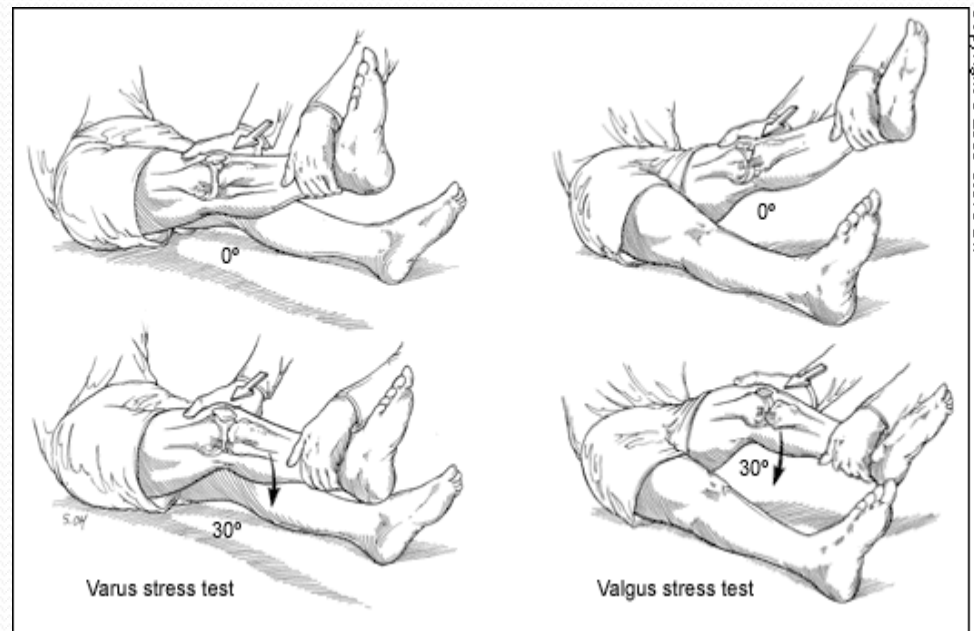
Grade 2 – 5 – 10 mm increase in laxity

Grade 3 - > 10 mm increase in laxity



Collateral ligament injuries

- Palpate the ligament first
- MCL
 - Arises – medial femoral epicondyle
 - Inserts – 6 – 8 cm distally on the tibia
- LCL
 - Arises – lateral femoral epicondyle
 - Inserts – fibula head



Collateral ligament exam

- MCL

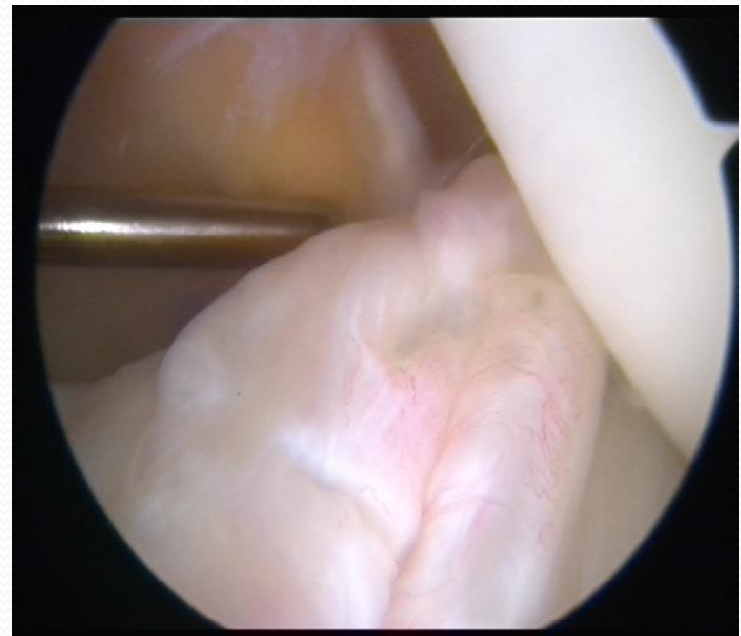
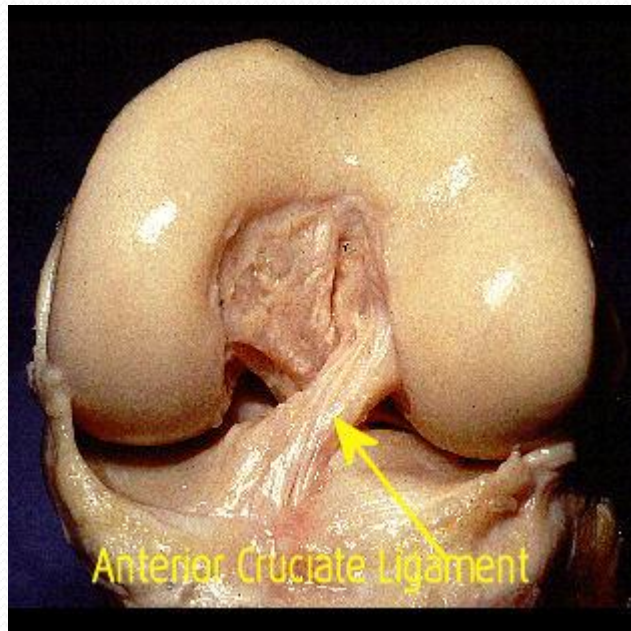
- Valgus stress test

- LCL

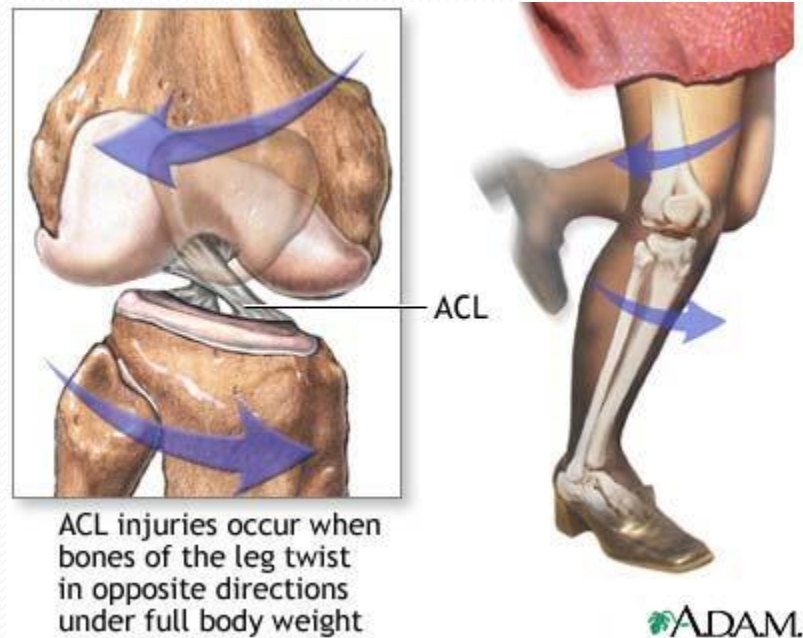
- Varus stress test



ACL anatomy



ACL Rupture



ACL examination

- Lachman test – best test
 - Anterior translation of tibia



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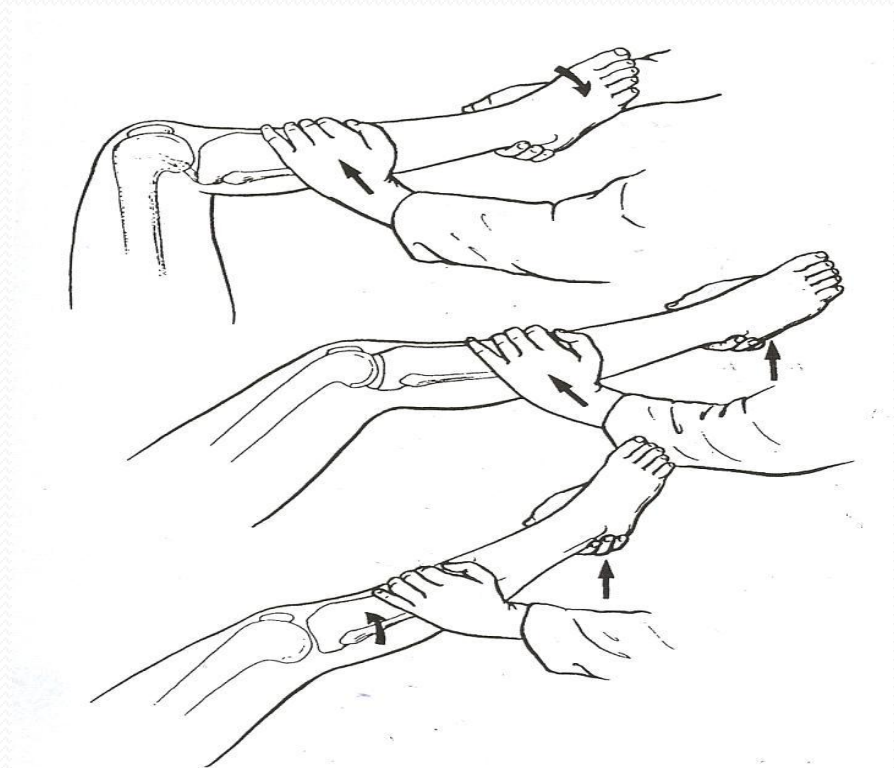
ACL examination

- Anterior drawer test –
- Beware that it is decreased by the posterior horn of the medial meniscus.



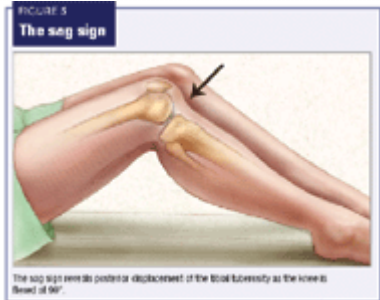
ACL examination

- Pivot shift test
 - Reproduces the sensation of giving way. Lateral compartment subluxes.
 - Patient's hamstrings need to be relaxed.



PCL examination

- Drop back (posterior sag sign) seen with knee at 90 degrees
- Compare with the other side!



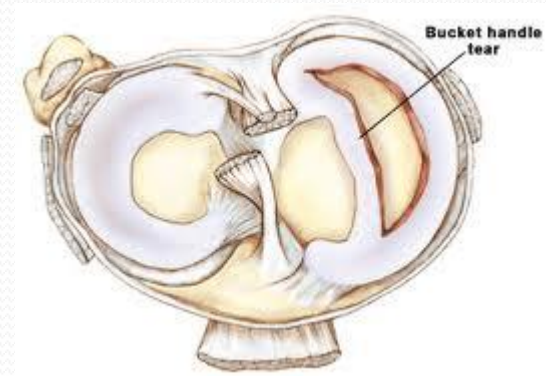
PCL examination

- Posterior drawer test



Meniscal tears

- CLINICAL FINDINGS
 - Effusion
 - Springy block to full extension, if bucket handle
 - Point joint line tenderness
 - Pain on meniscal grinding
 - Pain on squatting



Meniscal grinding test



Patella dislocation

- Haemarthrosis
- Medial retinacular tenderness
- Positive patella apprehension test

Patella apprehension test



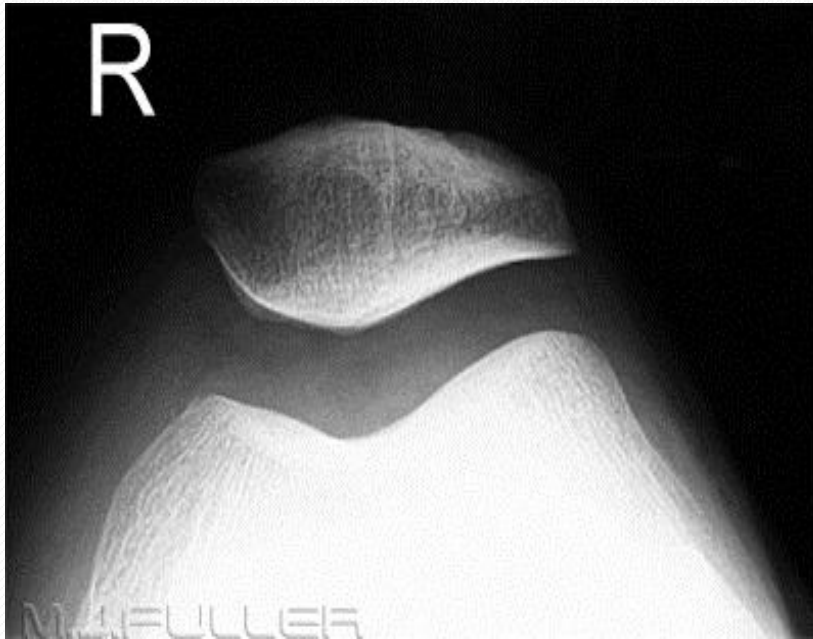
X-Rays

- AP weightbearing
- Lateral
- Skyline patella
- Intercondylar notch views (flexion PA)

AP; Lateral



Skyline; Notch view



Lipohaemarthrosis

= intraarticular fracture



->Tibial Plateau Fracture



Ultrasound

- There is no place for ultrasound in routine investigation of acute knee soft tissue injuries (now not funded by ACC)
- Ultrasound is useful in the diagnosis of:
 - superficial soft tissue swelling (solid v cystic)
 - Patella/quadriceps tendon ruptures
 - Rule out DVT

MRI scan

- MRI scan - gold standard imaging modality for intraarticular soft tissue pathology i.e. menisci, ACL/PCL, articular cartilage.
- Still no substitute for taking a **GOOD HISTORY AND CLINICAL EXAMINATION!**

Knee Examination Demonstrations

- 1. Knee effusion tests
- 2. MCL/LCL tests
- 3. ACL – Lachman test
- 4. ACL – Anterior drawer test
- 5. ACL – Pivot shift test
- 5. PCL - Posterior sag sign
- 6. PCL - Posterior drawer test
- 7. Menisci – Meniscal grind test
- 8. Patella dislocation - Patella apprehension test

Common traps in diagnosis

- ACL rupture v patella dislocation
- Giving way
 - ?true ligament instability
 - ?pseudo giving way secondary to pain inhibition of quadriceps
- *Beware* false positive Anterior Drawer in PCL deficient knee
- Referred pain (hip/lumbar spine)

What and when to refer to a Knee Specialist ?

When to refer

IMMEDIATELY (Public Hospital)

- Dislocated knee (tibiofemoral joint)
- Neurovascular injury
- Open injury
- Compartment syndrome
- Septic arthritis
- Fractures involving the knee joint
- Patella tendon rupture/Quadriceps tendon rupture

When to refer

in 24 – 48 hours (Private ACC)

- Acute locked knee (bucket handle meniscal tear). Do not refer to physiotherapy.

When to refer

in 7 – 14 days (Private ACC)

- Unstable knee – single ligament MCL, LCL, ACL, PCL
- Meniscal tears – unless acute locked knee
- Patella dislocations

Thank you for your attention