

# Best Practices in Knee Treatment

Chairperson: Michael Kelley

Tuesday, May 1<sup>st</sup>

8:00 - 8:55am

*Work Related Injuries Workshop  
April 30<sup>th</sup> & May 1<sup>st</sup>, 2018*

# Decoding the Medial Record:

## What Constitutes a Good Knee Exam and What Does It Tell You About the Diagnosis

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May 1, 2018



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# The Knee Exam

- HISTORY
- Gait
- Surface Exam / Anatomy
- Range of Motion
- Palpation
- Ligament Testing



"He's started hanging around ever since he found out orthopaedic means bones!"





# HISTORY

- Most important component of a focused exam
- Includes
  - Where ?
  - When ?
  - Circumstances / Energy involved?
  - Immediate condition ?
  - Persistent complaints, limitations ?
  - Where does it hurt ?



# Gait

- Limp
- Assisting device - crutch /cane/stretcher ?
- Sit in the chair?
- Up to the exam table?
- Presentation – tearful / happy / fearful?





# Surface Exam

- Deformity
- Edema
- Effusion
- Ecchymosis
- Braces / tapes / sleeves
- Skin compromise - cuts / abrasions



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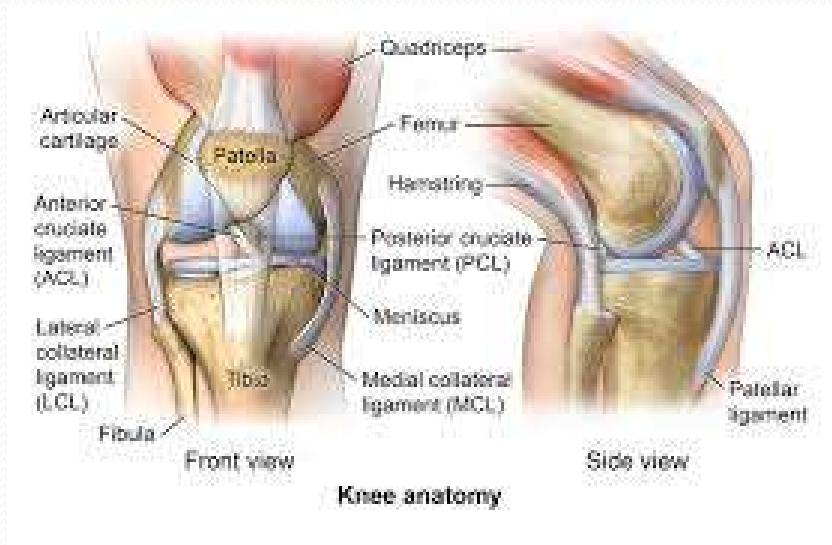


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# Surface Anatomy

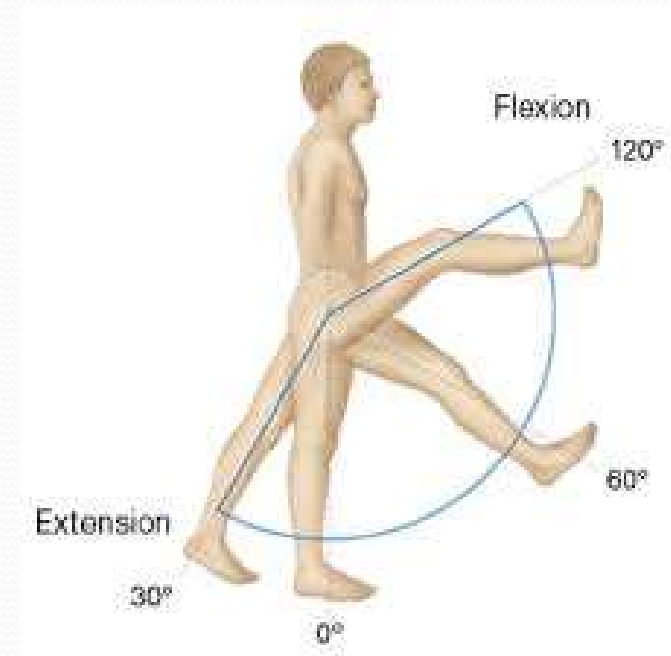




# Range of Motion



ADAM



# Palpation

- Quadriceps / suprapatellar
- Patella / patellar tendon
- Proximal tibia / infrapatellar
- Medial and lateral joint line
- Fibular head / Lateral collateral ligament
- Posterior hamstring
- Lateral femoral condyle / IT band
- Medial collateral ligament





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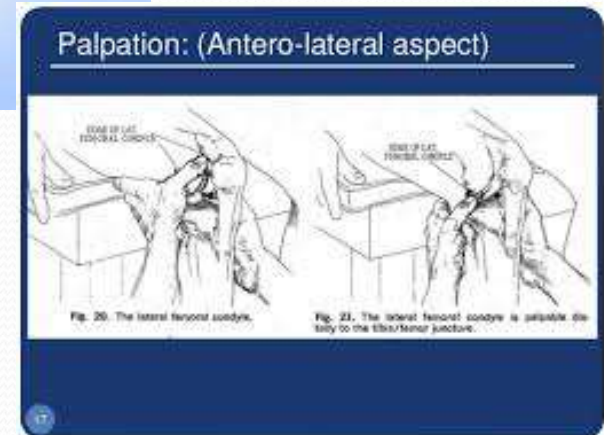
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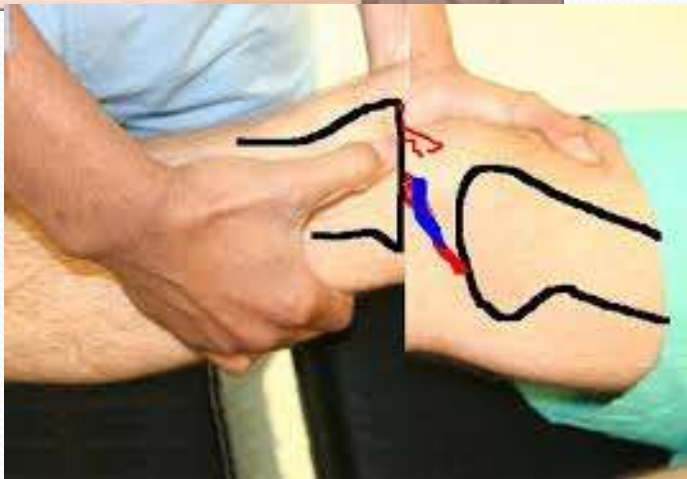




# Ligament / Provocative Testing

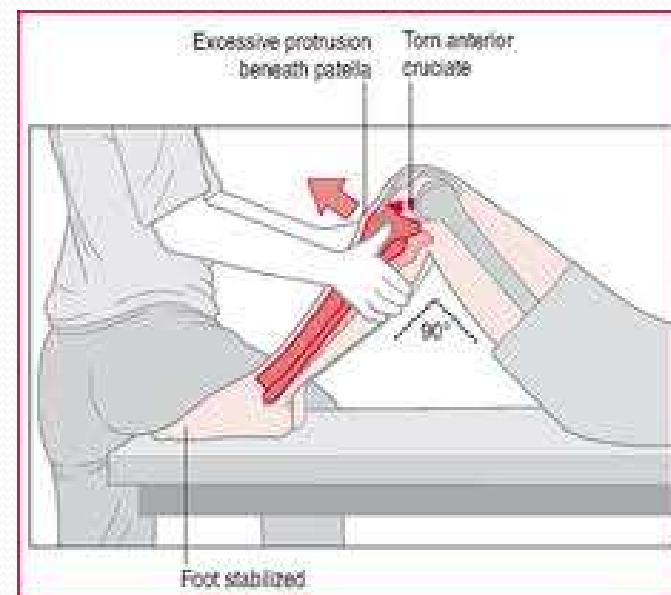
- Lachman test
- Drawer test – anterior / posterior
- Collateral testing
- Pivot shift
- Reverse pivot shift
- Quadriceps active test
- McMurray test

# Lachman Test - ACL

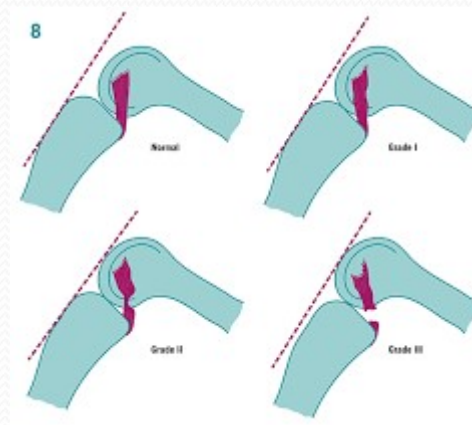




# Drawer Test – Anterior - ACL



# Drawer Test – Posterior - PCL





# Collateral Testing - Medial

## SPECIAL TESTS - Ligaments

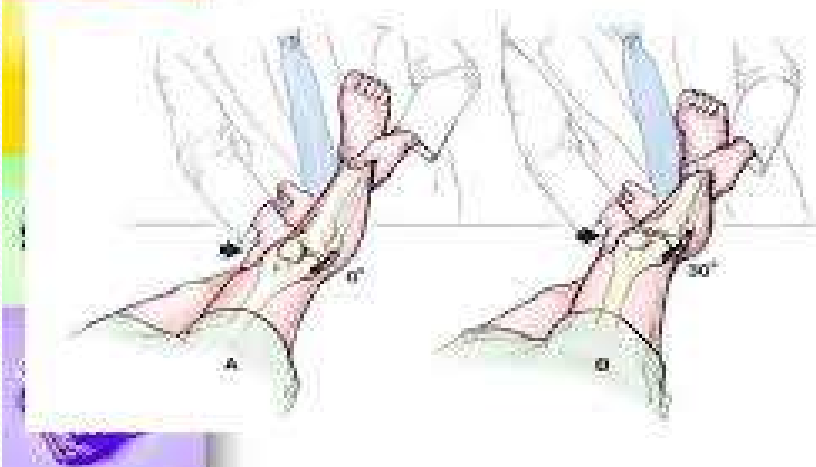
### Medial Collateral Ligament

- Flex knee to 20-30°
- One hand on inner calf/ankle
- Push inward (valgus stress) on lateral knee while applying outward stress with hand on calf/ankle
- Positive test = joint laxity



# Collateral Testing - Lateral

## 2. Varus stress test – lateral collateral ligament (LCL)



## Lateral Collateral Ligament (LCL)

1. Flex knee > 30 degrees.
2. Right hand medial aspect knee.
3. Left hand on ankle or calf.
4. Push steadily w/right hand while supplying opposite force w/ left.
5. If LCL torn, joint will "open up" on lateral aspect.
6. May elicit pain on direct palpation of injured ligament



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Anatomy – Collateral Ligament Injuries



# Pivot Shift - ACL

## Pivot Shift Test



- Gold standard test for ACL
- Leg is externally rotated
- Valgus force is applied as leg is flexed
- Positive test indicated by clunk sensation

## B- PIVOT SHIFT TEST

\*position of the patient:

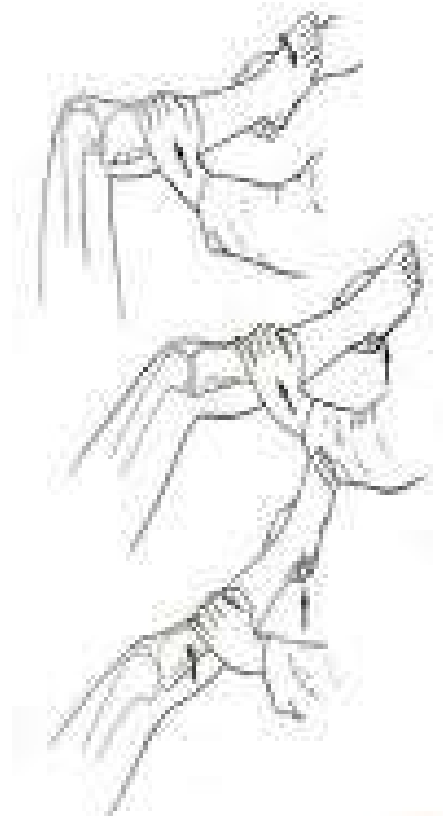
supine

\*position of examiner :

The examiner should lift the tested leg off the table with the knee fully extended. Place the heel of one hand behind the fibular head of the patient. Use the other hand to grasp the tibia, while palpating the medial joint line. While maintaining a valgus force and internal rotation of the tibia throughout the test, slowly flex the patient's knee (note: the test starts by putting the tibia in the abnormal position!).

\*results:

If there is an anterior subluxation felt during extension the test is positive for instability

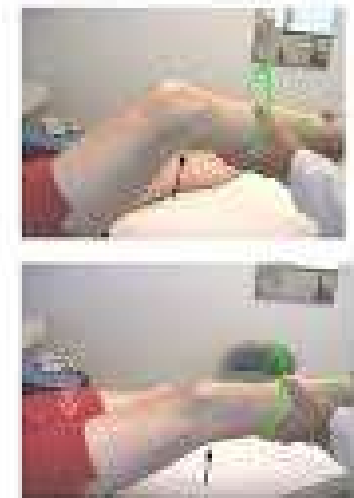


# Reverse Pivot Shift - PCL



## Reverse Pivot Shift

- Dynamically assesses for posterolateral knee rotation.
- Knee flexed 50-90 degrees, a valgus and ER force applied.
- Knee is then extended. If the tibia is posterolaterally subluxated, the iliotibial band will reduce it as it goes from a flexor to an extensor of the knee (@20-30 deg flexion)





# Quadricep Active Test - PCL

## Quadriceps Active Test

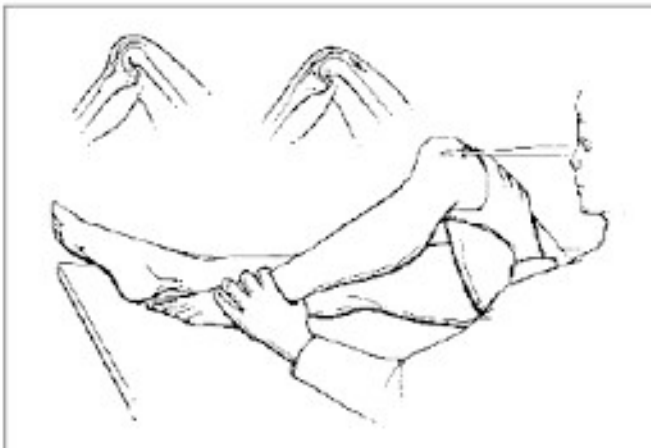


Figure 3. The Quadriceps active test.

## Clinical evaluation



### Clinical Examination:

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#### • The Quadriceps Active Test

1. the knee is placed at 60° of flexion.
2. the examiner holds pressure on the foot.
3. The patient is asked to contract the quadriceps isometrically.
4. In the case of a complete rupture of the PCL, the quadriceps contraction achieves a dynamic reduction of the posterior displacement of the tibia.

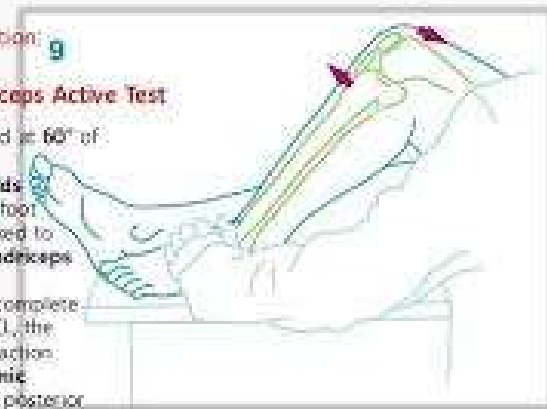
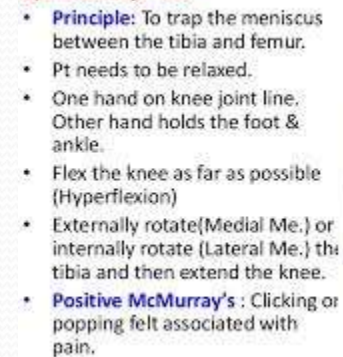


Fig. 14



- **Principle:** To trap the meniscus between the tibia and femur.
- Pt needs to be relaxed.
- One hand on knee joint line. Other hand holds the foot & ankle.
- Flex the knee as far as possible (Hyperflexion)
- Externally rotate (Medial Me.) or internally rotate (Lateral Me.) the tibia and then extend the knee.
- **Positive McMurray's :** Clicking or popping felt associated with pain.

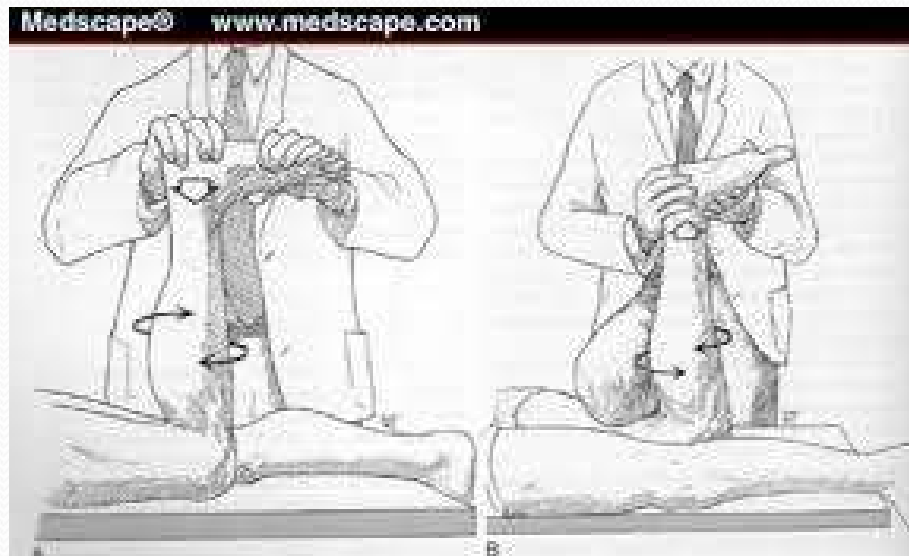


- McMurray first described his test in 1942 and published in paper entitled 'Semilunar Cartilage'





# Apley Test - Meniscus



## Apley's grinding test

- ❖ Patient prone
- ❖ Knee flexed to 90 degrees
- ❖ Knee rotated
- ❖ Compression force applied
- ❖ Pain indicates torn meniscus



# Patellofemoral Grind / Apprehension

Patella Grinding Test



## Palpation

- ❑ Patellar grind test
  - ❑ The patient is in the supine position with the knee extended
  - ❑ The examiner displaces the patella inferiorly into the trochlear groove
  - ❑ The patient is then asked to contract the quadriceps while the examiner continues to palpate the patella and provides gentle resistance to superior movement of the patella
  - ❑ The test is indicative of PFPS if pain is produced

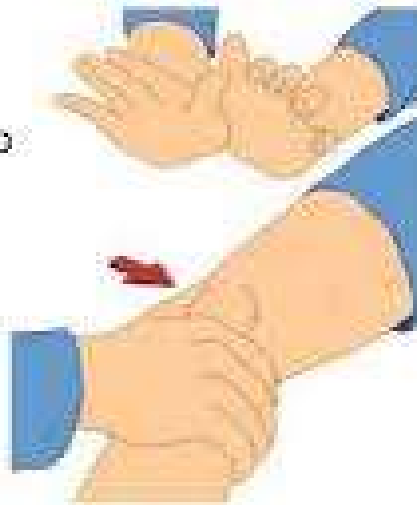




# Patellofemoral Grind / Apprehension

## Patellar Apprehension Test

- Patient Supine
- Grasp the Sympt limb at ankle and allow the knee to be Flexed over the Side of table.
- Push the patella as far laterally as possible
- Then slowly flex the knee with other hand
- Creates an APPREHENSION that episode of instability is imminent



# What Does It Tell You About Diagnosis?

## Everything

- History and exam formulate the diagnosis
- Exam allows first determination of :
  - Injury
  - Chronicity
  - Causality
  - Disability
- Directs further imaging needs
- Directs evaluation of care recommendations





# Thank you

# What to Look for in a Non-Operative Knee Rehabilitation Program

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# Non Operative Care

- Diagnose the injury
- Understand the injury
- Empower sense of control of the care
- Educate necessary steps to recovery
- Instruct proper SELF CARE
- Introduce plan for return to activities / work place



# Pain Control

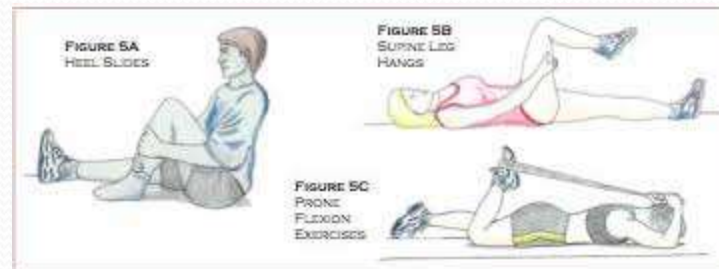
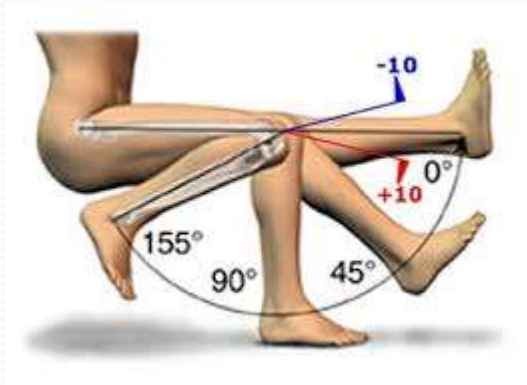
- Swelling control
  - Ice
  - Elevation
  - Wrap
- Medication
  - NSAIDs
  - Pain medication
- Stress management





# Range of Motion

- Initial evaluation of motion
- Goals for the motion
- Timing
- Assist in the ROM / passive?
- Home program to maintain progress



# Strength

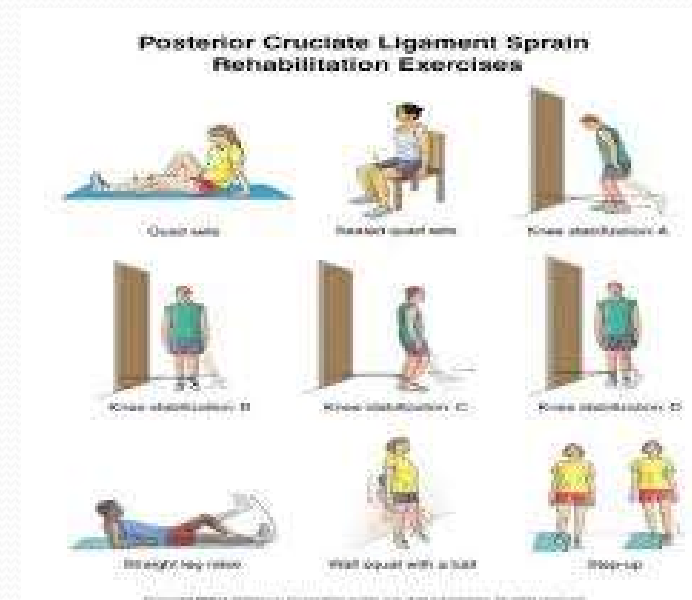
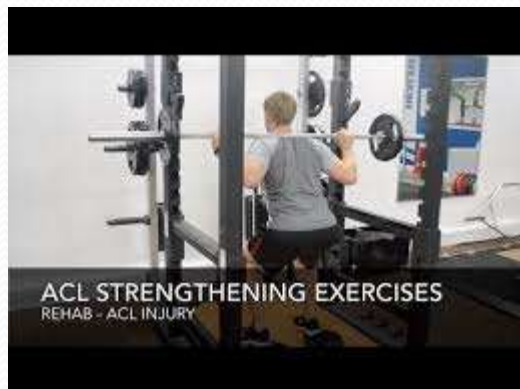
- Evaluation of deficiency
- Plan for strength recovery
- Early stimulation / electrical
- Recovery of early quad strength
- Focus on fiber recruitment
- Secondary hamstring strengthening





# Focused Care

- Quad strength for PCL injuries
- Hamstring strength for ACL injuries
- ROM and general strength for strains and meniscus tears



# Confidence

- Neuromuscular training
- Focused knee stress exercises
- Balance instruction
- Perturbation training
- Proprioception
- Strength challenges
- Coordination drills



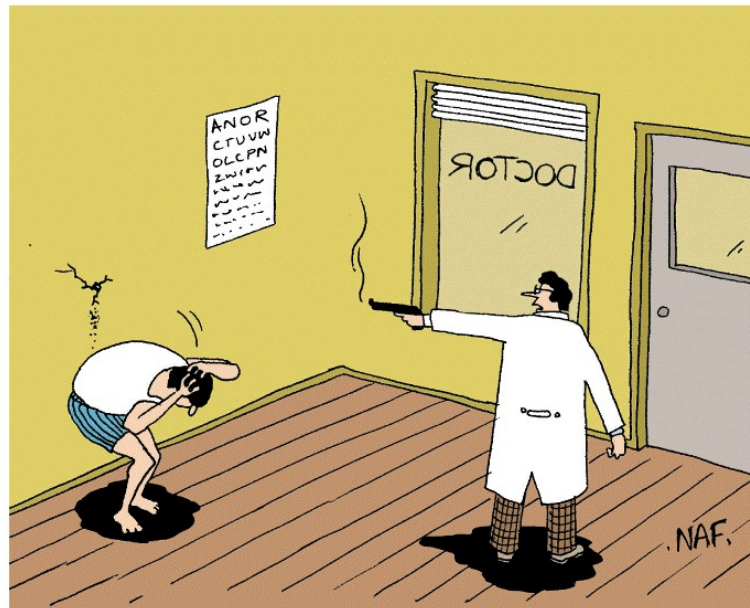
Squat  
Legs





# Elimination of Disability

- Return to activities
- Activities of daily living
- Return to pre injury exercise and athletic activities



"Your reflexes seem fine Mr Hart"

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# Return to Work

- Assess work environment
- Investigate injury mechanism and potentials
- Work simulations
- Conditioning for the job specific activities
- Discussions of modified work activities
- Plan for continued rehabilitation



## Fit for Work





# Thank You

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