

Knee Injuries

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What, Me Worry?



thinking







Knee

- One of the most complex joints, 3 articulations
- Commonly injured
 - Microtrauma – tendonitis
 - Macrotrauma – ligaments, fractures
- Receives enormous stresses
- Knee “complex” includes pelvis and ankle

Anatomy is key to the knee



Anatomy

- Bony
- Joint
- Muscles
- Tendons
- Ligaments

Muscle Tendon Anatomy

- Quadriceps
- Hamstrings
- IT band
- Adductors
- Gastrocnemius muscles
- Patellar tendon

Issues

- No consensus
- Uniplanar exam
- Focus on ligaments
- Exam findings vs functional deficits

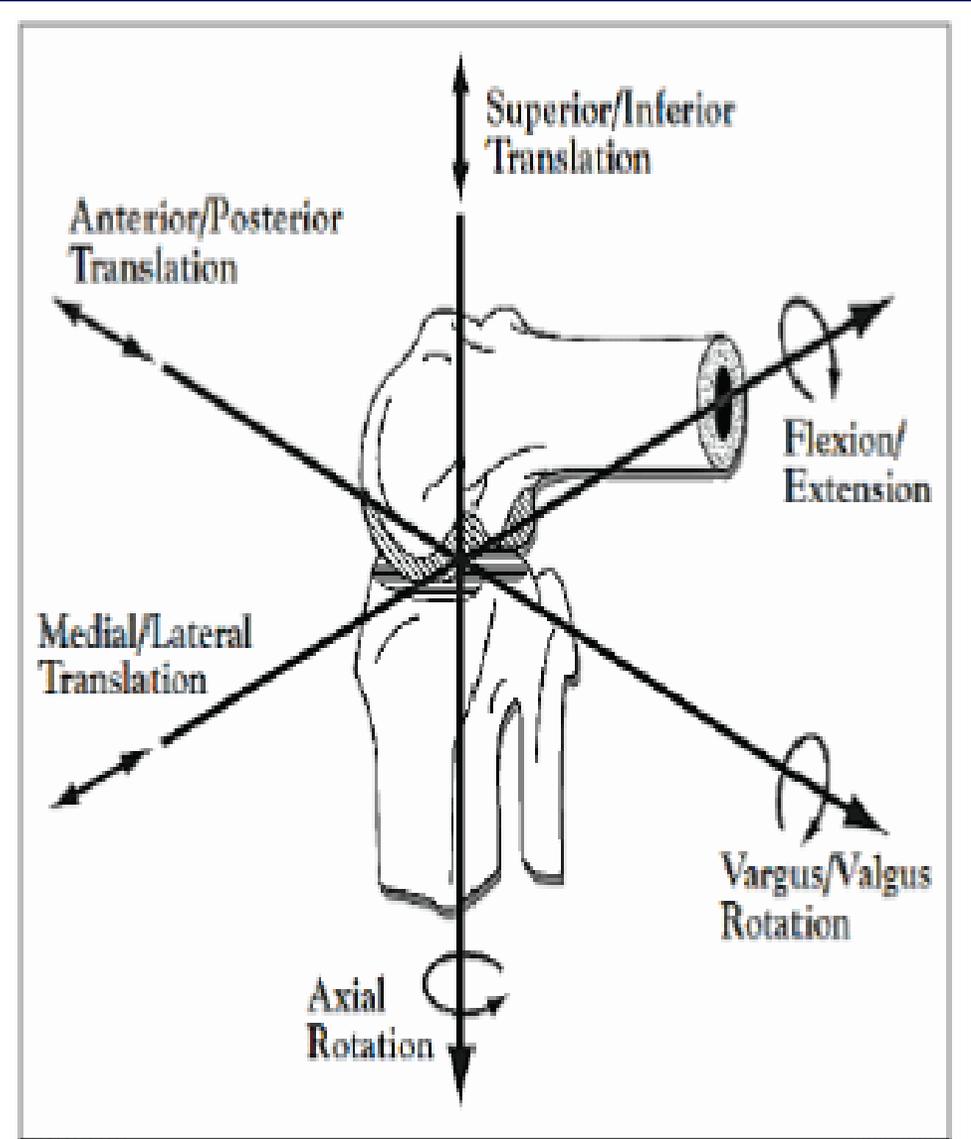


Figure 5: Six degrees of freedom of the knee joint [10].

History, Physical Exam & Treatment

History

- Acute vs. chronic
- Mechanism of injury
- Feel or hear a pop
- Swelling
- Disability

Exam

- Gait pattern
- Alignment/mechanical axis
- Atrophy
- Swelling
- Ecchymosis

Physical Exam Ligaments

- ACL
 - -Anterior Drawer, Lachman, Pivot Shift
- PCL
 - -Posterior Drawer, Posterior Sag, Quad Active Test
- MCL
 - -Valgus Stress
- LCL
 - -Varus Stress

Diagnostic Studies

- Plain radiographs
- MRI
- CT scan
- EMG/NCV

Injuries

Common Terms

- ACL Tear
- ACL/MCL
- ACL/LCL
- PCL
- ACL/PCL
- Etc,etc
- What does it all mean?

Uncommon Terms

- Anterolateral rotatory instability
- Anteromedial rotatory instability
- Posterolateral rotatory instability
- Posterolateral Corner



Collateral Ligament Injuries

- Grade I – tender stable, 0-2mm, 0-5mm
- Grade II – tender, opens, 2-4mm, 5-10mm
- Grade III – gross laxity, 5-10mm, >1cm
- No Consensus, intra-observer variability
- Gross laxity implies significant other pathology
- Worry about dynamic inputs/muscle tendon units

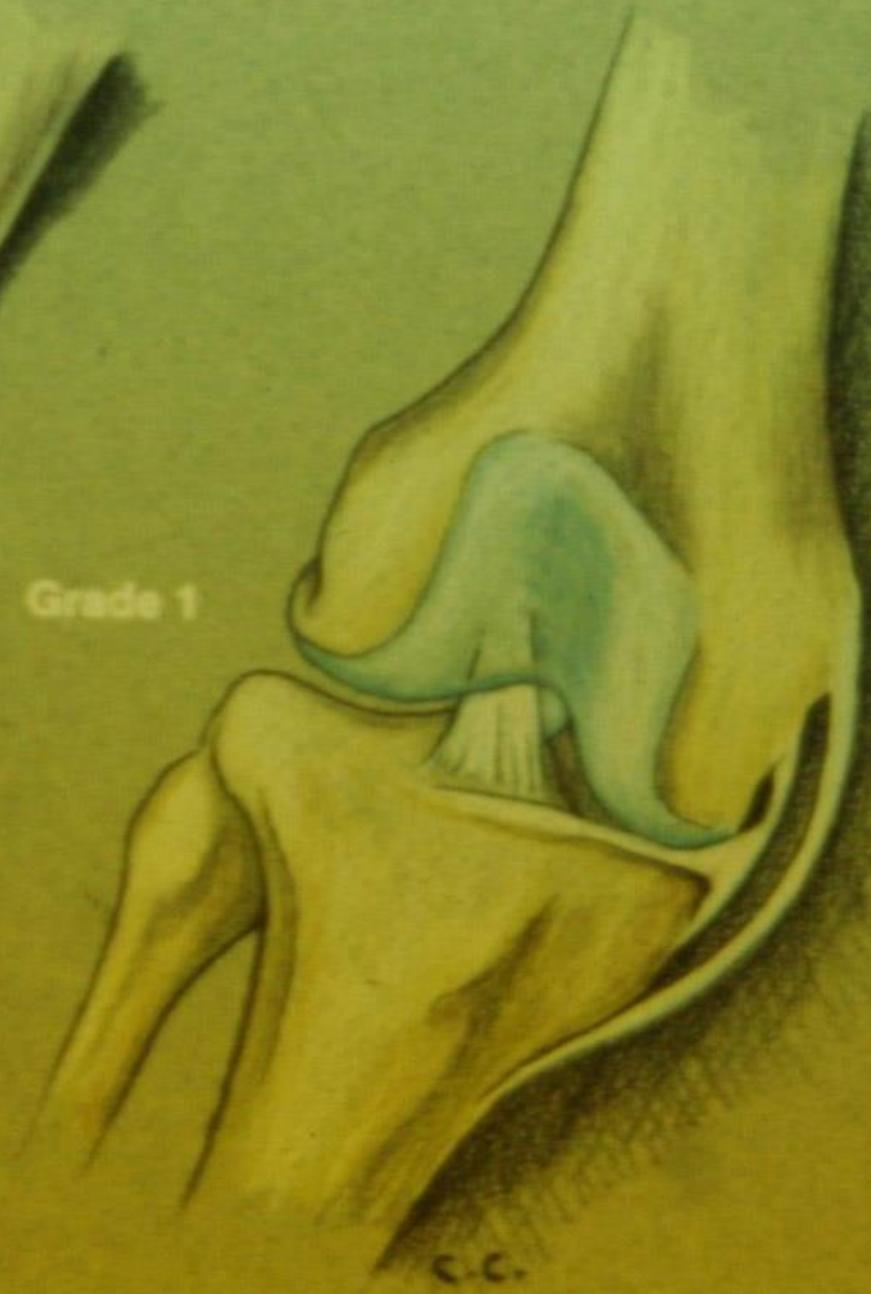




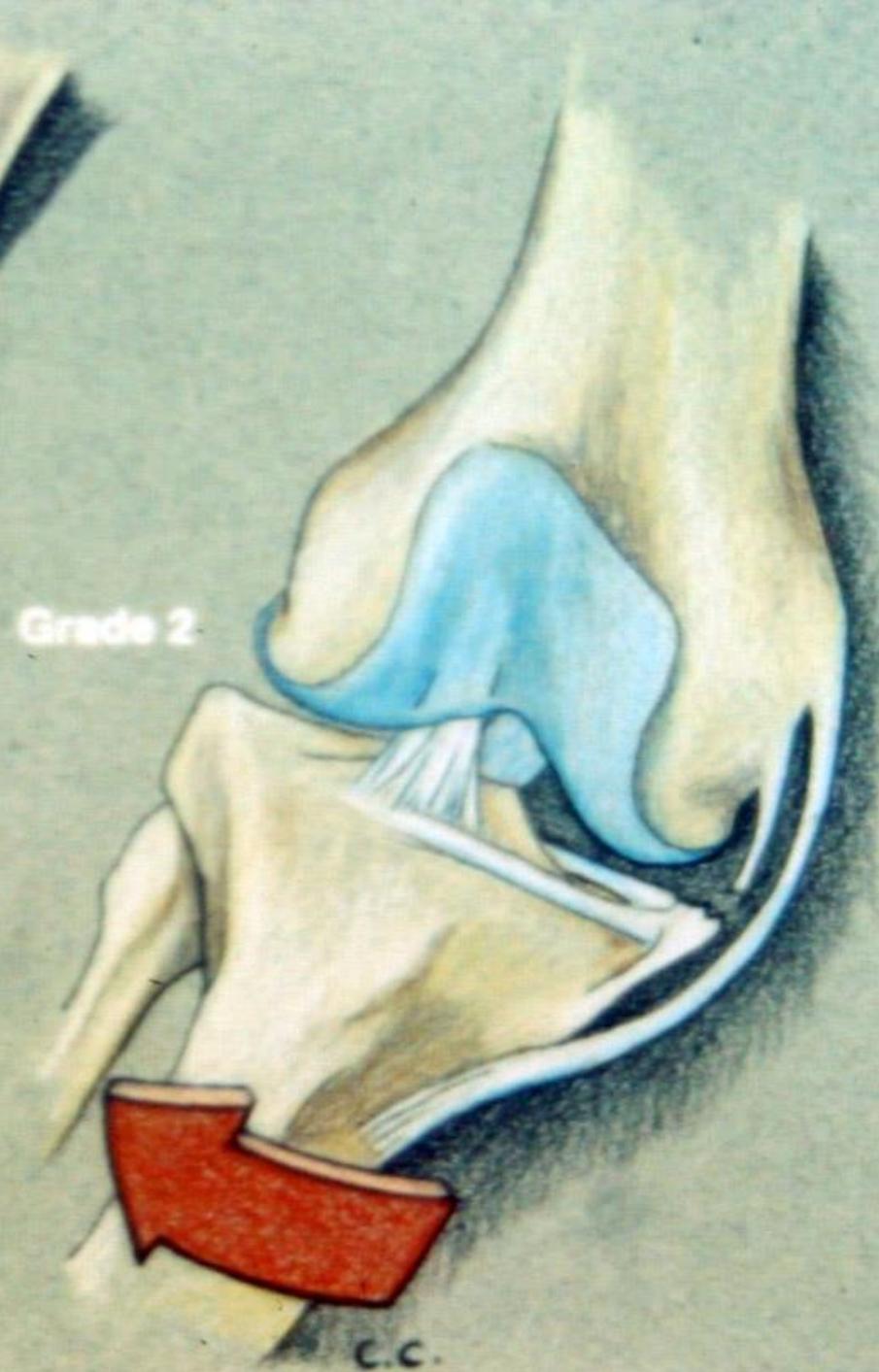
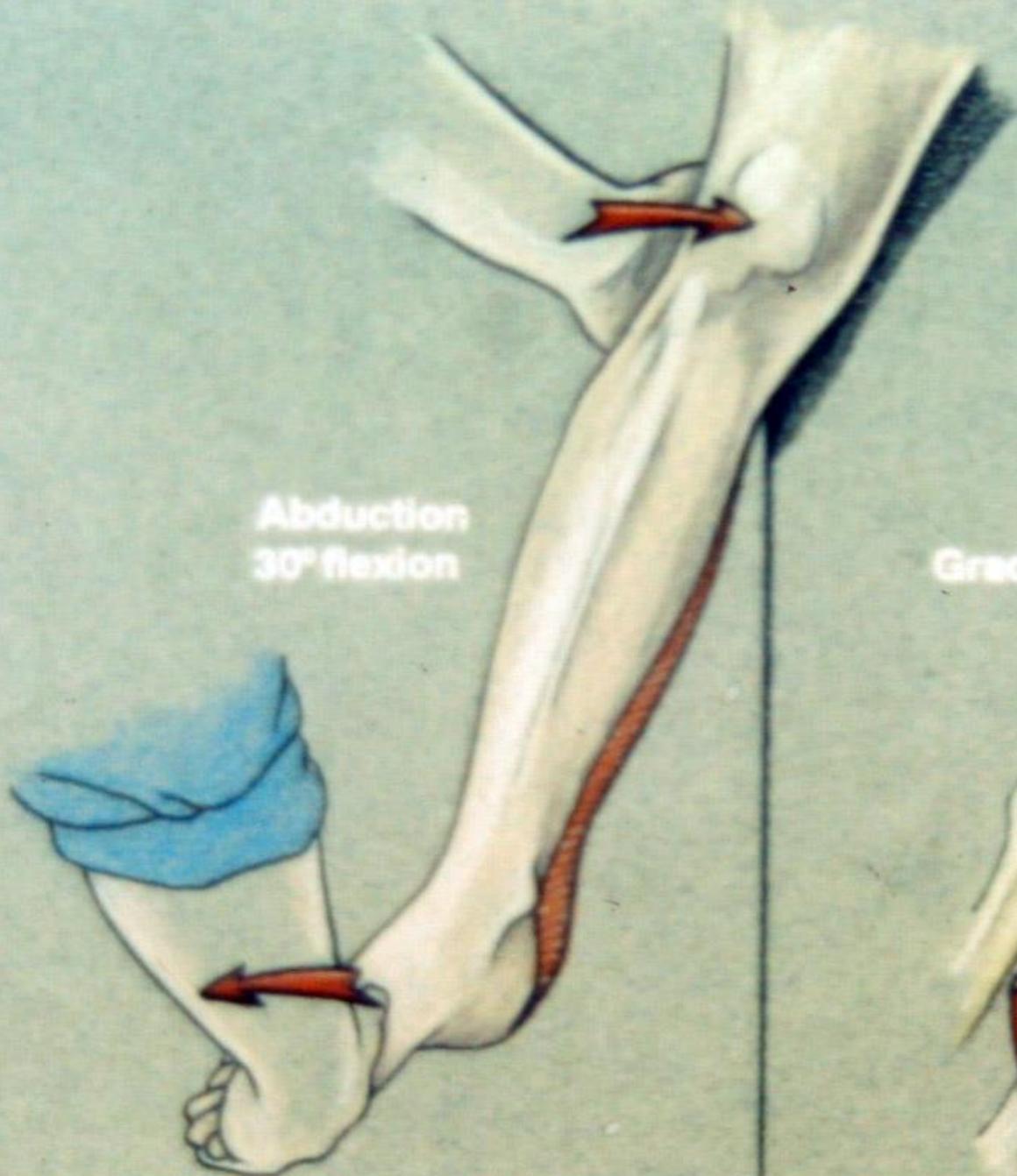
Abduction
30° flexion



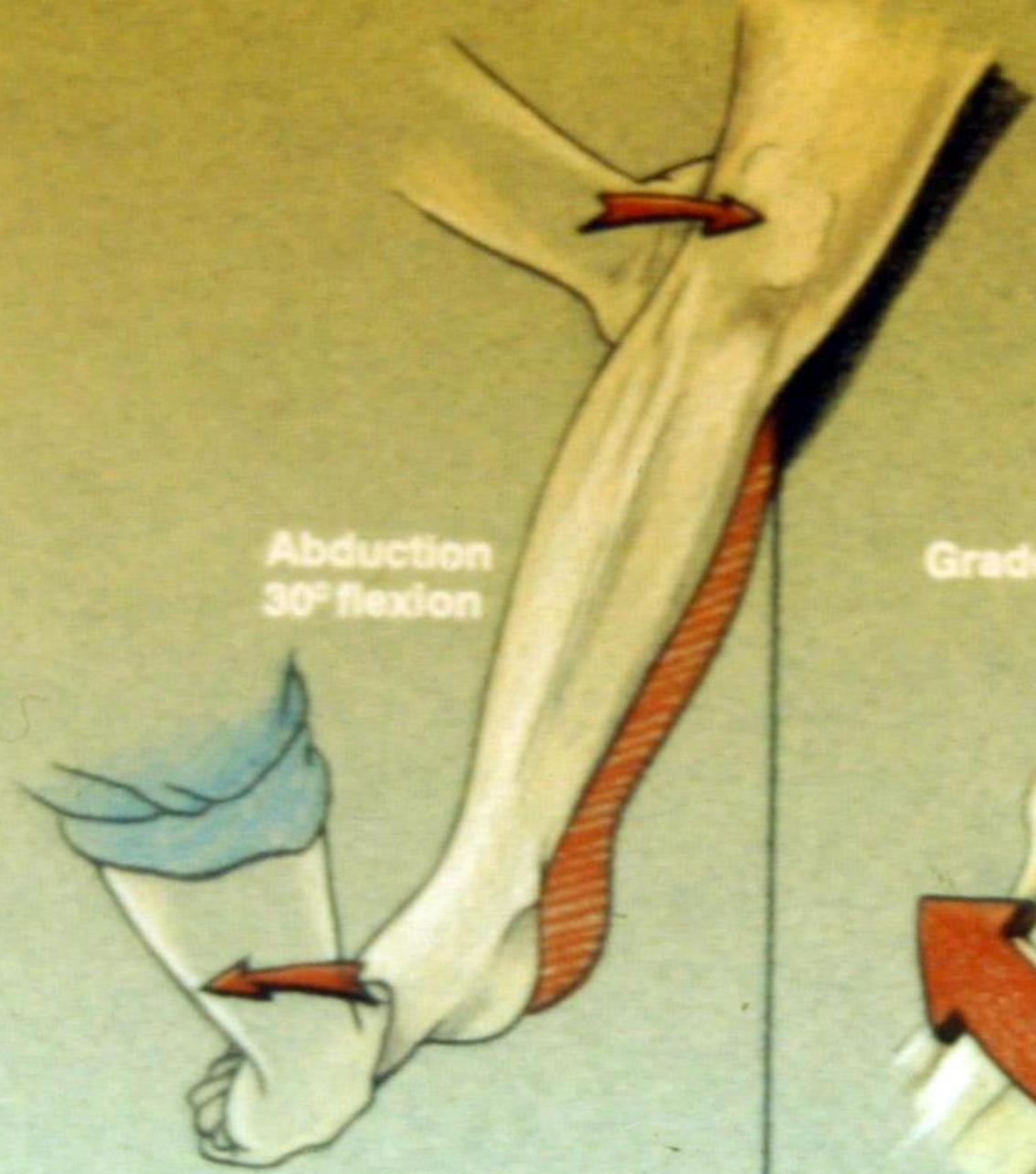
Grade 1



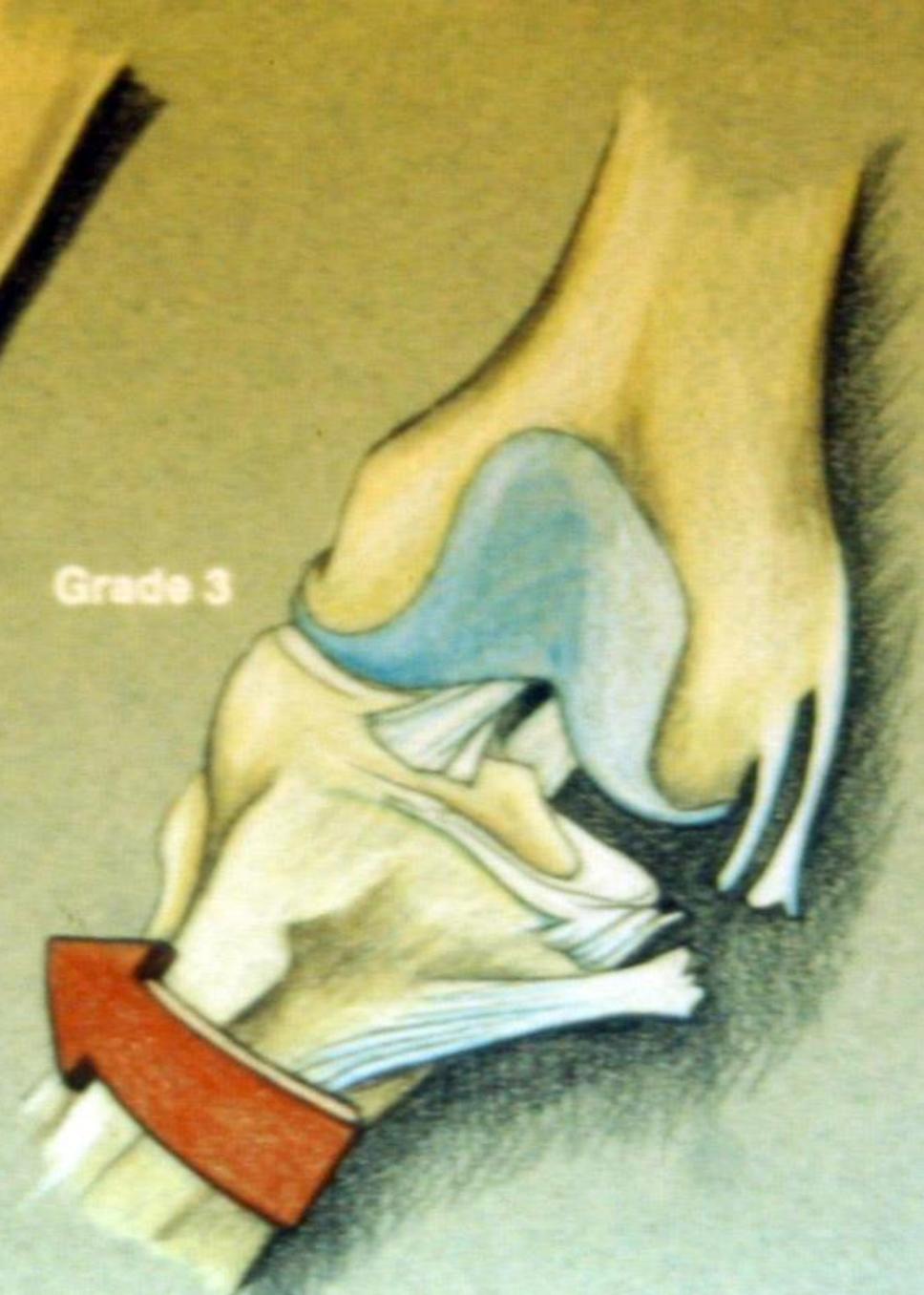
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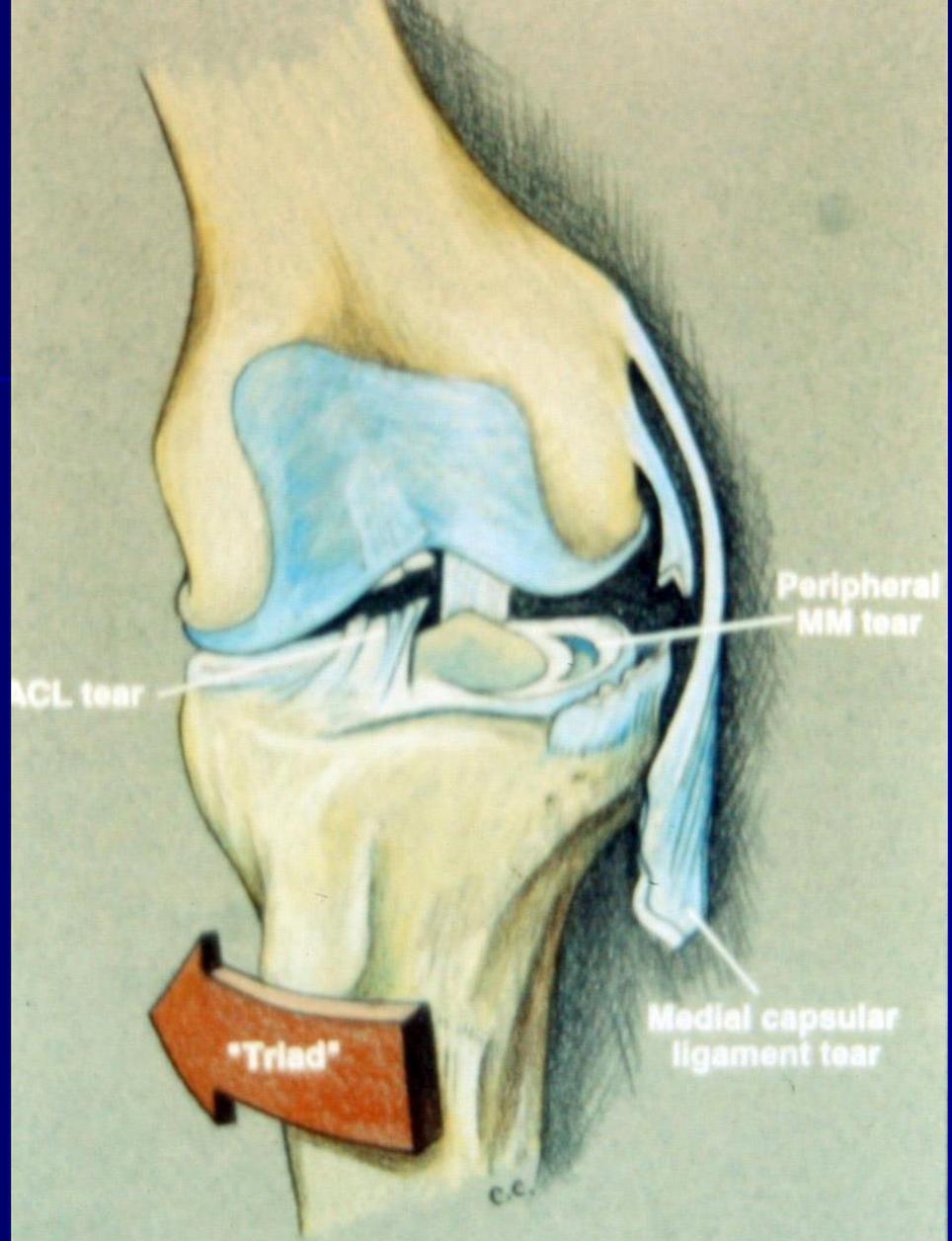


Abduction
30° flexion



Grade 3





Treatment Considerations

- Age
- Limitations
- Health
- Weight
- Mechanical axis
- Expectations
- Risk vs. reward
- Graft options, repair vs reconstruction

Collateral Ligament Injuries

- Grades I & II
 - - Rest, Ice, Brace, Rehab
- Grade III
 - - May need surgical repair



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SLICE





Rules To Live By

- No knee is so bad it cant be made worse with surgery
- Avoid cutting normal anatomy
- No such thing as minor surgery...unless its done on somebody else
- Know your handicap
- Bone broke me fix



Anteromedial Rotatory Instability

- AMRI
- Grade III medial compartment injury
- +/- Anterior Cruciate Ligament injury
- More common with tibial sided injury

AMRI

- 23yo OSU medical student
- Two failed ACL surgeries in under 12 months
- Hamstring graft/cadaver graft
- Mom's a professor at Ohio State
- Unrecognized AMRInow chronic
- Hamstring graft?
- Valgus knee

AMRI

- 20 yo Professional Soccer Player
- -Contact injury
- -Valgus mechanism
- -Reduced on field
- - Combined injury ACL with Grade III medial compartment off tibia







Posterolateral Rotatory Instability

- -PLRI
- -Combined injury to static and dynamic stabilizers
- -May be much worse in varus knee
- -Isolated or combined with ACL and or PCL injuries



The challenge by Galileo
Giovanni which has almost
certainly united Pascal
Villanov's season.

From Paolo Galliani

PLRI

- Initial injury may cause only slight discomfort and swelling, able to continue playing
- Frequent complaint of knee giving way backwards
- Present with medial knee pain
- Prior partial medial menisectomy----worse

Posterolateral Instability

- Dr Hughston 1985
 - 18 pts isolated PLRI 140 pts total
 - 2-44 months injury to diagnosis/surgery
 - Prior operations 20
 - 70% patients suffered severe socioeconomic disasters, loss of jobs, bankruptcies, divorces

PLRI

- Requires immediate diagnosis and treatment
- Low grade injuries
 - Brace, rehab
- High grade injuries
 - Immediate surgical repair vs delayed reconstruction



PLRI

- -38 yo laborer 1 year after injury
- -On crutches complains of pain and instability
- -Prior "normal" arthroscopy and 2 normal MRI s
- - In tears in office

PLRI

- -35 yo Physical therapist from northern Ohio
- -On crutches 4 months after injury
- -Workers compensation
- - Normal MRI







PLRI

- -24yo nursing student
- -Injured knee 10 days ago
- -By the way going back to school tomorrow
- -My mom is an OB at RMH
- -Combined ACL and Posterolateral Corner





