

# How to Examine the Patellofemoral Joint

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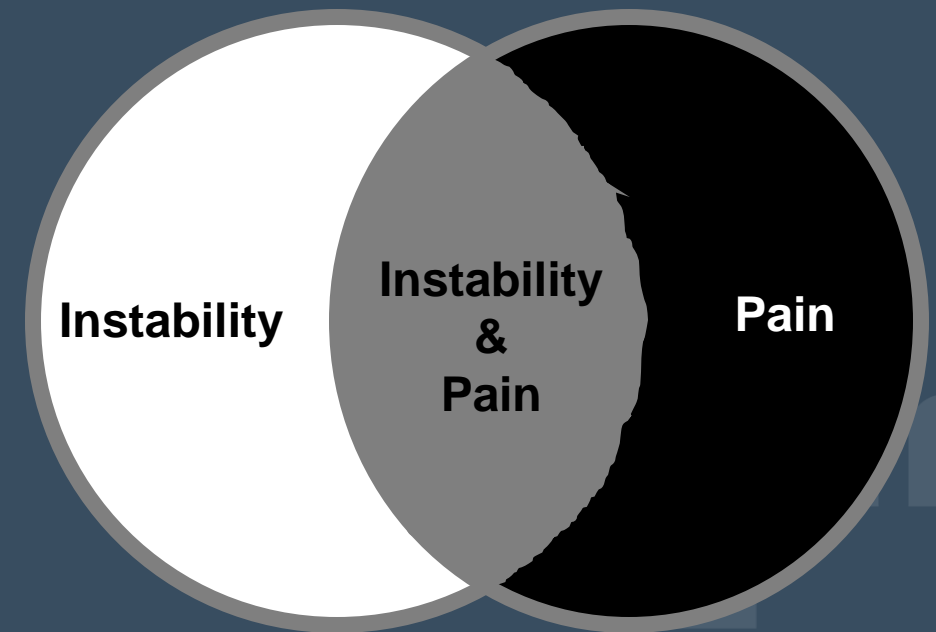
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# Introduction

- Arguably most complex and comprehensive joint exam
- Often not straight forward
- Variable presentation
- Instability versus Pain?
  - Often overlap



# Introduction

- Often requires time
- No stone unturned!
- Much is gleaned prior to hands-on exam
- Consider entire extremity
- Do not forget syndromes and body types

# Introduction

- Predisposing risk factors
  - Femoral anteversion
  - Genu valgum
  - Patella alta
  - High Q-angle
  - Pes planus
  - Generalized hyperlaxity
  - J-Sign, L-Sign, etc. etc



# Patellofemoral Physical Exam

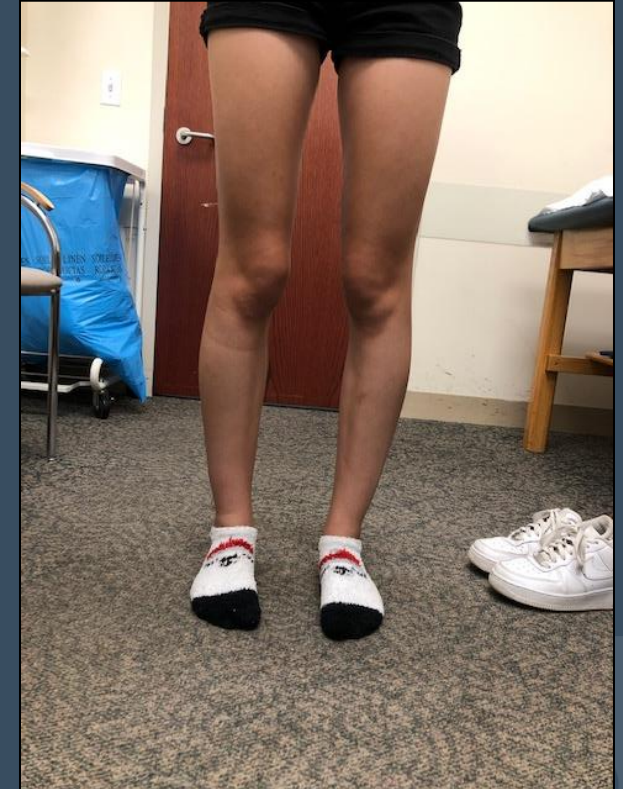
- **Must see (most) of extremity!!**
  - Shorts on
  - Shoes off
- Standing
- Walking
- Sitting
- Supine
- Prone



# Patellofemoral Physical exam

- **Standing**

- Genu varum vs genu valgum
- Rotatory malalignment
- Quad tone
- Patellar position



# Patellofemoral Physical exam

- **Standing**
  - Foot position
    - Eversion - ↑'s tibial IR, Q-angle, PF stress
  - **Half squat test**
    - Valgus collapse?
    - Pain
  - **Single leg squat**
    - Indicator of quad strength



# Patellofemoral Physical Exam

- **Sitting**
- Patellar position
  - Alta?
  - Tilt
- Active extension
  - Patellar tracking
    - J-sign/L-sign
    - Angle of engagement





# Patellofemoral Physical Exam

- **Sitting**
  - Active extension
    - Crepitance
    - Catching
  - Poor man's Q-angle
    - Patellar tendon-transepicondylar axis
    - $> 10^\circ$  is abnormal



# Physical Exam - Patellofemoral

- **Supine**
  - Palpate for tenderness
    - Prepatellar bursa
    - **FAT PAD!!**
    - Retinacula
    - Quads
    - Patellar tendon
    - **JLTPP - ANTERIOR**
    - Patellar facets



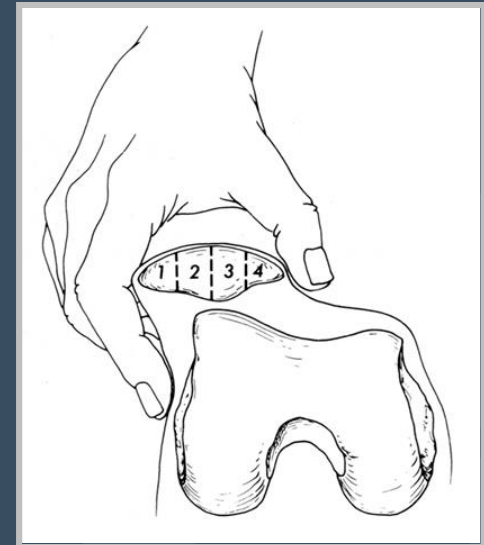
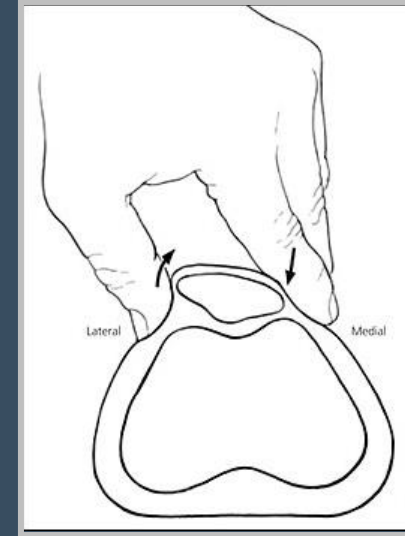
# Physical Exam - Patellofemoral

- **Supine**
  - Apprehension testing
    - Medial & lateral
  - PF compression
    - Pain
    - Crepitation
  - Crepitance
  - **Q angle**



# Patellofemoral Physical Exam

- **Supine**
  - Patellar tilt
    - Reduce patella into trochlea
    - Lateral retinacular tightness
  - Patellar glide
    - Medial and lateral
    - Normally 2 quadrants



# Patellofemoral Physical Exam

- **Supine**
  - Eval PF alignment
    - Patella in relation to tubercle
  - **Q-angle**
    - Mean - 15°
    - Women - 17°
    - Men - 14°
    - 11/150 > 20°

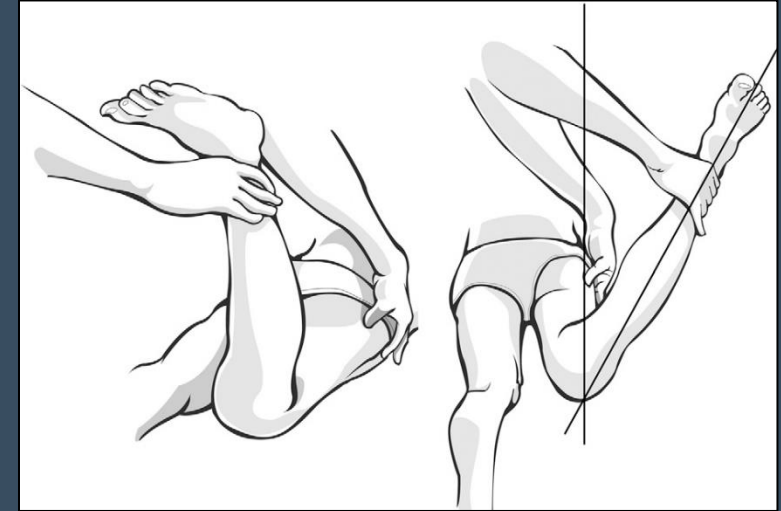


*Aglietti et al Clin Orthop 1983*

# Patellofemoral Physical Exam






- **Prone**

- Assess femoral anteversion
- Thigh-Foot angle
  - Internal Tibial torsion: negative angle
  - External tibial torsion:  $> 10^{\circ} - 15^{\circ}$



# Patellofemoral Physical Exam

- Other
  - Hamstring tightness (supine)
  - Beighton Score
    - Thumb to forearm
    - MCP dorsiflexion to 90°
    - Knee hyperextension
    - Elbow hyperextension
    - Hands flat on ground

Maneuver	Example	Number of Points
Apposition of the thumb to the flexor aspect of the forearm		1 point for each side (Maximum Score of 2)
Passive dorsiflexion of the metacarpophalangeal joint to 90 degrees		1 point for each side (Maximum Score of 2)
Passive hyperextension of the elbow greater than 10 degrees		1 point for each side (Maximum Score of 2)
Passive hyperextension of the knee greater than 10 degrees		1 point for each side (Maximum Score of 2)
Forward flexion with the hands flat on floor and knees extended		1 point for the procedure (Maximum Score of 1)

# Conclusions

- Comprehensive exam needed for accurate diagnosis
- Multifaceted approach
- Standing, sitting, supine and prone examination is key
- Overlap often exists between pain and instability examination





**Every life deserves world class care.**