

Introduction to Clinical Assessment

Practical – Knee MMTs

Recap - AROM

- Flexion (0 to 135°)
- Extension (-5 to 0°)
- Medial tibial rotation
(seated at 90°)
 - 10-20°
- Lateral tibial rotation
(seated at 90°)
 - 20-30°

Manual Muscle Testing - PROM

- Active movement to EoR then passive overpressure applied- note range and end feel
- Flexion (soft)
- Extension (hard)
- Medial tibial rotation (springy)
- Lateral tibial rotation (springy)

Manual Muscle Testing (7)

- Quadriceps (as a group)
- Vastus Medialis Obliquus (isolated)
- Rectus Femoris
- Iliotibial Band (TFL)
- Hamstrings (as a group)
- Popliteus
- Gastrocnemius

Manual Muscle Testing

- **Quadriceps as a Group**

Manual Muscle Testing

- **Vastus Lateralis**
 - O: Femur – Greater trochanter and posterior and lateral aspects of the upper part of shaft
 - I: Tibial tuberosity via Quadriceps tendon and ligamentum patella
 - A: Knee extension



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Manual Muscle Testing

- **Vastus Intermedius**
 - O: Femur – From upper 2/3rds anterior and lateral aspects of the upper part of the shaft
 - I: Tibial tuberosity via Quadriceps tendon and ligamentum patella
 - A: Knee extension

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Manual Muscle Testing

- **Vastus Medialis**
 - O: Femur – From postero-medial aspect of the upper part of shaft, distally along the medial aspect and the tendon of adductor magnus
 - I: Tibial tuberosity via Quadriceps tendon and ligamentum patella
 - A: Knee extension



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Manual Muscle Testing

- **Rectus Femoris**
 - O: Anterior inferior iliac spine of pelvis
 - I: Tibial tuberosity via Quadriceps tendon and ligamentum patella
 - A: Knee extension AND hip flexion



Manual Muscle Testing

- **Vastus Medialis Obliquus**
 - Continuous line of attachment on the femur, which begins on the front and middle side (anteromedially) on the intertrochanteric line of the femur.
 - The fibres converge onto the inner (medial) part of the quadriceps femoris tendon and the inner (medial) border of the patella



Isolated Quadriceps

- VMO
- Rectus Femoris



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Tensor Fascia Latae

- **Origin**
 - It arises from the anterior part of the outer lip of the iliac crest; from the outer surface of the anterior superior iliac spine, and part of the outer border of the notch below it, between the gluteus medius and sartorius
- **Insertion**
 - Gerdy's tubercle (lateral tubercle on the tibia) and lateral retinaculum of patella



Manual Muscle Testing

- Hamstrings over the knee

Hamstrings - Semimembranosus

- Origin
 - Superio-lateral aspect of ischial tuberosity
- Insertion
 - Posterior aspect of medial tibial condyle
- Action
 - Knee flexion and assists hip extension



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Hamstrings - Semitendinosus

- Origin
 - Superio-medial aspect of ischial tuberosity
- Insertion
 - Upper part of medial aspect of tibial shaft (pes anserinus)
- Action
 - Knee flexion and assists hip extension



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Hamstrings – Biceps Femoris

- Origin
 - Long head – superio-medial aspect of ischial tuberosity
 - Short head – Lateral tip of linea aspera
- Insertion
 - Upper part of fibular head
- Action
 - Knee flexion and assists hip extension



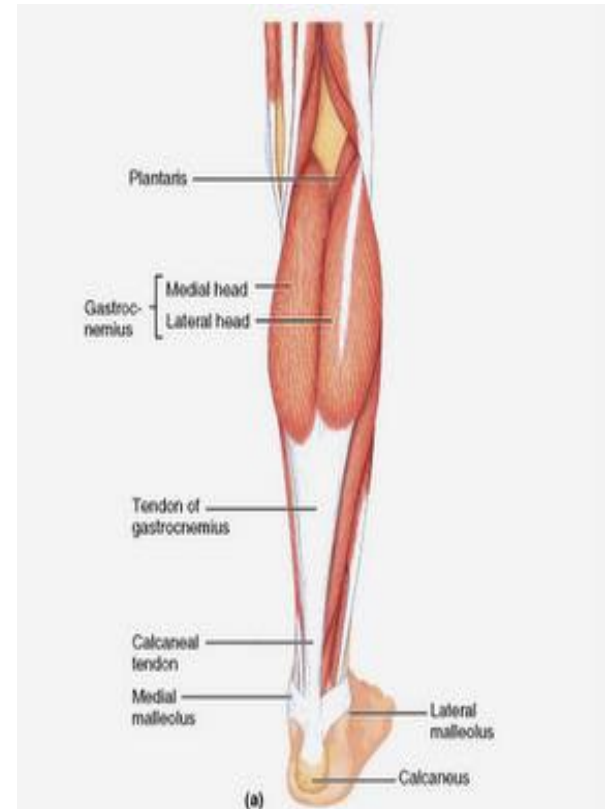
Popliteus

- Posterior to the knee
- Flexes the knee (weak) and **MEDIALY ROTATES** tibia on femur
 - Un-locks the **SCREW HOME MECHANISM**
- O: outer surface of lateral condyle of femur
- I: posterior surface of tibia above the soleal line
- Also has attachment to lateral meniscus drawing it posteriorly to prevent bony impingement



Superficial posterior compartment

- Gastrocnemius
- O:
 - Medial head
 - Medial supracondylar ridge and adductor tubercle of the femur
 - Lateral head
 - Outer surface lateral condyle of femur
- I: via Achilles tendon into calcaneus
- A; Plantarflexion of ankle and assists in knee flexion



Knee Revision

- Tibial tuberosity
- Head of fibula
- Medial and lateral tibial condyles
- Tibial Plateau
- Medial and lateral tibiofemoral joint line (and menisci)
- Patella
 - Superior and inferior pole
 - Medial and lateral border
- Femur
- Medial/Lateral condyles
- Medial and lateral epicondyles
- Adductor tubercle
- AROM/ PROM
 - KF
 - KE
 - MR
 - LR
- MMTS
 - Quads
 - VMO
 - Rectus Femoris
 - Hamstrings
 - Popliteus
 - Gastrocnemius