

*Learning Outcomes

*functional anatomy of knee joint

*range of normal movements

- *collateral ligaments, cruciate ligaments and menisci
- *stability of knee joint
- *major bursae around knee
- *(embryology and growth of knee)









*Articulations of knee joint (3)

- *Synovial hinge joint between two long bones (femur and tibia)
- *Single joint cavity contains 3 articulations
 - *2 x condyles of femur with plateaux of tibia each via a meniscus
 - **femur* with *patella* provides mechanical advantage to action of *quadriceps femoris* muscle
 - *not include fibula



*Movements of knee joint (2)

- *Flexion = 120°-150°
 - * limited by leg against posterior thigh
 - * During 'swing' phase of locomotion use hamstring muscles to flex knee
 - * in shock-absorbing use lengthening of quadriceps femoris muscle to control flexion
- *Extension = 5°-10°
- * during propulsion, extension from flexed position uses quadriceps femoris muscle
- *Active rotation = ~15°
- * for example, when turning in flexed position
- *Passive rotation to 'lock' knee in extended position when standing
 - * normal mechanism not to be confused with pathological 'locking' of knee
 - * no exact equivalent of pronation and supination

































* popliteus* / gracilis / semimembranosus* / semitendinosus / biceps femoris / sartorius / lateral and medial* heads of gastrocnemius (* = communication with knee joint cavity)

* 'Locking' and 'unlocking' of extended knee joint

*In standing (extended knee), passive rotation at the knee joint 'locks' the knee in a stable position

*in full extension anterior cruciate ligament tightens

*medial rotation of femur on tibia

* tightens other ligaments to 'passively lock' knee

*iliotibial tract assists in maintaining stable 'locked' position

*'Unlocking' of knee requires *popliteus* to laterally rotate femur

*popliteus also pulls lateral meniscus posteriorly