Exam 1 on Friday
Homework graded by Wednesday
Example problems and solutions posted by tomorrow
The Knee
Anatomy
Introduce Disease
Learning Objectives

- Identify the main bones making up the knee
- Identify the articulating surfaces of the knee
- Describe bursae and their function
- Describe the two main types of cartilage in the knee and their function
- Identify the ligaments of the knee
- Identify the main muscles of the knee joint
- Describe Osteoarthritis
Bones of the Knee

[Diagram of the knee joint with labeled parts]

Thursday, October 15, 15
Bones of the Knee

Femur

[Diagram of knee joint with unlabeled parts]
Bones of the Knee

Femur

Patella

[Diagram of the knee joint with labels for femur and patella]
Bones of the Knee

- Femur
- Patella
- Tibia
Bones of the Knee

- Femur
- Patella
- Fibula
- Tibia
Three Functional Parts

- Femoropatellar articulation
- Medial and Lateral femorotibial articulations
Articulating Surfaces

Femur

Tibia

Tibiofemoral surfaces
Patellofemoral surfaces

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Internal articular facet
External articular facet

Surface for the ligamentum patellae

Medial condyle
Lateral condyle

Lateral groove
Lateral epicondyle

Patellar surface
Medial groove
Medial epicondyle
Semilunar area
Bursae

Fluid filled sacs (synovial fluid) lined by synovial membrane

Provides cushioning between bones and tendons/muscles reducing friction between the bones
Cartilage

Two types of cartilage in the knee:

- Fibrous Cartilage
- Hyaline Cartilage
Menisci

Articular disks that partly divide the joint space.

Medial and lateral disk consist of connective tissue with extensive collagen fiber with cartilage like cells.
Menisci

- Protect the ends of the ends of the bones
- Help to distribute stress between the tibial and femoral condyles
Major Muscle Groups
**Quadriceps**

**Origin:** Pelvis & Femur

**Insertion:** Tibia (via patella)

**Actions:** Knee extension, Hip flexion
Hamstring group of thigh muscles: biceps femoris, semitendinosus, and semimembranosus.
Osteoarthritis

Degenerative joint disease

degradation of the articular cartilage and subchondral bone

can be caused by hereditary, developmental, and mechanical defects
Causes of OA

Majority of OA cases are caused by damage due to mechanical stress, coupled with cartilage’s inability to regenerate.

Abnormal stress on the joint can be caused by:

- misalignments of bones caused by congenital or pathogenic causes
- mechanical injury
- excess body weight
- loss of strength in the muscles supporting a joint
Osteoarthritis

Healthy knee joint

Hypertrophy and spurring of bone and erosion of cartilage

ADAM.
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