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ISHTA 200H TT Assignment  
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### Topic 3

## Anatomy I: Basics

3.1 Briefly describe each of these tissues and its function: Muscle, Ligament, Tendon, and Cartilage.

#### MUSCLE

A muscle is tissue consisting of bundles of parallel fibers wrapped in fascia.

Properties:

- ❖ Excitable – Reacts to stimuli via innervation
- ❖ Contractible – May contract upon stimulation in 3 different ways
  - ~ Concentrically - Muscle shortens
  - ~ Eccentrically - Muscle lengthens
  - ~ Isometrically - Muscle neither shortens or lengthens during contraction
- ❖ Extensible - May be stretched
- ❖ Elastic - Able to recoil

Roles:

- ❖ Agonist - Prime mover muscle
- ❖ Synergist - Supporting muscle to help the agonist in movement
- ❖ Antagonist - Opposes prime mover to slow and monitor movement
- ❖ Protects joint
- ❖ Stabilizer - A muscle that pairs with an opposing muscle to keep a bone in place

#### LIGAMENT

A ligament is a dense piece of connective tissue that connects one bone to another bone.

- ❖ Protects joints
- ❖ Avascular - no blood supply
- ❖ Barely elastic → difficult to heal

## TENDON

A tendon is a tough, fibrous continuation of muscle fascia that attaches muscle to bone.

- ❖ Stabilizes joint
- ❖ Transmits and supports muscle force
- ❖ Woven into the periosteum/outer shell of the bone

## CARTILAGE

Cartilage is supplementary tissue to muscle providing strength, rigidity, and a little elasticity.

- ❖ Fibrocartilage
  - ~ Cushioning, pillowy
  - ~ Shock-absorbing
  - ~ Avascular - no blood supply
- ❖ Hyaline Cartilage
  - ~ Smooth, glassy
  - ~ Reinforcing coat where bones rub against one another
  - ~ Avascular - no blood supply

3.2 *The elbow is a hinge joint and the hip is a ball-and-socket joint. What are the movements of a hinge joint? Name the plane.*

The movements of a hinge joint are flexion and extension, and the plane is the Sagittal Plane.

3.3 *What are the movements of a ball-and-socket joint? In how many planes does a ball-and-socket joint move and what are the actions in each of the planes?*

The movements of a ball-and-socket joint and their corresponding planes are:

1. Rotation (internal and external) in the Transverse Plane
  2. Flexion & Extension in the Sagittal Plane
  3. Adduction & Abduction in Coronal Plane
- \* Circumduction involves all movements and planes in combination, except rotation in the Transverse plane

3.4 *What is the job of an agonist? What is the job of a synergist?*

An agonist is the prime mover muscle that does the bulk of the work in a movement. The synergist is a supporting muscle that assists the agonist in doing the movement or compensates if the agonist is injured/dysfunctional.