Superficial fascia

Superficial fascia, also known as the subcutaneous tissue or hypodermis, is a layer of connective tissue that lies just beneath the skin and above the deep fascia that surrounds muscles and other structures.
The thickness and composition of the superficial fascia can vary from one part of the body to another and among individuals.

1. Thin (Devoid of fat)

Present in Eyelid, Penis, Scrotum

2. Thick (Rich in fat)

Present in Breast, Buttock, Anterior abdominal wall

3. Very dense

Present in Scalp, Palm, Sole

Functions:

1. Protection

Superficial fascia provides a layer of protection for the underlying structures, including muscles, blood vessels, nerves, and organs.

2. Insulation

It helps to insulate the body by storing fat, which can serve as an energy reserve and also helps regulate body temperature.

3. Support

Superficial fascia supports the skin and allows it to move freely over the underlying structures. This is important for functions like joint movement.

4. Blood and Lymphatics Vessels

This layer contains blood vessels and lymphatic vessels that supply the skin and underlying tissues with nutrients, oxygen, and immune system components.

5. Connective Tissue

Superficial fascia is composed of connective tissue elements, including collagen and elastin fibers, which give it strength and flexibility.

Deep Fascia

- Deep fascia, also known as deep connective tissue or investing fascia, is a layer of dense connective tissue that lies beneath the superficial fascia and surrounds muscles, bones, and various organs and structures within the body.
- Deep fascia is composed of dense collagen fibers and is relatively avascular (contains few blood vessels).
- It has a tough and inelastic nature, which helps it resist deformation and support the structures it surrounds.
- The thickness and arrangement of deep fascia can vary in different parts of the body.

Functions:

1. Provide Support
2. Protection of muscle and deep tissue
3. Separates different compartments of muscle groups
4. Transmission of forces
5. Facilitate of muscle function

Tendons

- Tendons are tough, fibrous connective tissues that attach **muscles to bones**, allowing for the transmission of muscular forces to the skeletal system, enabling movement.
- Tendons come in various shapes and sizes, and they serve different functions in the body.

- These tendons vary in size, shape, and function, but they all play a crucial role in enabling movement and stability in the musculoskeletal system

Some common types of tendons:

1. **Tendon of skeleton muscles**
   - These are the most well-known type of tendons.
   - They connect skeletal muscles (voluntary muscles) to bones.
   - Examples include the Achilles tendon (connecting the calf muscles to the heel bone), the quadriceps tendon (connecting the quadriceps muscles to the patella or kneecap), and the biceps tendon (connecting the biceps muscle to the radius bone in the forearm).
2. **Tendon of smooth muscles**
   - Some internal organs have smooth muscles, and these muscles also have tendons that attach them to other structures.
   - For example, the myometrial tendons connect the smooth muscles of the uterus to the pelvic bones.
3. **Tendon in Hand and Wrist**
   - There are several tendons in the hand and wrist that control finger and wrist movements.
   - For example, the extensor tendons on the back of the hand are responsible for extending the fingers, while the flexor tendons on the palm side enable finger and wrist flexion.
4. **Tendon of Foot and Ankle**
   - In addition to the Achilles tendon, there are numerous tendons in the foot and ankle that control movements such as dorsiflexion, plantarflexion, and inversion and eversion of the foot.
5. **Pulley Tendons**
   - These are tendons that glide through fibrous rings or pulleys within the body.
   - For example, the flexor tendons in the fingers pass through pulley systems in the hand, which help maintain proper alignment and function.
6. **Aponeurosis**
   - These are broad, flat tendinous sheets or membranes that are attached to muscles and are often found in the abdominal and thoracic regions.
   - The linea alba, a fibrous structure running down the midline of the abdomen, is an example of an aponeurosis.
7. **Retinacula**
   - These are thickened bands of connective tissue that hold tendons in place, preventing them from bowing out of position.
   - Examples include the extensor and flexor retinacula of the wrist and ankle.
8. **Tendinous sheath**
   - Some tendons are encased in protective sheaths that reduce friction during movement.
   - These sheaths contain synovial fluid for lubrication.
   - An example is the synovial sheath of the long flexor tendons in the fingers.

Ligaments

- Ligaments are tough, fibrous bands of connective tissue
- They connect bones to other bones
- They providing stability and limiting excessive joint motion
- They come in various shapes and sizes throughout the body, and different ligaments serve different functions
- Ligaments are essential for maintaining joint stability and preventing excessive movement that could lead to injury.

- Injuries to ligaments, such as sprains and tears, are common and can result in pain, swelling, and limited joint function

Some common types of Ligaments

1. **Articular Ligaments**
    - These ligaments are found within joints and help stabilize and reinforce the joint capsule.
    - They play a crucial role in maintaining the integrity of the joint.
    - Examples include the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL) in the knee and the collateral ligaments in various joints.
2. **Extracapsular Ligaments**
    - These ligaments are located outside the joint capsule and provide additional stability to joints. Examples include the lateral collateral ligament (LCL) and medial collateral ligament (MCL) in the knee, which help prevent side-to-side motion.
3. **Intracapsular Ligaments**
    - These ligaments are located within the joint capsule and are often involved in the stabilization and function of the joint.
4. **Periosteal Ligaments**
    - Some ligaments are associated with the periosteum (the outer layer of bone) and help anchor the ligament to the bone.
    - These ligaments are often found near the attachments of tendons to bones.
5. **Sacroiliac Ligaments**
    - These ligaments connect the sacrum (a bone in the lower spine) to the ilium (a bone in the pelvis) and help stabilize the sacroiliac joint.
6. **Ligaments of the Ankle**
    - The ankle joint is supported by several ligaments, including the anterior talofibular ligament (ATFL), posterior talofibular ligament (PTFL), and calcaneofibular ligament (CFL).
7. **Ligaments of the spine**
    - Ligaments in the spine, such as the anterior longitudinal ligament (ALL), posterior longitudinal ligament (PLL), and ligamentum flavum, help maintain the stability of the vertebral column.
8. **Ligaments of shoulder**

The shoulder joint is supported by several ligaments, including the coracoclavicular ligament, which connects the clavicle (collarbone) to the coracoid process of the scapula, and the glenohumeral ligaments, which reinforce the shoulder joint.

9. **Interosseous Ligaments**
    - These ligaments connect bones within the same limb, such as the interosseous membrane between the radius and ulna in the forearm and the interosseous ligament between the tibia and fibula in the lower leg.
10. **Cruciate Ligaments**
    - These ligaments are named for their cross-like shape and are commonly found in the knee joint. Examples include the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL).

Bursae

They are small, fluid-filled sacs located throughout the body near joints and other areas of friction between tendons, muscles, and bones.
These sacs help reduce friction and provide cushioning, allowing smooth movement of these structures.

There are various types of bursae in the body, classified based on their locations and functions. Bursae can become inflamed or irritated, leading to conditions known as bursitis.
Bursitis can cause pain, swelling, and limited joint mobility.

Some common types of bursae:

1. **Subacromial Bursa**
   - This bursa is located beneath the acromion process of the scapula and above the rotator cuff tendons in the shoulder joint.
   - It helps reduce friction during shoulder movements.
2. **Subdeltoid Bursa**
   - This bursa is closely associated with the subacromial bursa and is found between the deltoid muscle and the underlying rotator cuff tendons.
3. **Trochanteric Bursae**
   - These bursae are located on the lateral aspect of the hip, where the iliotibial band (IT band) passes over the greater trochanter of the femur.
   - There are usually two trochanteric bursae, one superficial and one deep.
4. **Ischial Bursa (Weaver's Bottom)**
   - This bursa is located between the ischial tuberosity (sit bone) and the overlying gluteus maximus muscle.
   - It provides cushioning when sitting.
5. **Prepatellar Bursa**
   - Situated just in front of the patella (kneecap), this bursa reduces friction between the skin and the patella during knee movements.
6. **Infrapatellar Bursa (Pes Anserinus Bursa)**
   - This bursa is located below the patella and is associated with the insertion of the pes anserinus tendons (sartorius, gracilis, and semitendinosus) on the tibia.
7. **Olecranon Bursa**
   - Located at the back of the elbow, this bursa provides cushioning between the skin and the olecranon process of the ulna during movements of the elbow joint.
8. **Retrocalcaneal and Subcutaneous Calcaneal Bursae**
   - These bursae are found near the Achilles tendon and the calcaneus (heel bone).
   - They reduce friction during ankle and foot movements.
9. **Metatarsal Bursae**
   - There are multiple bursae in the forefoot region, particularly near the metatarsophalangeal (MTP) joints.
   - These bursae help reduce friction during walking and other foot movements.
10. **Anserine Bursa**
    - Located on the medial side of the knee, this bursa is associated with the insertion of the tendons of the sartorius, gracilis, and semitendinosus muscles.
11. **Deep Infrapatellar Bursa**
    - This bursa is situated deep within the knee joint, beneath the patellar tendon and the tibia.
    - It helps reduce friction within the joint.
12. **Iliopsoas Bursa**
    - This bursa is located near the hip joint and reduces friction between the iliopsoas tendon and the pelvic bone.