

BASIC ANATOMY OF MUSCULOSKELETAL SYSTEM APPLICATIONS

BONES

Missions

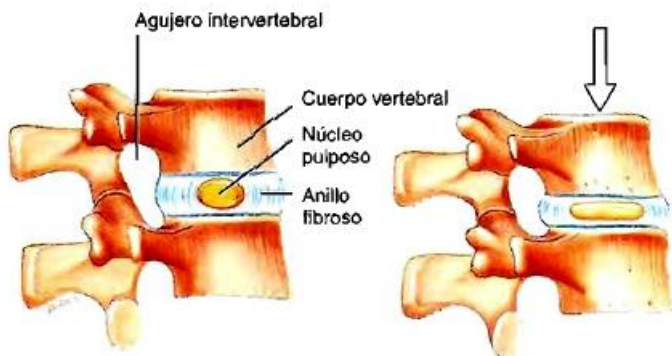
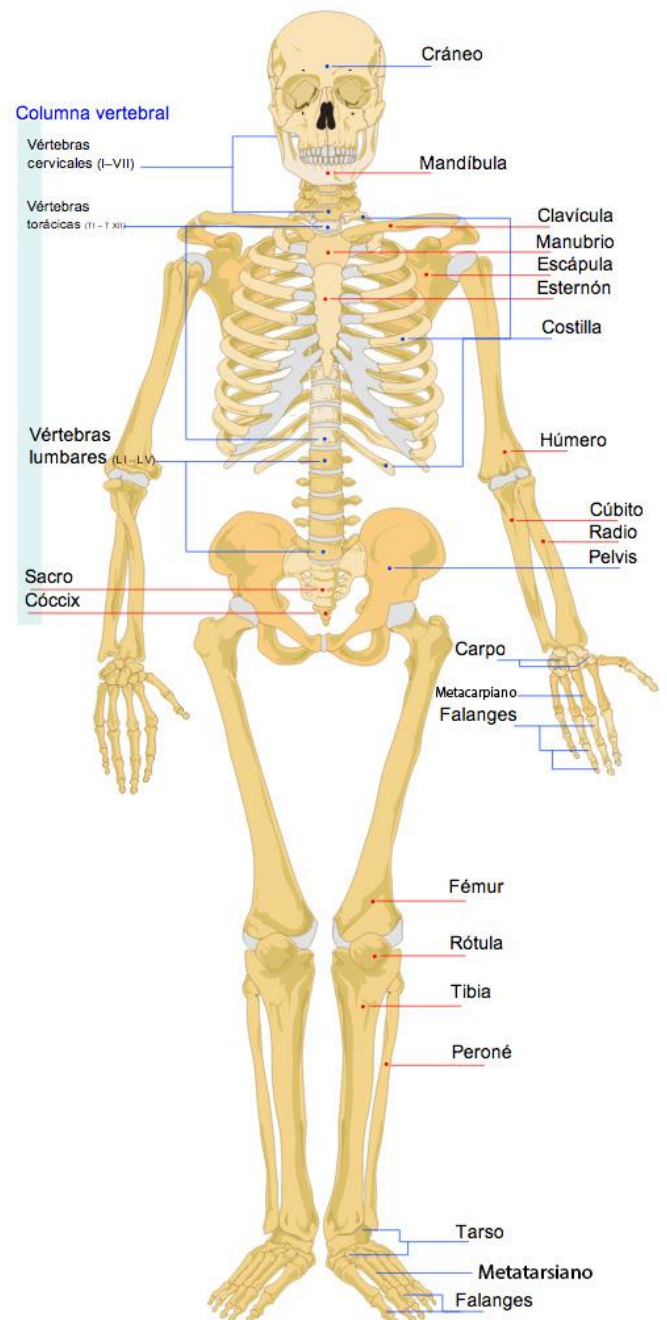
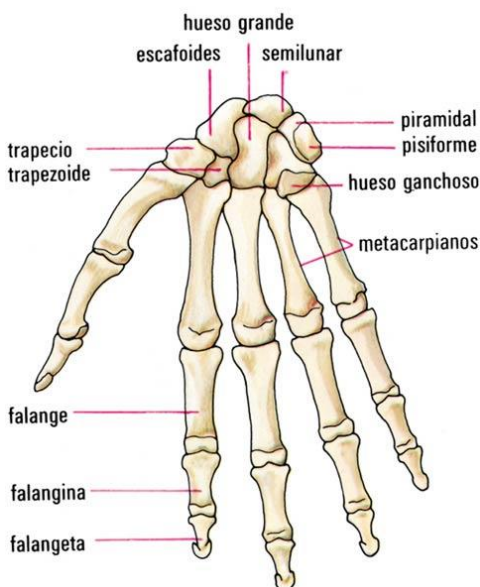
- a) They serve as support to the body.
- b) They protect some internal organs such as the heart or spinal cord.
- c) It is the passive element in human movement serving as insertion to the muscles.
- d) Inside, in the bone marrow, blood cells are formed.
- e) It is the body's largest reservoir of calcium and phosphorus.

Types of bones

Long. Like the femur or humerus.

Plans. Like the shoulder blade or the bones of the head.

Shorts. Such as vertebrae or wrist bones.



Disco intervertebral normal

Compresión del disco intervertebra en un levantamiento de pesas

(d) Discos intervertebrales

JOINTS

Definition

It is the union of 2 or more bones.

Tuition

(a) **SYNARTHROSIS**. They lack movement, such as the bones of the head.

b) **AMPHIARTHROSIS**. They have poor mobility, like the joints of the vertebrae.

(c) **DIARTHROSIS**. They have great mobility, such as the shoulder, hip or knee joint.

Parts (of a diarthrosis)

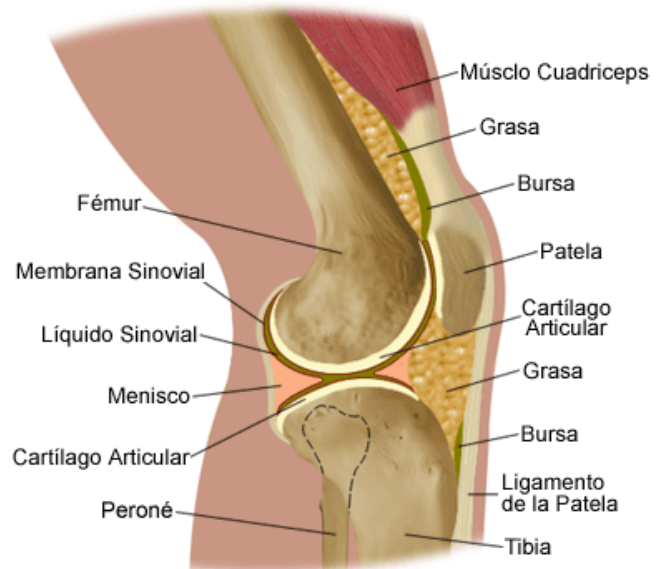
a) **Bones** that are articulated.

b) **Articular cartilage**. They cover the areas of the bones that are articulated to protect them and prevent their wear. Sometimes there are intra-articular cartilages that are the **MENISCOS**.

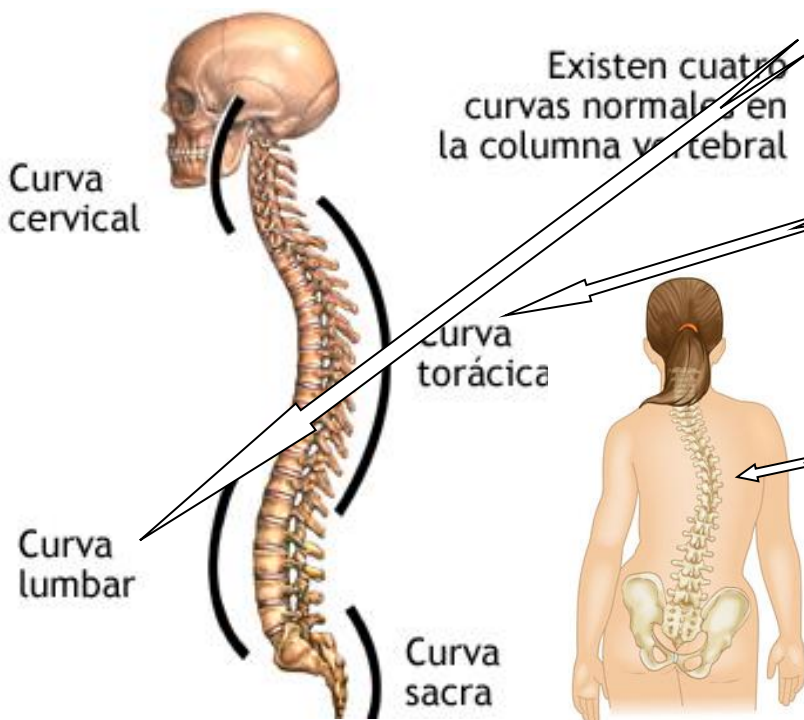
c) **Pocket and synovial membranes**. They serve as a lubricant to the joint and inside is the **SINOVIAL FLUID**.

d) **Ligaments**. They hold the bones together.

Anatomía de la Rodilla



The joint area that suffers the most is the **spine**, since it is a "battered" structure in daily life and physical activity. For this, it has curvatures that allow it to do its function better. The problem is when these natural curvatures are excessive and occur:



Hyperlordosis: excessive lumbar curvature. Some sports such as rhythmic gymnastics, bad posture, abdominal weakness or a lot of tone in the psoas can cause or aggravate it.

Hyperkyphosis: we call it "chepa", it is an excessive thoracic curve that is produced in part by bad postures, by lack of muscle tone in the dorsal area or by excess muscle tone in the opposite part, the pectoral.

Scoliosis: view from the front or from behind, when the spine curves at some point (when it is severe the corset is used).

MUSCLES

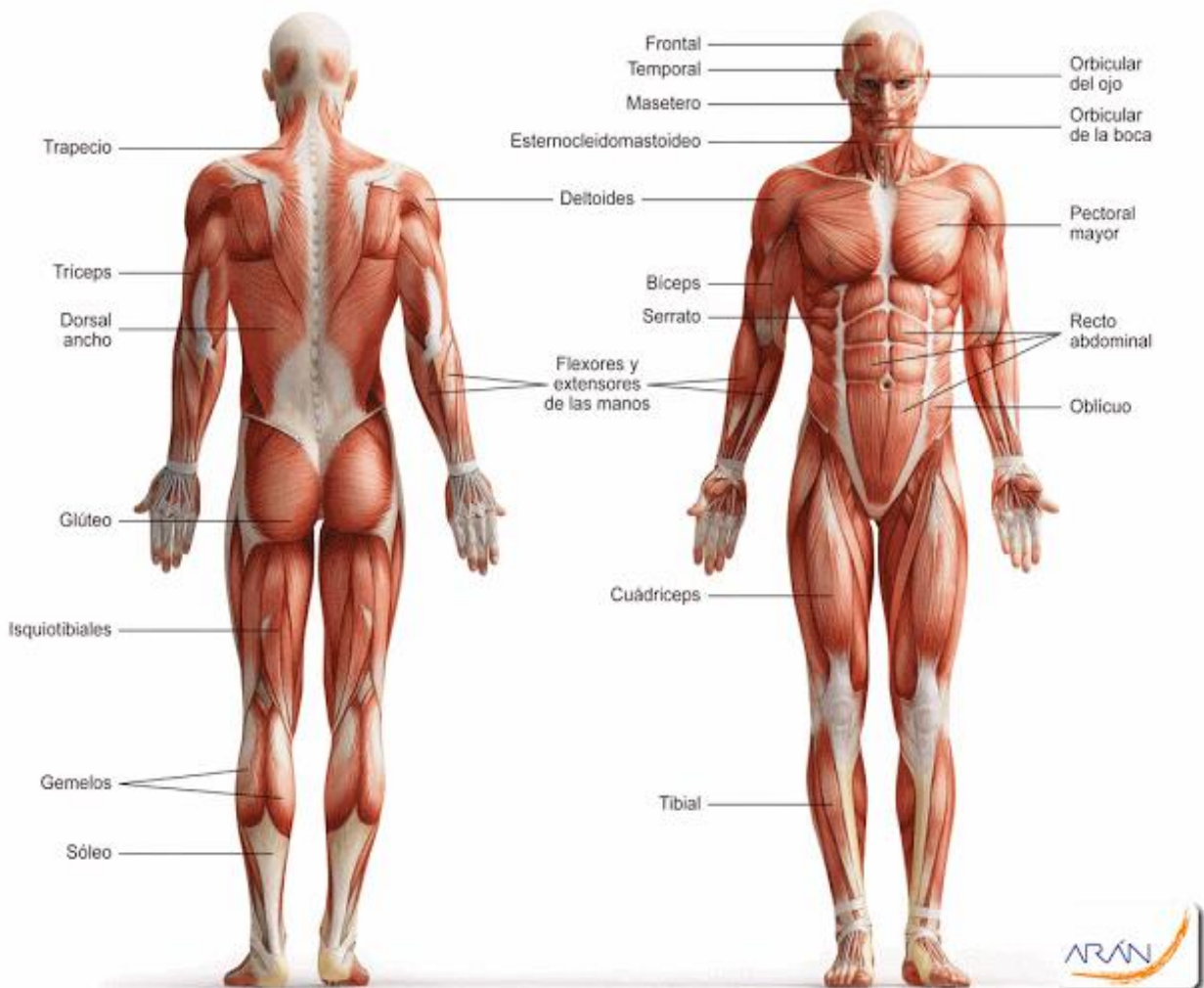
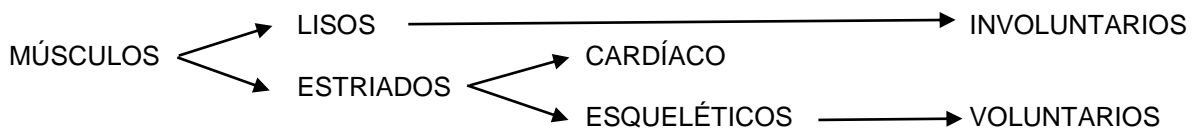
Mission

They are the active elements of movement that transform chemical energy into mechanical energy by joining the bones by means of **the TENDONS**.

Types

(a) **Smooth**. They form the walls of the viscera and are of involuntary contraction. For example, the arteries or stomach.
 (b) **Striated**. Composed of fibers and innervated by nerves of voluntary regulation. Its main function is to produce movement.

Heart muscle. Special mention deserves this muscle because it is striated type but involuntary innervation.



GENERAL TIPS FOR MUSCULOSKELETAL WELL-BEING

1. **Being overweight** weighs down your chances and overloads your joints.
2. The human skeleton is a network in which muscle tissue is held to perform the function of human movement. **As each muscle fulfills a function, it is important that they are compensated or balanced with each other** to avoid pain and injury.
3. You will notice that your body in particular has more strength in some areas than in others. We are also more flexible in some areas than in others. **Focus on compensating for your deficiencies and prioritize strength and flexibility work in those areas where you are most lacking.**
4. *We all have areas of the body that tend to contract ("Tonics") and areas of the body that tend to relax ("Phasic").* For your body balance it is very important that you try to **strengthen those areas that we have in general weak or little toned (phasic muscles such as the abdominal)**, and relax the areas that generally have less mobility and elasticity (such as the muscles of the lumbar and hamstring areas). That is why we recommend:
 1. Work on the exercises on strength and flexibility that are developed in Physical Education classes.
 2. Keep in mind that:

Muscles that are usually weak	Muscles that often need stretching
Abdominal Dorsal Triceps Buttocks or gluteus	Psoas, quadriceps, pectoral Cervical and lumbar area Isquiotibial or hamstring Twin and soleus } "BACK CHAIN"

1. **Take care of your postural hygiene** in everyday life. For example, when you carry your backpack or wait for the bus, when you are sleeping (1/3 of the day), when you are sitting (in class, studying at home or working at the computer) and when you do strength and flexibility exercises (technique is very important). Accumulating stiffness and bad positions deforms the body and leads to discomfort, pain and / or injury.
1. **If you suffer from scoliosis, kyphosis, lordosis or hamstring shortening syndrome:**

HIPERKYPHOSIS	Postural hygiene. Pectoral and shoulder stretches in front, dorsal strengthening and structures of the back of the shoulder.
HIPERLORDOSIS	Postural hygiene. Stretching of the psoas and the lumbar region (and the posterior chain in general) and strengthening of the abdominal area.
SCOLIOSIS	Postural hygiene and medical prescription.