

The Skeletal System Introduction

EQ: Compare and contrast different types of bones.

- I. Functions of the Bones
 - a. Bones are made of osseous tissue
 - i. Osteocytes are the cells in osseous tissue
 - b. Support and Protection
 - c. Body movement – due to muscles
 - d. Blood cell formation (inside bone marrow) - hematopoiesis
 - e. Storage of inorganic materials (salt, calcium, potassium....)
- II. Two Divisions
 - a. Around 206 bones in all
 - b. Axial Skelton
 - i. The long axis of the body...
 - c. Appendicular
 - i. The limbs and their supporting structures or girdles...
- III. Classifying Bones
 - a. Bone Classification by Tissue
 - i. Two Basic Types
 1. Compact: dense and smooth
 2. Spongy: looks like a “sponge”
 - b. Bones Classified by Size
 - i. Different sizes
 1. Long: all bones of the limbs, mostly compact bone
 2. Short: think wrist & ankle, small, cuboid bones, mostly spongy bone. Sesamoid bones (grow inside tendons, fit here too)
 3. Flat: spongy inside with compact outside. Think skull, sternum, ribs
 4. Irregular: they just don't fit any of the above. Think vertebrae, and pelvic bones
- IV. Bone Structure
 - a. The shaft or diaphysis is the most noticeable part of a long bone
 - b. It's protected by a tough membrane called the periosteum
 - c. The ends are called epiphysis
 - d. Their ends are covered with glistening hyaline cartilage or articular cartilage
 - e. Going Inside the Long Bone
 - i. Two types of marrow
 1. Yellow: fat storage
 2. Red: blood cell production
 - ii. In adults, most red marrow is in the spongy bone of flat bones
 - f. Epiphyseal line & Plate
 - i. Before puberty, you have a line of hyaline cartilage by the epiphysis – this is where the bone is growing or epiphyseal plate
 - ii. After puberty, just a solid line is left or epiphyseal line
- V. Bone Growth
 - a. In the embryo the skeleton is mostly hyaline cartilage
 - b. This cartilage is replaced by bone
 - c. This bone formation is called ossification
 - d. Bone formation is caused by osteoblasts – bone forming cells
 - e. Osteoclasts dissolve bone

VI. Rickets

- a. Disease of children
- b. Bones don't calcify
- c. Rare in U.S. due to vitamin D added to dairy products