Tender heart High school Chd

PAGE NO. ...1..... DATE:... 15.04.24

CLASS: ...IX..... SUBJECT: ...Physical Education...

TOPIC:...Chapter 1 (The human Anatomy and Physiology)...

TEACHER'S NAME:...Ms. Kusum...

Good Morning Students,

This lesson is of Class...IX...for the Subject..Physical Education..., Topic..Skeletal System.....which is covered in Chapter..1..(The human Anatomy and Physiology starting on Page No..17...of your Text Book , Titled...Health Physical Edu. & Sports...and is being submitted to you on 15.04.24

This voice is of ...Ms. Kusum.....

If all students are ready then let us start with topic ..Skeletal System..... all of you please listen carefully as I will be asking a few questions in between the chapter.

Introduction to the Skeletal System :-

Humans are vertebrates, humans having a vertabral column or backbone. The human skeletal system consists of bones, cartilage, ligaments and tendons and accounts for about 20% of the body weight.

The living bones in our bodies use oxygen and give off waste products in metabolism. They contains active tissues that consume nutrients, require a blood supply and change or remodel in response to variations in mechanical stress.

Bones work together with muscles as simple mechanical lever systems to produce body movement.

Bones provide a rigid framework, known as the skeleton, that support and protect the soft organs of the body.

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The skeleton supports the body against the pull of gravity. The large bones of the lower limbs support the trunk when standing.
The skeleton also protects the soft body parts. The fused bones of the cranium surround the brain to make it less vulnerable to injury. Vertebrae surround and protect the spinal cord of the rib cage help protect the heart and lungs of the thorax.

Bones contain more calcium than any other organ. The intercellular matrix of bone contains large amounts of calcium salts, the most important being calcium phosphate.

When blood calcium levels decrease below normal, calcium is released from the bones so that there will be an adequate supply for metabolic needs. When blood calcium levels are increased, the excess calcium is stored in the bone matrix. The dynamic process of releasing and storing calcium goes on almost continuously.

In infants red marrow is found in the bone cavities. With age, it is largely replaced by yellow marrow for fat storage. In adults, red marrow is limited to the spongy bone in the skull, ribs, sternum, pelvis etc. Red marrow functions in the formation of red blood cells, white blood cells and blood platelets.

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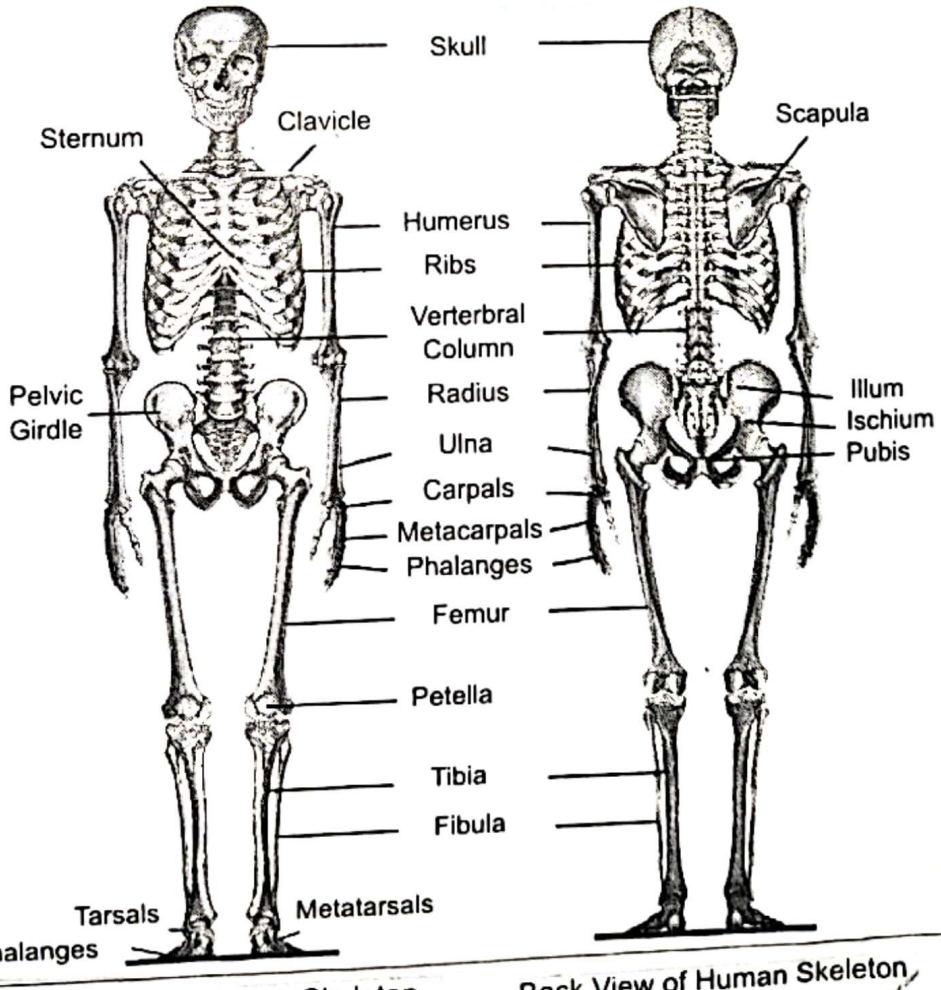
Skeletal System Bones :-

The skeletal system is a combination of various bones, cartilages, tendons and ligaments. A newborn baby has approximately 300 bones but after the age of adolescence the number of bones is reduced to 206. As matter of fact, some of the bones unite with each other completely. The structure of bone is rigid and hard, so it gives the body a framework, maintains its shape and protect delicate organs. Bones provide a place for muscles and supporting structures to attach. They also form a system of levers upon which muscles can act to produce body movements. The longest bone in the body is femur in the upper leg and the smallest is the stapes bone in the middle ear. In an adult, the skeleton comprises approximately 14% of the total body weight and half of this weight is water.



Front View of Human Skeleton Back View of Human Skeleton

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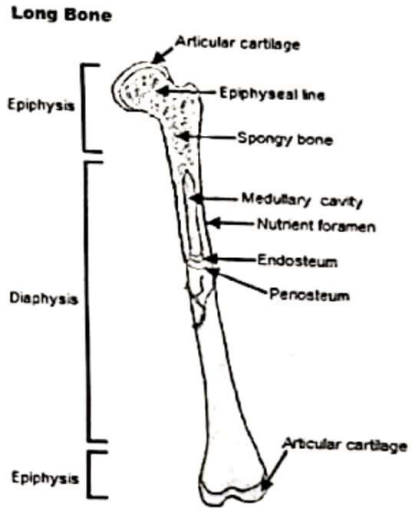
Structure of Bone Tissue :-

There are two types of bone tissue :- compact and spongy. The names imply that the two types differ in density or how tightly the tissue is packed together. There are three types of cells that contribute to bone homeostasis.

Osteoblasts are bone-forming cell, Osteoclasts resorb or break down bone, and Osteocytes are mature bone cells. An equilibrium between osteoblasts and osteoclasts maintains bone tissue.

Classification of Bones.

1. Long Bones



The bones of the body come in a variety of sizes and shapes. The four principal types of bones are long, short, flat and irregular. Bones that are longer than they are wide are called long bones. They consist of a long shaft with two bulky ends or extremities. They are primarily compact bone but may have a large amount of spongy bone at the ends or extremities. Long bones include bones of the thigh, leg, arm, and forearm.

Short Bones : Short bones are roughly cube shaped with vertical and horizontal dimensions approximately equal. They consist primarily of spongy bone, which is covered by a thin layer of compact bone. Short bones include the bones of the wrist and ankle.

Flat Bones: Flat bones are thin, flattened, and usually curved. Most of the bones of the cranium are flat bones.

Irregular Bones

Bones that are not in any of the above three categories are classified as irregular bones. They are primarily spongy bone that is covered with a thin layer of compact bone. The vertebrae and some of the bones in the skull are irregular bones.

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All bones have surface markings and characteristics that make a specific bone unique. There are holes, depressions, smooth facets, lines, projections and other markings. These usually represent passageways for vessels and nerves, points of articulation with other bones or points of attachment for tendons and ligaments.

Students before going any further in the chapter, let me ask you a few questions.

Q1. Define the terms :-

a) Skeletal System
b) Cartilage
c) Ligaments
d) Tendons
e) Metabolism
f) Bone Marrow
g) Osteocytes
h) Osteoblasts
i) Organ
j) Tissue
k) Cell

Q2 How many bones does the adult human body have?

Q3 Which bone protects the human Heart?

Q4 How many bones make up the human spine.

Q5 The Axial skeleton is comprised of _____ bones.

Q6 What do you understand by Anatomy and Physiology?

Ans :- 1

a) Skeletal System :- Skeletal System is the supportive of the body. It consists of cartilage, bones, joints. which provide attachment to the movement of muscles.

b) Cartilage :- Cartilage is a connective tissue consists of a dense matrix of collagen fibres and elastic fibres.

Spiral

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c) Ligaments :- Ligaments connect two bones together, particularly in the joints, like strong, firmly attached straps or ropes, they stabilize the joint or hold the ends of two bones together.

d) Tendons :- Tendons attach muscle to bone. It is made up of fibrous connective tissue.

e) Metabolism :- Metabolism, the sum of chemical reactions in human body. (Anabolism Catabolism)

f) Bone Marrow :- It is flexible tissue. It is found in the hollow interior of bones.

g) Osteocytes :- Bone cells are called osteocytes

h) Osteoblasts :- Osteoblasts are bone-forming cells.

i) Organ :- An organ is a group of tissues that perform a specific function.

j) Tissue :- Tissue are composed of Cells, not necessary identical but of the same origin.

k) Cell :- Cell is the smallest and functional unit of life.

Ans :- 2 206 bones

Ans :- 3 Sternum protects the human heart

Ans :- 4 33 bones

Ans :- 5 80 bones

Ans :- 6 Anatomy :- Anatomy is a branch of biology which studies the human body structure, its shape and

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interrelation of various parts of the body.

Physiology :- Physiology is the science of mechanical, physical, bio-electrical and bio chemical functions of human organs and the cells.

Note :-

Hope you all have understood the topic skeletal System. All of you are required to read this topic from your book and you will write above question and answers in your note book.

Thank you.