Uniwersytet Rzeszowski

The Skeletal System

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https://pixabay.com/pl/illustrations/czaszka-ko%c5%9b%c4%87-szkielet-ko%c5%9bci-3378748/

Introduction

Here are some facts and figures.

- ➔ The human skeleton consists of 206 bones.
  We must remember that we are born with 270 bones.
- ➔ The human skeleton weighs an average of about 10 kg for women and 12 kg for men.
- ➔ The skeletal system, apart from bones, also consists of ligaments, cartilages and tendons.

Skeletal system functions

- carries the weight of the whole body,
- is the site of muscle attachment,
- has a hematopoietic function,
- protects organs against injuries,
- produces blood cells,
- stores mineral salts.

https://www.britannica.com/science/human- skeleton

Human skeleton - structure

The skeleton is divided into two parts - the axial skeleton, which includes the skull, spine, ribs and sternum , the skeleton of the upper and lower limbs and their rims.

There are also several groups of bones, along with their subgroups. These are:

- skull bones
- torso bones
- upper limb bones
- lower limb bones

https://pixabay.com/pl/vectors/kr%c4%99gos%c5%82up-kr%c4%99gi-ko%c5%9bci-szkielet-7156359/

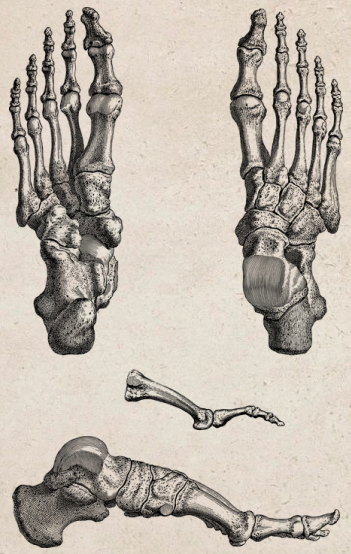
Basic types of bones

There are four different types of bone in the human body:

- **Long bone**

https://pixabay.com/pl/vectors/ko%c5%9b%c4%87-s%c5%82odziutki-ko%c5%9b%c4%87-udowa-cz%c5%82owiek-2937723/

- **Short bone**



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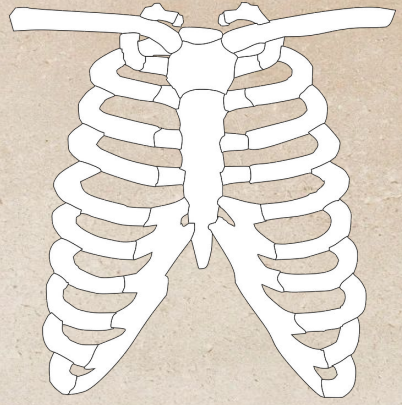
- **Flat bone**



https://pixabay.com/pl/vectors/%c5%bcebro-klatka-szybowa-%c5%bcebra-szkielet-42420/

- **Various bone**

https://pixabay.com/pl/vectors/m%c3%b3zg-kr%c4%99gos%c5%82up-kr%c4%99gos%c5%82upa-w%c4%85ska-1300499/

Bone tissue

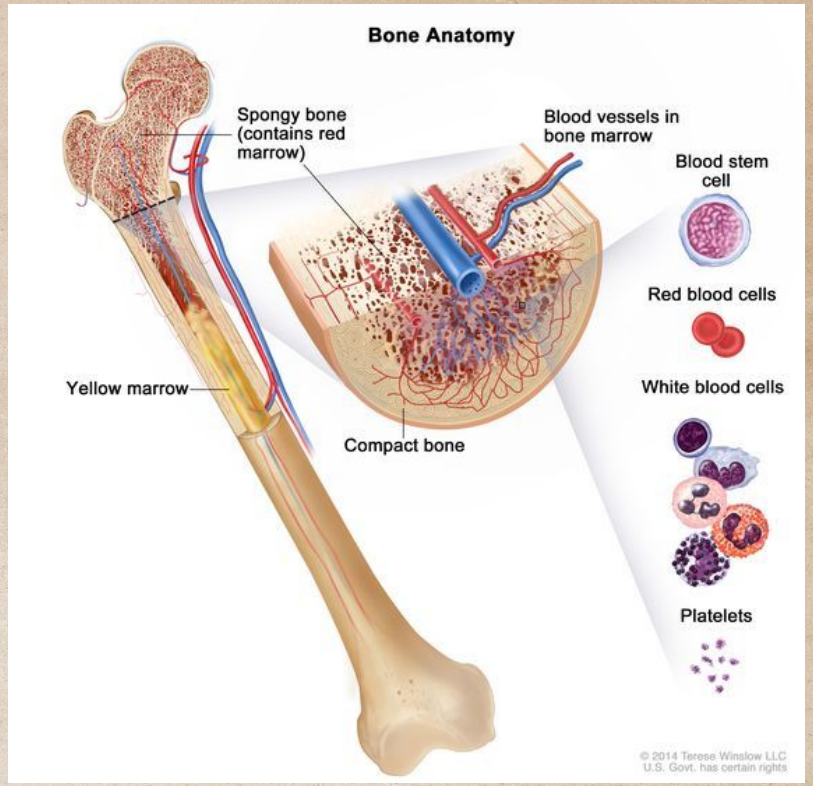
The different layers of bone tissue include:

- **Periosteum** – the dense, tough outer shell that contains blood vessels and nerves
- **Compact or dense tissue** – the hard, smooth layer that protects the tissue within
- **Spongy or cancellous tissue** – the porous, honeycombed material found inside most bones, which allows the bone to be strong yet lightweight
- **Bone marrow** – the jelly-like substance found inside the cavities of some bones that produces blood cells.

Bone marrow

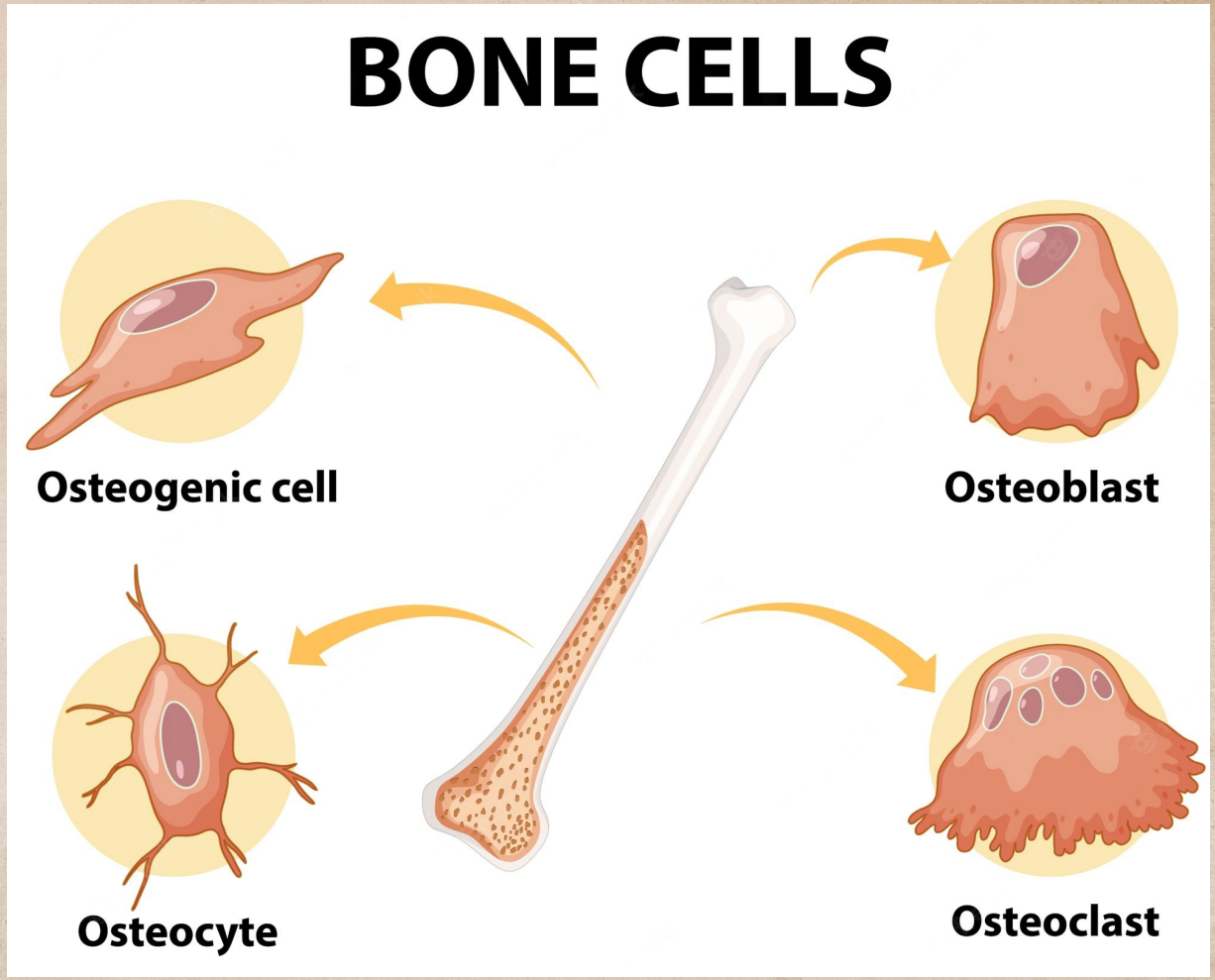
Bone marrow is where blood cells are made. The three different types of blood cell made by bone marrow include:

- **Red blood cells** – carry oxygen around the body.
- **White blood cells** – make the body's immune system.
- **Platelets** – are used for clotting.



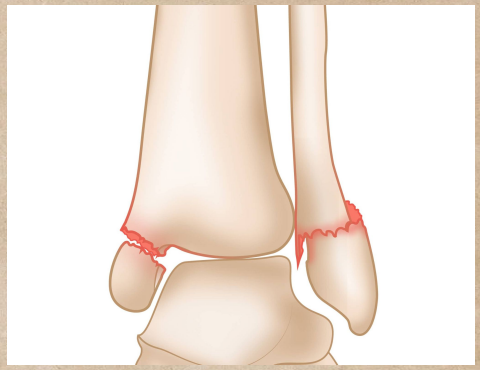
https://www.cancer.gov/publications/dictionaries/cancer-terms/def/bone-tissue

BONE CELLS



Bone conditions

https://orthoinfo.aaos.org/en/diseases--conditions/ankle-fractures-broken-ankle/

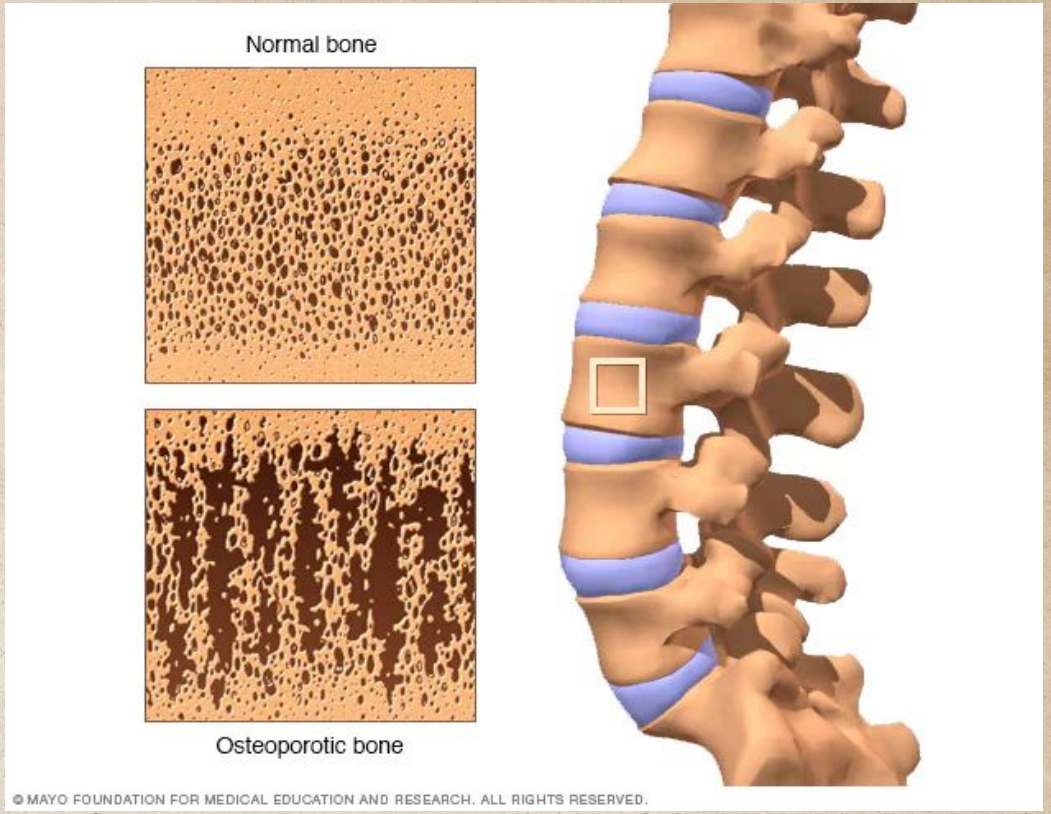


Some conditions of bone include:

- **Fractures** – broken bones of various types
- **Osteoporosis** – loss of bone density and strength
- **Osteomyelitis** – infection of the bone
- **Osteitis** – bone inflammation, for example, Paget's disease of the bone
- **Acromegaly** – overgrowth of bones in the face, hands and feet
- **Fibrous dysplasia** – abnormal growth or swelling of bone
- **Rickets** – a child's growing bones fail to develop due to a lack of vitamin D
- **Multiple myeloma** – cancer of the plasma cells in bone marrow
- **Bone cancer –** primary bone cancers include osteosarcomas and chondrosarcomas. However, most cancers found in bone have spread from other organs such as the breast, prostate, lung or kidney.

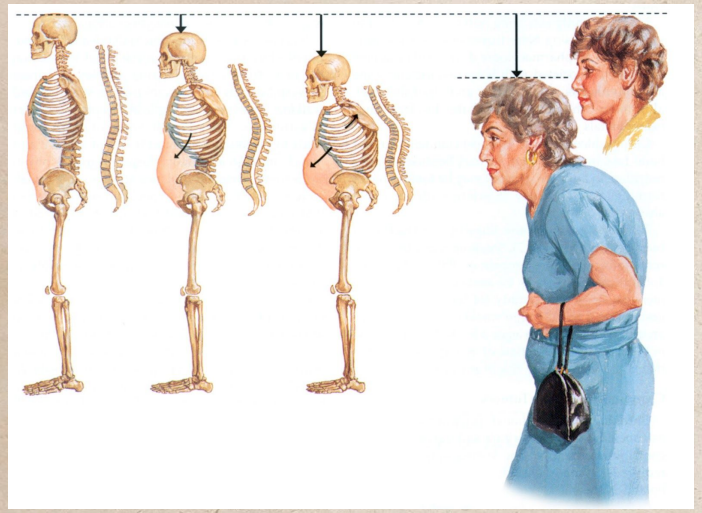
Osteoporosis

Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.



Symptoms

There typically are no symptoms in the early stages of bone loss. But once your bones have been weakened by osteoporosis, you might have signs and symptoms that include:



https://rcz-zbaszyn.pl/m/dla_pacjentow/aktualnosci/200/densytometria_standardem_w_rozpoznaniu_osteoporozy.html

https://cornerstonephysio.com/resources/5-types-of-back-pain/

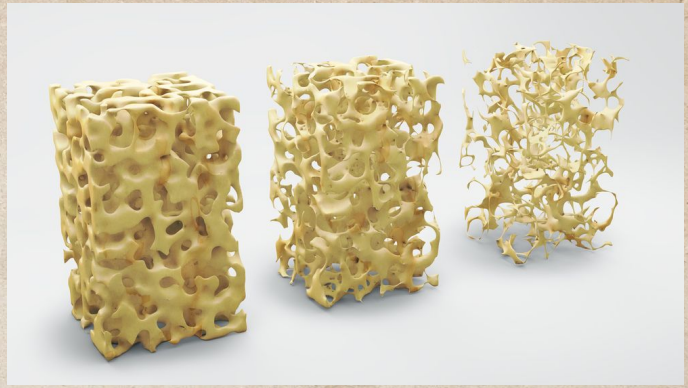
Risk factors

A number of factors can increase the likelihood that you'll develop osteoporosis — including your age, race, lifestyle choices, and medical conditions and treatments.

Unchangeable risks

Some risk factors for osteoporosis are out of your control, including:

- **Your gender.**
- **Age.**
- **Race.**
- **Family history.**
- **Body frame size.**



https://www.drnesterenko.com/2019/04/26/osteoporosis-and-spine-health/

Dictionary

ligaments- więzadła

cartilages- chrząstka

tendons- ścięgna

muscle attachment- przyczep mięśniowy

skull- czaszka

spine- kręgosłup

ribs- żebra

sternum- mostek

periosteum- okostna

bone marrow- szpik kostny

white blood cells- krwinki białe

platelets- płytki krwi

fractures- złamania

osteoporosis- osteoporoza

osteomyelitis-zapalenie szpiku

osteosis- kostnienie

acromegaly- akromegalia

fibrous dysplasia- dysplazja włóknista

rickets- krzywica

multiple myeloma- szpiczak mnogi

bone cancer- rak kości

red blood cells- czerwone krwinki

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