



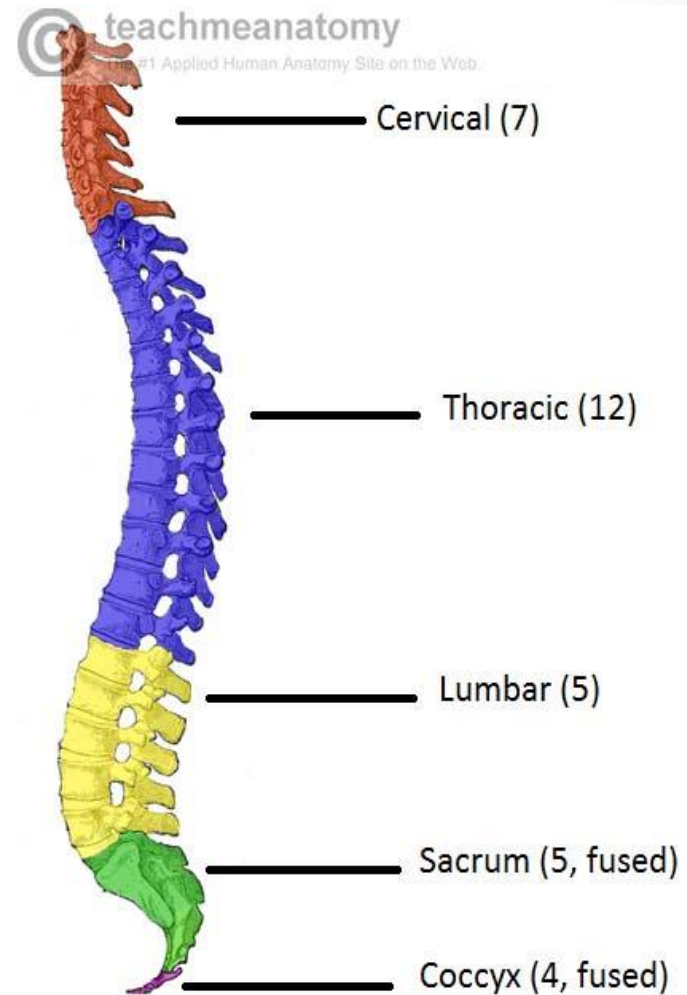
THE SKELETAL SYSTEM

PHYSICAL EDUCATION

THE STRUCTURE AND FUNCTION OF THE VERTEBRAL COLUMN

The **vertebral column** supports the upper body and protects the spinal cord. There are five regions:

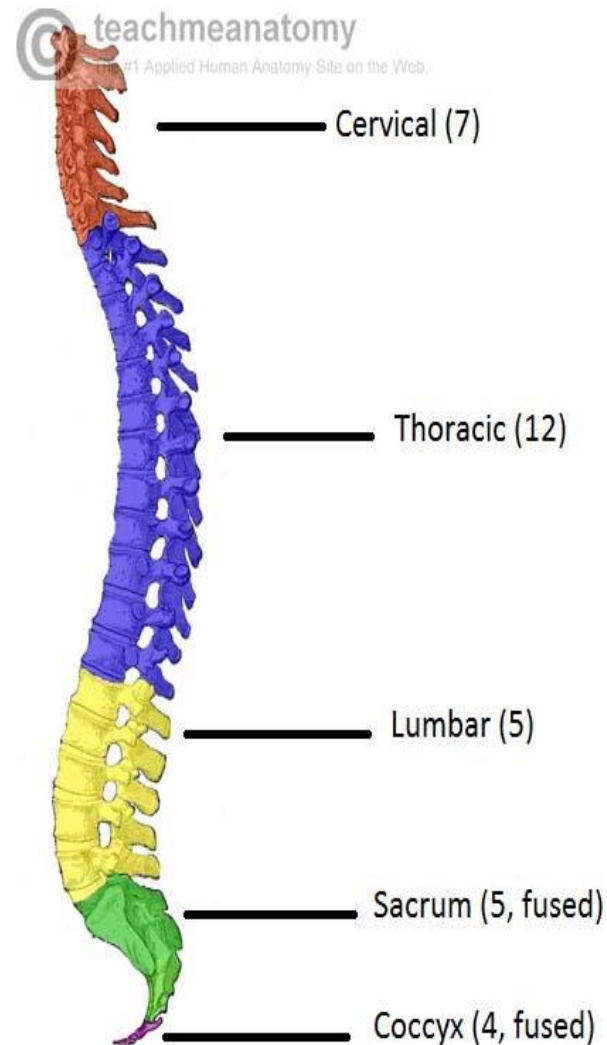
- **7 cervical vertebrae** support the neck and head. They allow you to bend, turn and tilt the head.



THE STRUCTURE AND FUNCTION OF THE VERTEBRAL COLUMN

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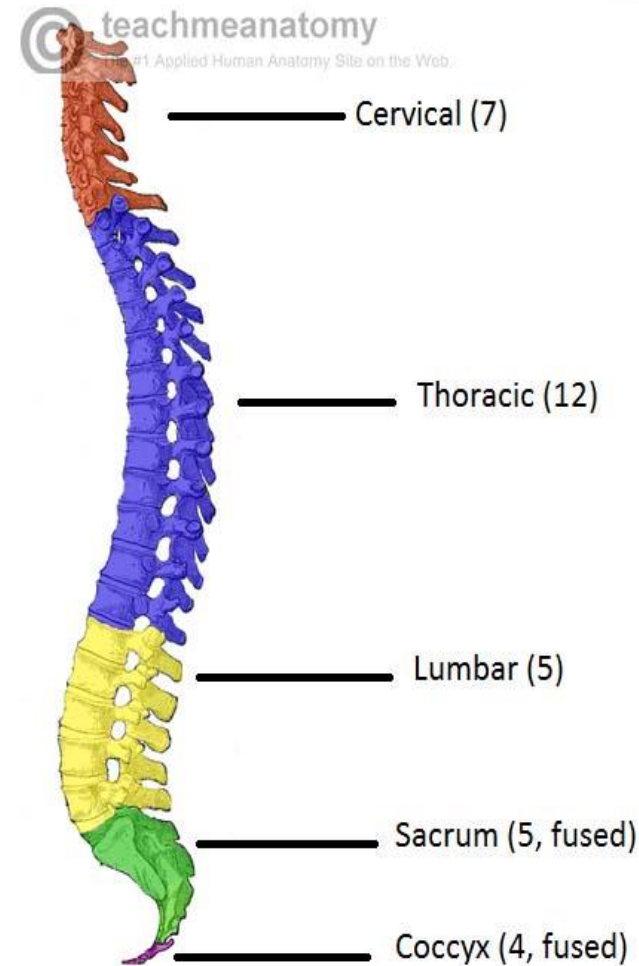
- ❑ **12 thoracic vertebrae** connect to the ribs and support the rib cage.



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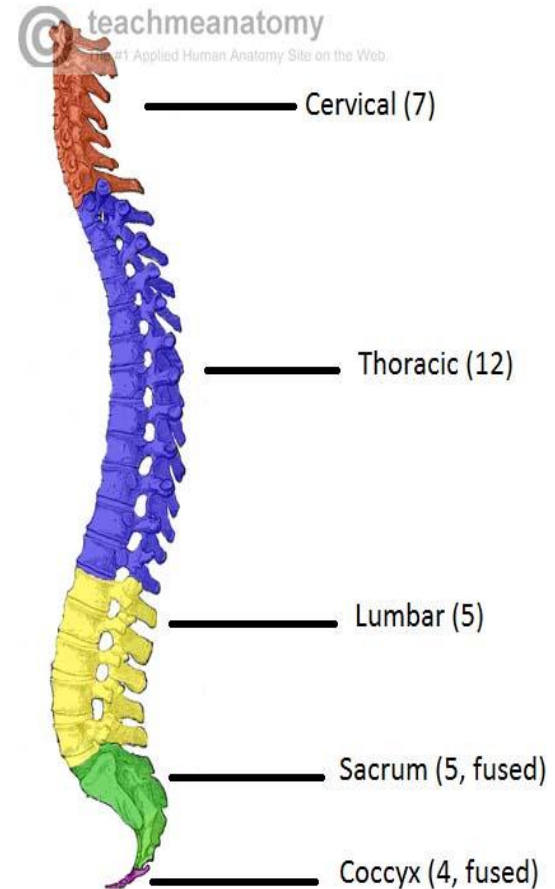
- **5 lumbar vertebrae** are attached to the strong back muscles to allow bending twisting and turning



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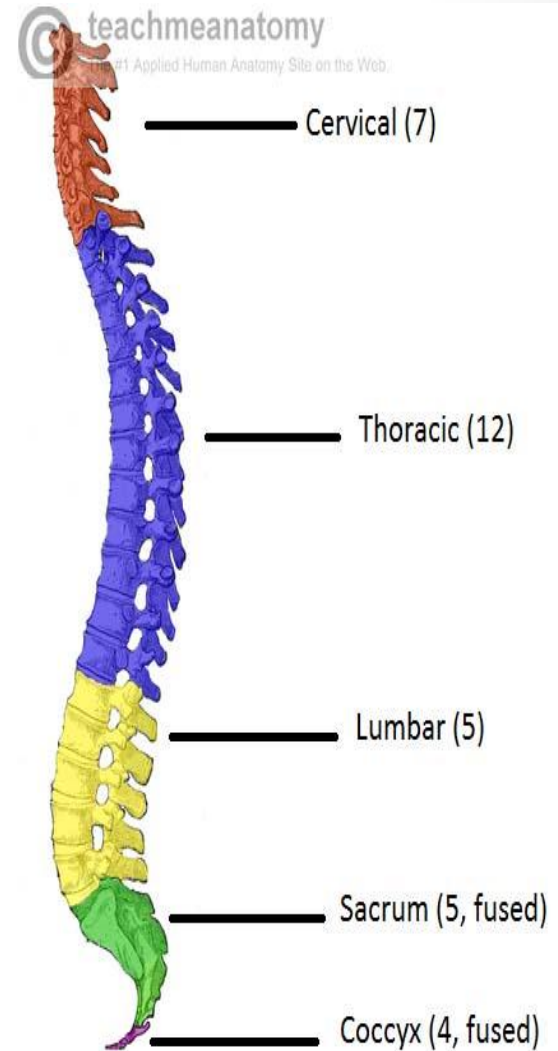
- **5 fused vertebrae** form the sacrum making a solid base for the trunk and legs.



THE STRUCTURE AND FUNCTION OF THE VERTEBRAL COLUMN

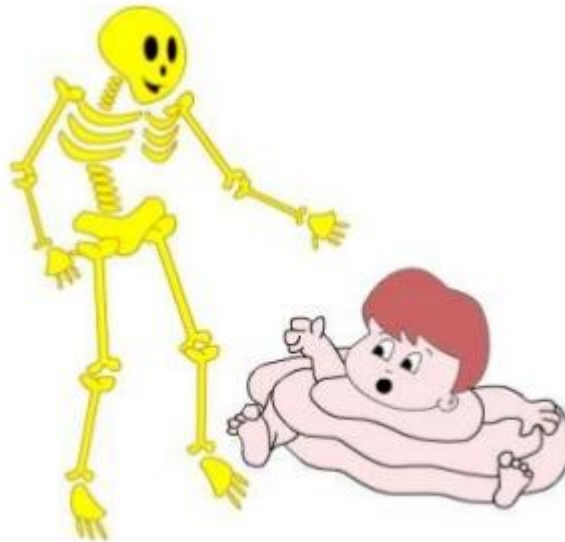
The vertebral column supports the upper body and protects the spinal cord. There are five regions:

- ❑ **Coccyx** – 4 fused vertebrae that have no function



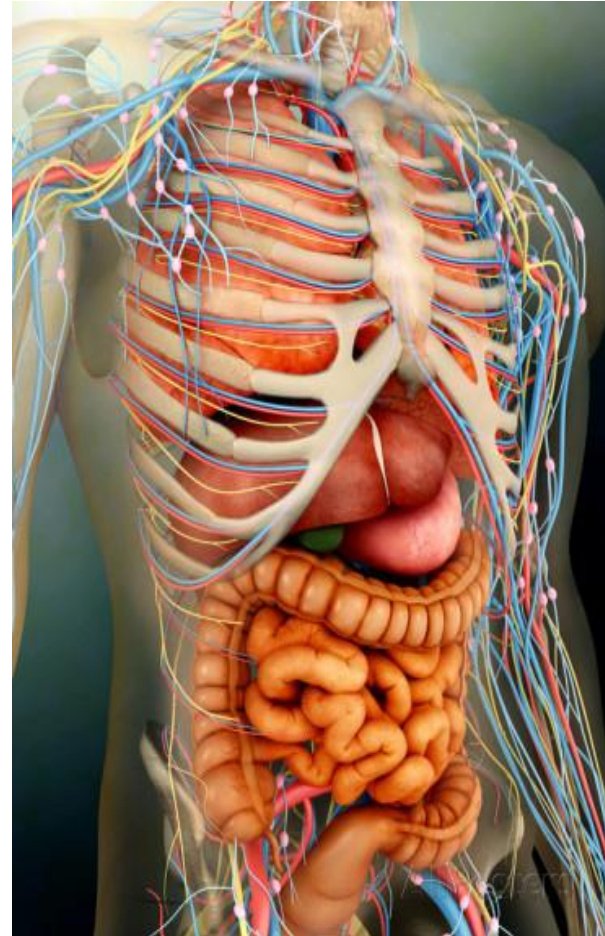
THE SKELETON HAS FOUR FUNCTIONS

1. **SUPPORT** – it forms a framework to support the body and gives it shape (this is sometimes given as an extra function).



THE SKELETON HAS FOUR FUNCTIONS

2. PROTECTION – it protects the vital organs, e.g. the ribs protect the heart and lungs from damage



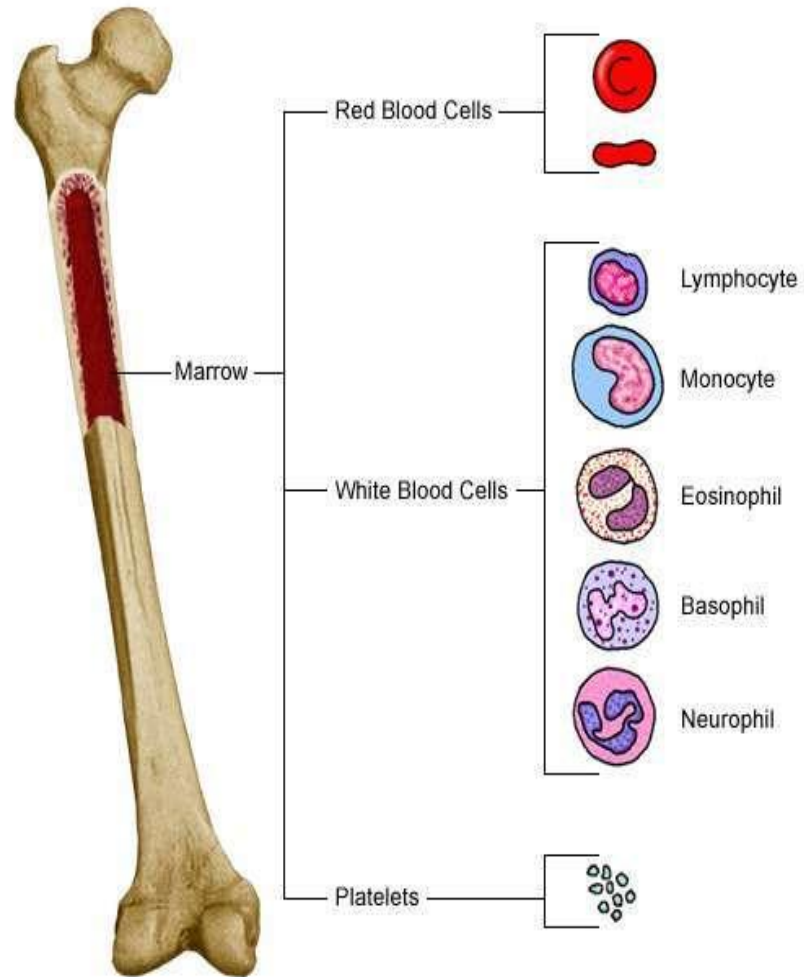
THE SKELETON HAS FOUR FUNCTIONS

3. MOVEMENT – muscles are attached to bones to make them move at the joints.



THE SKELETON HAS FOUR FUNCTIONS

4. BLOOD PRODUCTION – red cells, white cells and platelets are made in the bone marrow of some bones, such as the femur.



BONE TYPES

There are four types of bones. These are classified by their shape and size:

1. **LONG BONES**
2. **SHORT BONES**
3. **FLAT PLATE – LIKE BONES**
4. **IRREGULAR BONES**

BONE TYPES

1. **LONG BONES** – act as levers to assist movement, e.g. **femur**, **humerus**



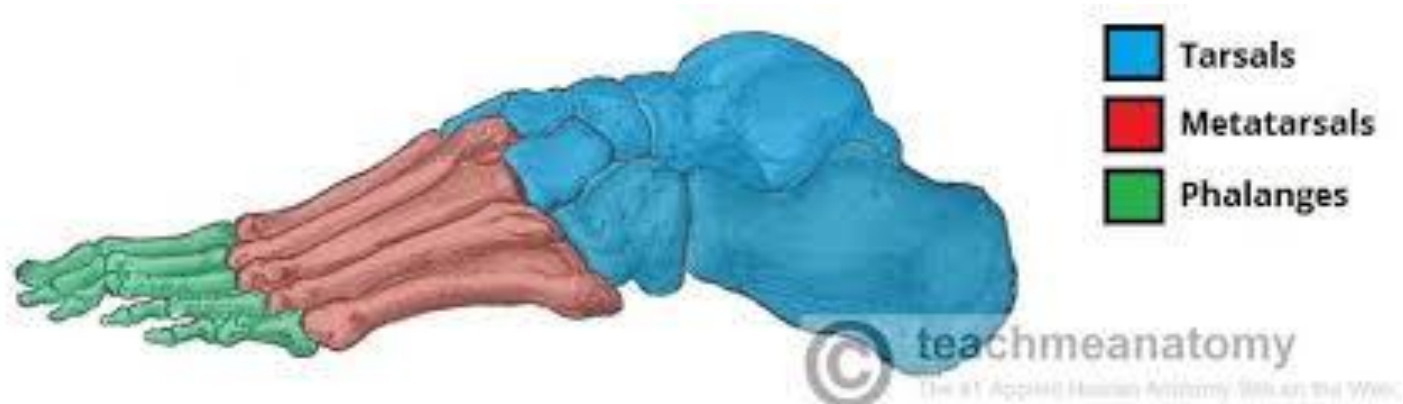
humerus



femur

BONE TYPES

2. **SHORT BONES** – help provide movement, e.g. **carpals**, **tarsals**.



BONE TYPES

3. FLAT PLATE – LIKE BONES – have a large surface area, which helps muscle attachment , such as the **scapula** and **pelvis**. They also protect vital areas, e.g. the **cranium** protects the brain



BONE TYPES

4. **IRREGULAR BONES** – protect and support, e.g. **vertebrae** and **patella**.



(C) Sportinjuryclinic.net



BONE TYPES

The muscular and skeletal system work together to enable movement.

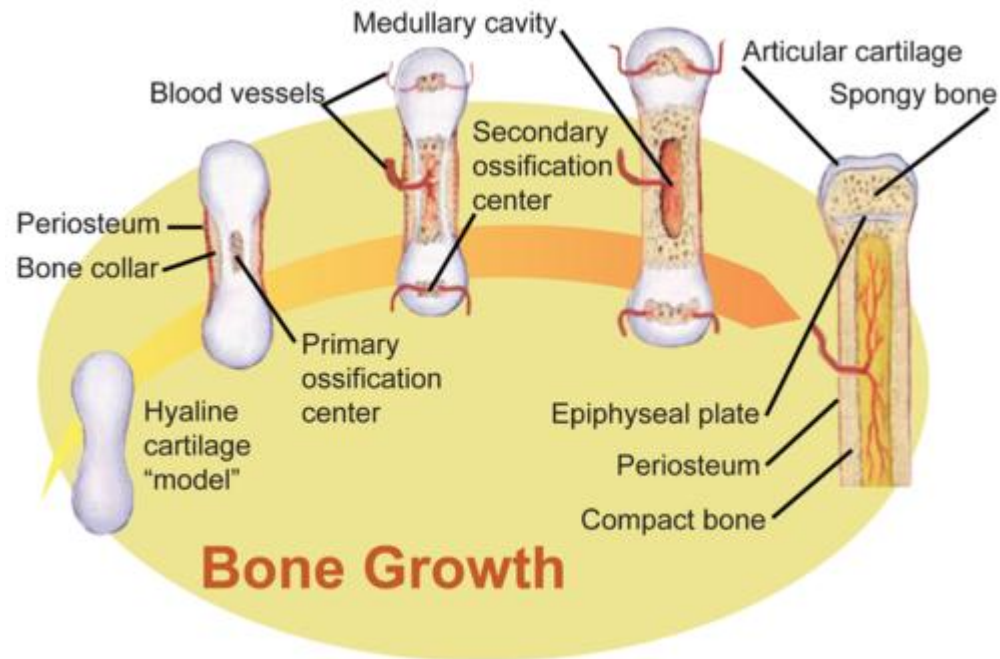
EXERCISE helps the skeleton to develop. It can increase **bone density** as well as **bone width**, therefore making bones stronger. Bones get lighter and weaker as we get older so it is important to **keep exercising** to help bones stay as strong as possible, for as long as possible. Older women, in particular, are prone to **osteoporosis**, which is a condition where bones become so weak that they break very easily.

HOW BONES GROW

Before birth, the skeleton is made up of **cartilage**. This cartilage changes to bone through the process of **ossification**.

Ossification is the growth and development of bone.

Bones continue to increase in length as the cartilage at the growth plates changes into the bone. These growth plates are bands of cartilage.



HOW BONES GROW

Bones stop growing in adulthood as these plates have been changed into bone. By this time the bones have become rigid and hard with only a small amount of cartilage left, which forms a thin layer around the bone ends. **Collagen fibres** make bones **strong** and **light**. **Calcium** compounds make them **hard**.

