

Difference Between Epiphysis and Diaphysis

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Key Difference - Epiphysis vs Diaphysis

The structure of a long bone is an important [anatomical](#) aspect in the study of [bone physiology](#). Long bones are the most common bones found in the mammalian body. Long bones are mainly composed of the [compact bone](#) and spongy bone. The compact bone is the dense and hard part of the long bone. The spongy bone is the tissue filled cavity of the bone which is comparatively less hard and contains the [red bone marrow](#).

The gross structure of the long bone consists of many parts; proximal and distal epiphysis, the spongy bone and the diaphysis consisting of the medullary cavity, endosteum, periosteum and the nutrient foramen. Thus, the anatomical structure of the long bone is divided into two main parts. They are the epiphysis and the diaphysis. **The epiphysis is the wider section at each end of the bone and the diaphysis also known as the shaft of a long bone makes up most of the length of the bone.** This is the **key difference** between epiphysis and diaphysis.

What is Epiphysis?

The epiphysis is the round end of the long bone. It is further categorized as the proximal epiphysis and the distal epiphysis. The structure of the epiphysis is round because it facilitates the contact with joints and eases the function of motion around a joint. In order to facilitate this function the proximal and the distal epiphysis are covered with layers of articular [cartilage](#). This cartilaginous layer allows the bones to slide past one another more easily.

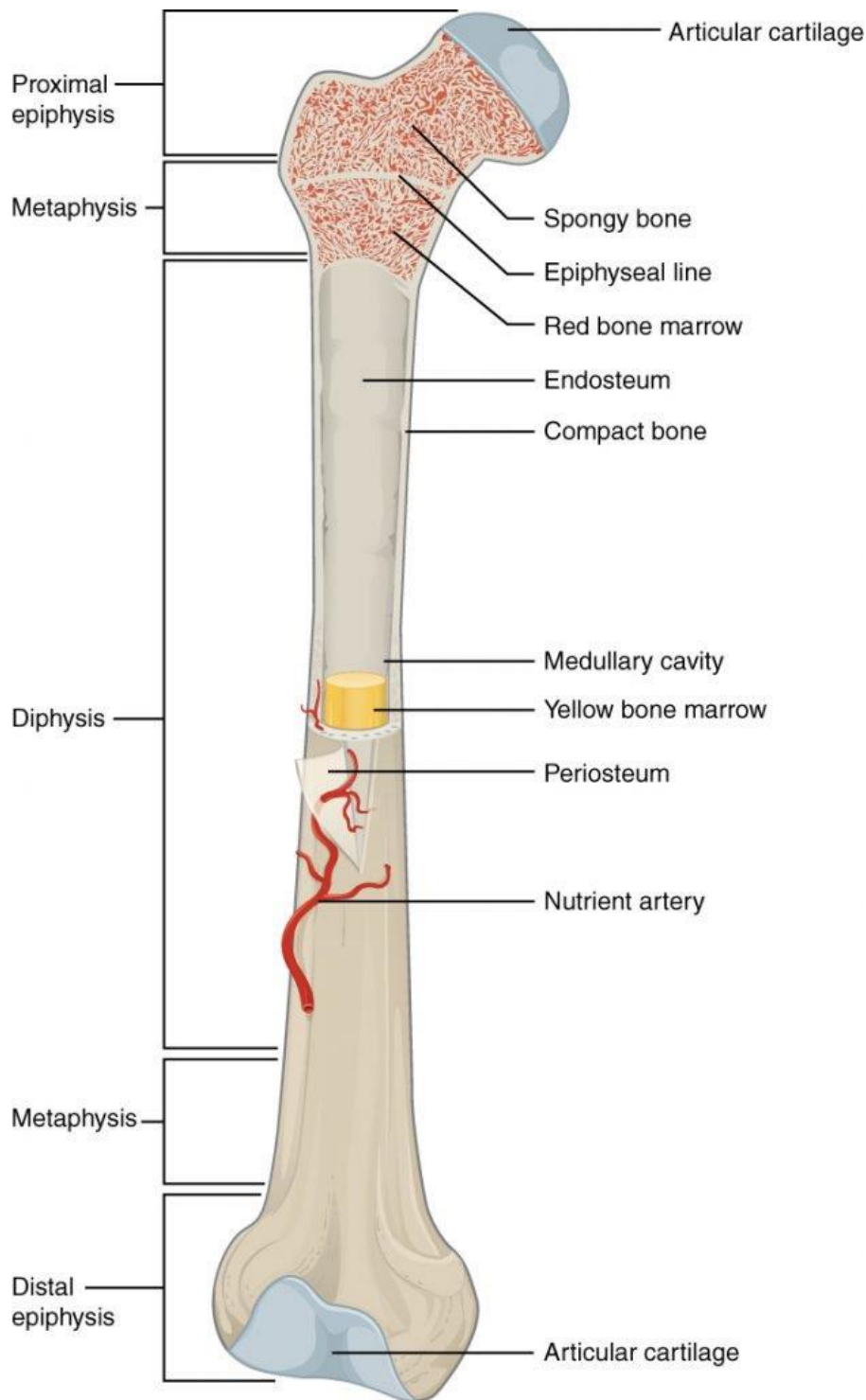


Figure 01: Anatomy of a long bone

The interior of epiphysis is filled with spongy bone. Some epiphyses are also sites of [red blood cell](#) formation in adults. In order to distinguish between the epiphysis and the diaphysis, a narrow area known as metaphysis is present. The metaphysis contains the epiphyseal plate (growth plate), a layer of hyaline (transparent) cartilage in a growing bone. As the growth phase is completed the

cartilage is replaced by osseous tissue. Following which the epiphyseal plate becomes an epiphyseal line.

What is Diaphysis?

The diaphysis or shaft of a long bone makes up most of the length of the bone. The diaphysis is cylindrical in shape. The epiphyseal line/plate in the metaphysis separates the diaphysis from the epiphysis. The diaphysis is the hard part of the long bone. It is composed of a thick layer of compact bone surrounding the medullary cavity.

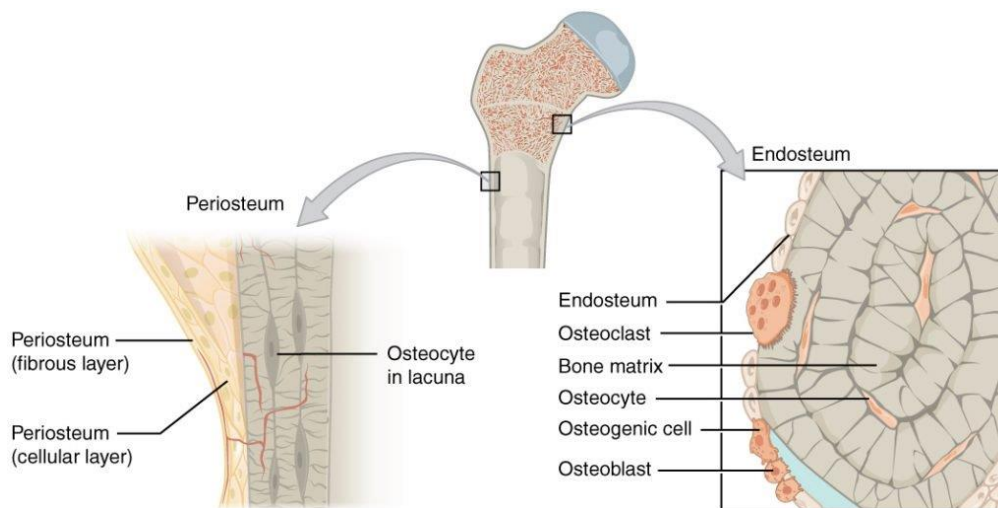


Figure 02: Periosteum and Endosteum of the Diaphysis

The medullary cavity is formed of two main parts; the endosteum and the periosteum. The endosteum is the delicate membranous lining. The main functions of the endosteum are to participate in bone growth, repair, and bone remodeling. The periosteum is the outer surface of the bone. It is covered with a fibrous membrane. The periosteum contains blood vessels, [nerves](#), and [lymphatic](#) vessels and the main function is to provide nutrition for the compact bone. Periosteum also acts as the site of attachment to tendons and ligaments. The periosteum is anchored and attached to the underlying bone by a type of fibrous structures termed as Sharpey's fibers. In adults, the medullary cavity can also be called the [yellow marrow cavity](#), but in infants, it is called the red marrow cavity, as it is filled with newly forming red blood cells.

What are the Similarities Between Epiphysis and Diaphysis?

- They are two main parts of a long bone.
- Both are involved in bone growth and development.
- The epiphysis and the diaphysis are distinguished by the metaphysis containing the epiphyseal plate.

What is the Difference Between Epiphysis and Diaphysis?

Epiphysis vs Diaphysis	
The epiphysis is the wider section at each end of the long bone which is filled with spongy bone.	Diaphysis is the shaft of a long bone, which runs between the epiphysis.
Shape	
The epiphysis is round in shape.	Diaphysis is long and cylindrical in shape.
Texture	
The epiphysis is cartilaginous structures and less hard.	Diaphysis is a hard structure with compact bone.
Components	
The epiphysis is a spongy bone.	Diaphysis is a medullary cavity with endosteum and periosteum.
Functions	
Facilitates the contact with joints and ease the function of motion of the site of red blood cell formation in adults are the functions of the epiphysis.	Endosteum involves in growth, repair, and bone remodeling and periosteum provides nutrition for the compact bone, attachment to tendons and ligaments.
Types	
Proximal and distal	None

Summary - Epiphysis vs Diaphysis

The long bone is the major bone forming most bones such as the [femur](#). In order to study physiology and the functionality, it is much important to understand the structure of the long bone. It mainly consists of two parts the epiphysis, which is the end part of the bone required in the attachment and the mid part between the proximal and the distal known as diaphysis (also known as the shaft). The difference between epiphysis and diaphysis is when epiphysis is the end of a long bone (the head) whereas the diaphysis is the shaft of the long bone.

Reference:

1. OpenStax. "Anatomy and Physiology." 6.3 Bone Structure | Anatomy and Physiology. Accessed 27 Sept. 2017. [Available here](#)
2. "Structures of long bones." Anatomy and Physiology. Accessed 27 Sept. 2017. [Available here](#)

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