

THE SKELETAL SYSTEM STRUCTURE

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MALUMOTI****MAQOLA TARIXI:***Received: 08.12.2025**Revised: 09.12.2025**Accepted: 10.12.2025***KALIT SO'ZLAR:**

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ANNOTATSIYA:

The skeletal system is the framework of the human body that provides support, shape, and protection to all internal organs. It consists of bones, cartilage, ligaments, and joints that work together to maintain body posture and enable movement. The study of the skeletal system is fundamental in anatomy and medicine as it plays a vital role in understanding human structure, physiology, and pathology.

The Skeletal System Structure

The skeletal system forms the rigid structure of the human body. It is made up of 206 bones in the adult human, which are classified according to their shapes and functions. The system provides mechanical support, protects vital organs, produces blood cells, stores minerals, and allows movement through coordination with the muscular system.

The human skeleton is divided into two main parts: the axial skeleton and the appendicular skeleton. The axial skeleton includes the skull, vertebral column, and thoracic cage, which support and protect the central nervous system and vital organs such as the brain, heart, and lungs. The appendicular skeleton consists of the bones of the limbs and girdles, which are responsible for movement and interaction with the environment.

Each bone in the body serves a specific purpose. Long bones, such as the femur and humerus, function as levers for movement, while flat bones like the scapula and skull bones protect delicate structures. Short bones, such as the carpal and tarsals, provide stability with

limited motion. Irregular bones, like the vertebrae, have complex shapes that support different anatomical roles.

Bones are composed of compact and spongy tissue. The compact bone provides strength and structure, whereas the spongy bone contains bone marrow, where hematopoiesis (formation of blood cells) occurs. Calcium and phosphorus are stored in bones, maintaining mineral balance in the human body.

Joints connect bones and allow movement. There are three main types of joints: fibrous (immovable), cartilaginous (slightly movable), and synovial (freely movable). Synovial joints, such as the knee, shoulder, and hip, are the most complex and allow a wide range of motion. Ligaments stabilize joints, while tendons connect muscles to bones, creating movement.

The skeletal system also interacts with other systems of the body. It supports muscles for motion, protects organs of the circulatory and respiratory systems, and provides calcium to maintain nerve and muscle function. Disorders of the skeletal system, such as osteoporosis, arthritis, and fractures, can impair mobility and overall health.

Modern medical imaging, including X-rays, CT scans, and MRIs, has significantly advanced the study of the skeletal system, allowing for precise diagnosis and treatment of bone diseases and injuries. Surgical innovations and prosthetics now help restore mobility and improve quality of life for patients with skeletal conditions.

The study of the skeletal system, known as osteology, continues to be one of the most important fields in medical science. Understanding the anatomy and physiology of bones is essential for diagnosing injuries, planning surgeries, and developing treatments for musculoskeletal disorders.

Scientists Who Contributed to the Study of the Skeletal System

The study of the skeletal system has evolved through centuries. Ancient Greek physician Hippocrates is known as the father of medicine and made early descriptions of bones and joints. Galen of Pergamon expanded anatomical knowledge during the Roman Empire. In the Renaissance, Andreas Vesalius revolutionized anatomy through detailed human dissections and his book 'De humani corporis fabrica'. Modern osteology continues to build upon the work of these pioneers with the help of advanced imaging and research techniques.