

Skeletal Tissue Mechanics

Human musculoskeletal system

vertebral column, and the appendicular skeleton. The skeletal system serves as a framework for tissues and organs to attach themselves to. This system acts

The human musculoskeletal system (also known as the human locomotor system, and previously the activity system) is an organ system that gives humans the ability to move using their muscular and skeletal systems. The musculoskeletal system provides form, support, stability, and movement to the body.

The human musculoskeletal system is made up of the bones of the skeleton, muscles, cartilage, tendons, ligaments, joints, and other connective tissue that supports and binds tissues and organs together. The musculoskeletal system's primary functions include supporting the body, allowing motion, and protecting vital organs. The skeletal portion of the system serves as the main storage system for calcium and phosphorus and contains critical components of the hematopoietic system.

This system describes...

Tissue expansion

the skin surface area increases. Continuum mechanics approaches can be used to model skin growth during tissue expansion and non-linear finite element methods

Tissue expansion is a technique used by plastic, maxillofacial and reconstructive surgeons to cause the body to grow additional skin, bone, or other tissues. Other biological phenomena such as tissue inflammation can also be considered expansion (see tissue inflammation below).

Skeleton

and spicules (sponges). Cartilage is a rigid connective tissue that is found in the skeletal systems of vertebrates and invertebrates. The term skeleton

A skeleton is the structural frame that supports the body of most animals. There are several types of skeletons, including the exoskeleton, which is a rigid outer shell that holds up an organism's shape; the endoskeleton, a rigid internal frame to which the organs and soft tissues attach; and the hydroskeleton, a flexible internal structure supported by the hydrostatic pressure of body fluids.

Vertebrates are animals with an endoskeleton centered around an axial vertebral column, and their skeletons are typically composed of bones and cartilages. Invertebrates are other animals that lack a vertebral column, and their skeletons vary, including hard-shelled exoskeleton (arthropods and most molluscs), plated internal shells (e.g. cuttlebones in some cephalopods) or rods (e.g. ossicles in

echinoderms...

Intramembranous ossification

gnathostome (excluding chondrichthyans such as sharks) skeletal system by which rudimentary bone tissue is created. Intramembranous ossification is also an

Intramembranous ossification is one of the two essential processes during fetal development of the gnathostome (excluding chondrichthyans such as sharks) skeletal system by which rudimentary bone tissue is created.

Intramembranous ossification is also an essential process during the natural healing of bone fractures and the rudimentary formation of bones of the head.

Unlike endochondral ossification, which is the other process by which bone tissue is created during fetal development, cartilage is not present during intramembranous ossification.

Theories of craniofacial growth

Neil; Fyhrie, David P. "Growth, Modeling and Remodeling of Bone". Skeletal Tissue Mechanics: 95-173. Martin, R. Bruce; Burr, David B.; A. Sharkey, Neil; Fyhrie

The development of craniofacial growth is a complicated phenomenon that has been the subject of much research for past 70 years. From the first theory in 1940s, many different ideas pertaining to how a face develops has intrigued the minds of researchers and clinicians alike.

Biomechanics

and morphogenesis at cell and tissue scale, overlapping with mechanobiology. In sports biomechanics, the laws of mechanics are applied to human movement

Biomechanics is the study of the structure, function and motion of the mechanical aspects of biological systems, at any level from whole organisms to organs, cells and cell organelles, and even proteins using the methods of mechanics. Biomechanics is a branch of biophysics.

Parenchyma

brain or lungs, or a structure such as a tumour. In zoology, it is the tissue that fills the interior of flatworms. In botany, it is some layers in the

Parenchyma () is the bulk of functional substance in an animal organ such as the brain or lungs, or a structure such as a tumour. In zoology, it is the tissue that fills the interior of flatworms. In botany, it is some layers in the cross-section of the leaf.

In vitro muscle testing

papillary muscle. For the successful isolation of skeletal muscles, specific conditions are required. The tissue should be isolated in frequently changed, chilled

In vitro muscle testing is a method used to characterize properties of living muscle tissue after removing it from an organism, which allows more extensive and precise quantification of its properties than in vivo testing. In vitro muscle testing has provided the bulk of scientific knowledge of muscle structure and physiology, and how both relate to organismal performance. Stem cell research relies on in vitro muscle testing to establish sole muscle cell function and its individual behavior apart from muscle cells in the presence of nonmuscle cells seen in in vitro studies.

Palpation

Identifying the location of human skeletal landmarks: why standardized definitions are necessary - a proposal. Clinical Bio mechanics 20:659-660. Pelvic examination

Palpation is the process of using one's hands to check the body, especially while perceiving/diagnosing a disease or illness. Usually performed by a health care practitioner, it is the process of feeling an object in or on the body to determine its size, shape, firmness, or location (for example, a veterinarian can feel the stomach of a pregnant animal to ensure good health and successful delivery).

Palpation is an important part of the physical examination; the sense of touch is just as important in this examination as the sense of sight is. Physicians develop great skill in palpating problems below the surface of the body, becoming able to detect things that untrained persons would not. Mastery of anatomy and much practice are required to achieve a high level of skill. The concept of being...

Bone

or spongy bone, also known as trabecular bone, is the internal tissue of the skeletal bone and is an open cell porous network that follows the material

A bone is a rigid organ that constitutes part of the skeleton in most vertebrate animals. Bones protect the various other organs of the body, produce red and white blood cells, store minerals, provide structure and support for the body, and enable mobility. Bones come in a variety of shapes and sizes and have complex internal and external structures. They are lightweight yet strong and hard and serve multiple functions.

Bone tissue (osseous tissue), which is also called bone in the uncountable sense of that word, is hard tissue, a type of specialised connective tissue. It has a honeycomb-like matrix internally, which helps to give the bone rigidity. Bone tissue is made up of different types of bone cells. Osteoblasts and osteocytes are involved in the formation and mineralisation of bone; osteoclasts...

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