

Calcaneus | definition of calcaneus by Medical dictionary

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calcaneus

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bone [bōn]

1. the hard, rigid form of connective tissue constituting most of the skeleton of vertebrates, composed chiefly of calcium salts.
2. any distinct piece of the skeleton of the body. See anatomic Table of Bones in the Appendices for regional and alphabetical listings of bones, and see color plates 1 and 2. Called also **os**. adj., *adj* bo'ny.

There are 206 separate bones in the human body. Collectively they form the **SKELETAL SYSTEM**, a structure bound together by ligaments at the joints and set in motion by the muscles, which are secured to the bones by means of tendons. Bones, ligaments, muscles, and tendons are the tissues of the body responsible for supporting and moving the body.

Some bones have a chiefly protective function. An example is the skull, which encloses the brain, the back of the eyeball, and the inner ear. Some, such as the pelvis, are mainly supporting structures. Other bones, such as the jaw and the bones of the fingers, are concerned chiefly with movement. The **bone marrow** in the center manufactures blood CELLS. The bones themselves act as a storehouse of **CALCIUM**, which must be maintained at a certain level in the blood for the body's normal chemical functioning.

STRUCTURE AND COMPOSITION. Bone is not uniform in structure but is composed of several layers of different materials. The outermost layer, the periosteum, is a thin, tough membrane of fibrous tissue. It gives support to the tendons that secure the muscle to the bone and also serves as a protective sheath. This membrane encloses all bones completely except at the joints where there is a layer of cartilage. Beneath the periosteum lie the dense, hard layers of bone tissue called compact bone. Its composition is fibrous rather than solid and it gives bone its resiliency. Encased within these layers is the tissue that makes up most of the volume of bone, called cancellous or spongy bone because it contains little hollows like those of a sponge. The innermost portion of the bone is a hollow cavity containing marrow. Blood vessels course through every layer of bone, carrying nutritive elements, oxygen, and other products. Bone tissue also contains a large number of nerves. The basic chemical in bone, which gives bone its hardness and strength, is calcium phosphate.

DEVELOPMENT. Cartilage forms the major part of bone in the very young; this accounts for the great flexibility and resiliency of the infant skeleton. Gradually, calcium phosphate collects in the cartilage, and it becomes harder and more brittle. Some of the cartilage cells break loose, so that channels develop in the bone shaft. Blood vessels enter the channels, bearing with them small cells of connective tissue, some of which become osteoblasts, cells that form true bone. The osteoblasts enter the hardened cartilage, forming layers of hard, firm bone. Other cells, called osteoclasts, work to tear down old or excess bone structure, allowing the osteoblasts to rebuild with new bone. This renewal continues throughout life, although it slows down with age.

Cartilage formation and the subsequent replacement of cartilage by hard material is the mechanism by which bones grow in size. During the period of bone growth, cartilage grows over the hardened portion of bone. In time, this layer of cartilage hardens as calcium phosphate is added, and a fresh layer grows over it, and it too hardens. The process continues until the body reaches full growth. Long bones grow in length because of special cross-sectional layers of

cartilage located near the flared ends of the bone. These harden and new cartilage is produced by the same process as previously described.

BONE DISORDERS. **FRACTURE**, a break in the bone, is the most common injury to the bone; it may be closed, with no break in the skin, or open, with penetration of the skin and exposure of portions of the broken bone. **OSTEOPOROSIS** is excessive brittleness and porosity of bone in the aged. **OSTEOMYELITIS** is a bone infection similar to a boil on the skin, but much more serious because blood supply to bone is less exquisite than that to other body organs and bone metabolizes more slowly, so that the infection can destroy the bone and invade other body tissues. **OSTEOMALACIA** is the term used for **RICKETS** when it occurs in adults. In these diseases there is softening of the bones, due to inadequate concentration of calcium or phosphorus in the body. The usual cause is deficiency of vitamin D, which is required for utilization of calcium and phosphorus by the body. In **OSTEITIS FIBROSA CYSTICA**, bone is replaced by fibrous tissue because of abnormal calcium metabolism. The condition usually is due to overactivity of the parathyroid glands. **OSTEOMA** refers to abnormal new growth, either benign or malignant, of the tissue of the bones. Although it is not common, it may occur in any of the bones of the body, and at any age.

alveolar bone the thin layer of bone making up the bony processes of the maxilla and mandible, surrounding and containing the teeth; it is pierced by many small blood vessels, lymphatic vessels, and nerves.

ankle bone **talus**.

brittle b's **osteogenesis imperfecta**.

bundle bone **lamina dura**.

cancellated bone (cancellous bone) bone composed of thin intersecting lamellae, usually found internal to compact bone.

cartilage bone bone developing within cartilage, ossification taking place within a cartilage model, as opposed to membranous bone.

cheek bone zygomatic bone.

collar bone **clavicle**.

compact bone bone substance that is dense and hard.

cortical bone the compact bone of the shaft of a bone that surrounds the marrow cavity.

cranial b's the bones that constitute the **CRANIUM**, including the occipital, sphenoid, temporal, parietal, frontal, ethmoid, lacrimal, and nasal bones, the inferior nasal concha, and the vomer. Some authorities also include the maxilla, zygomatic bone, and palatine bone. See anatomic Table of Bones in the Appendices.

ethmoid bone the sievelike bone that forms a roof for the nasal fossae and part of the floor of the anterior cranial fossa. See anatomic Table of Bones in the Appendices.

facial b's the bones that form the skeleton of the face, including the hyoid, palatine, and zygomatic bones, the mandible, and the maxilla. Some authorities include the lacrimal bones, nasal bones, inferior nasal concha, and vomer and exclude the hyoid bone. See anatomic Table of Bones in the Appendices.

flat bone one whose thickness is slight, sometimes consisting of only a thin layer of compact bone, or of two layers with intervening cancellous bone and marrow; usually curved rather than flat.

frontal bone the bone at the anterior part of the skull. See anatomic Table of Bones in the Appendices.

heel bone **calcaneus**.

hip bone the ilium, ischium, and pubis as a unit. See anatomic Table of Bones in the Appendices.

hyoid bone a horseshoe-shaped bone at the base of the tongue. See anatomic Table of Bones in the Appendices. Called also **lingual bone**.

incisive bone the portion of the maxilla bearing the incisors; developmentally, it is the premaxilla, which in humans later fuses with the maxilla, but in most other vertebrates persists as a separate bone.

innominate bone **hip bone**.

jaw bone either the **MANDIBLE** (lower jaw) or the **MAXILLA** (upper jaw). See anatomic Table of Bones in the Appendices.

jugal bone **zygomatic bone**.

lingual bone **hyoid bone**.

long bone one whose length far exceeds its breadth and thickness.

malar bone **zygomatic bone**.

marble b's **osteopetrosis**.

mastoid bone **mastoid PART of temporal bone**.

membrane bone (**membranous bone**) bone that develops within a connective tissue membrane, in contrast to cartilage bone.

occipital bone the bone constituting the back and part of the base of the skull. See anatomic Table of Bones in the Appendices.

parietal bone one of two bones forming the sides and roof of the cranium. See anatomic Table of Bones in the Appendices.

pelvic bone **hip bone**.

petrous bone **petrous PART of temporal bone**.

pneumatic bone bone that contains air-filled spaces.

premaxillary bone **premaxilla**.

pterygoid bone **pterygoid process**.

rider's bone localized ossification sometimes seen on the inner aspect of the lower end of the tendon of the adductor muscle of the thigh in horseback riders.

shin bone **tibia**.

short bone one of approximately equal length, width, and thickness.

solid bone **compact bone**.

spongy bone **cancellous bone**.

squamous bone **squamous PART of temporal bone**.

sutural bone any of the variable and irregularly shaped bones in the sutures between the bones of the skull. Called also **wormian bone**.

temporal bone one of two bones forming part of the lateral and inferior surfaces of the skull and containing the organs of **HEARING**. See anatomic Table of Bones in the Appendices.

thigh bone **femur**.

turbinate bone a nasal **CONCHA**.

tympanic bone **tympanic PART of temporal bone**.

wormian bone **sutural bone**.

zygomatic bone the quadrilateral bone that forms a cheek. See anatomic Table of Bones in the Appendices.

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cal·ca·ne·us , gen. and pl. **cal·ca·ne·i** (kal-kā'nē-ūs, -kā'nē-ī),

1. The largest of the tarsal bones; it forms the heel and articulates with the cuboid anteriorly and the talus superiorly.

Synonym(s): **calcaneal bone**, **calcaneum**, **heel bone**, **os calcis**

2. Synonym(s): **talipes calcaneus**

[L. the heel (another form of *calcaneum*)]

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calcaneus (kāl-kā'nē-əs) also **calcaneum** (-nē-əm)

n. pl. **calca·nei** (-nē-ī) also **calca·nea** (-nē-ə)

The quadrangular bone at the back of the tarsus. Also called *heel bone*.

cal·ca'ne·al *adj.*

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calcaneus The largest tarsal bone, which articulates anteriorly with the cuboid and superiorly with the talus. It is the point of origin of the abductors of the great and little toes and point of insertion of the Achilles tendon.

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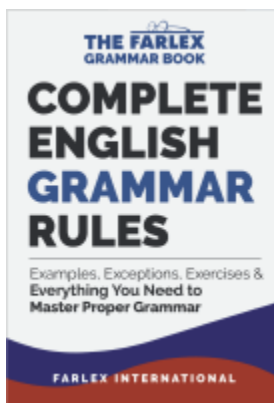
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calcaneus The heel bone, or os calcis.

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