

FUNCTIONS OF FOOT

- **Support body weight**
- **Serves as a lever to propel the body forward in walking & running**

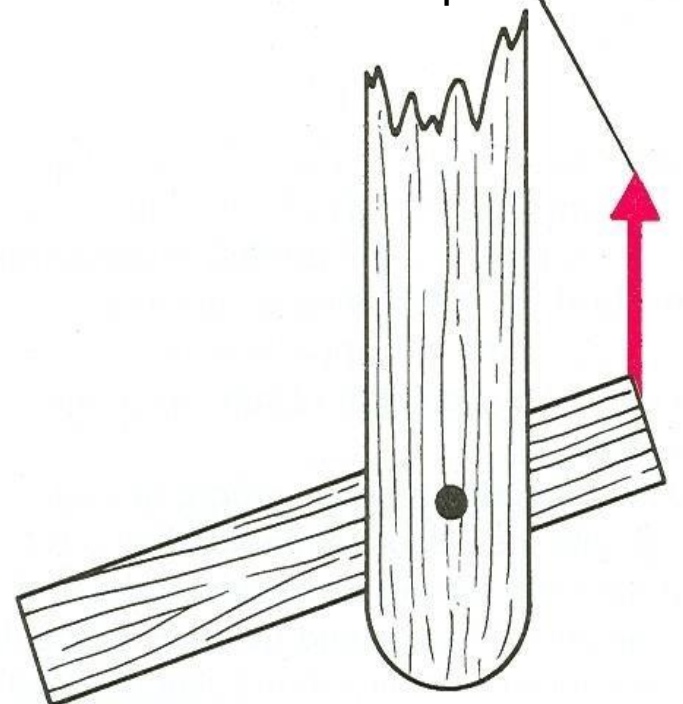
FUNCTIONS OF FOOT

**IF THE FOOT
POSSESSED A
SINGLE BONE**

- **It cannot adapt itself to uneven surfaces**
- **Its propulsive action depends entirely on gastrocnemius & plantaris**

BUT

Gastrocnemius & plantaris

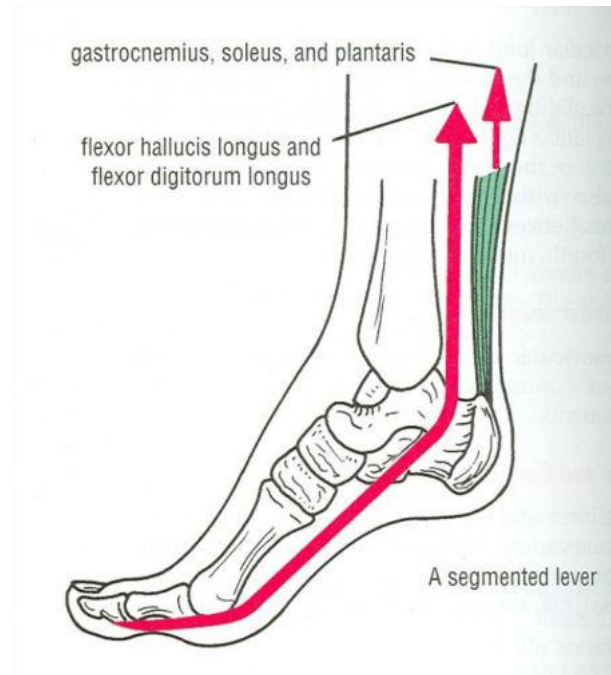


A simple lever

FUNCTIONS OF FOOT

IF THE FOOT IS FORMED OF SMALL BONES & MANY JOINTS

- **It can adapt itself to uneven surfaces**
- **Long flexors & small muscles of foot assist in propulsive action**

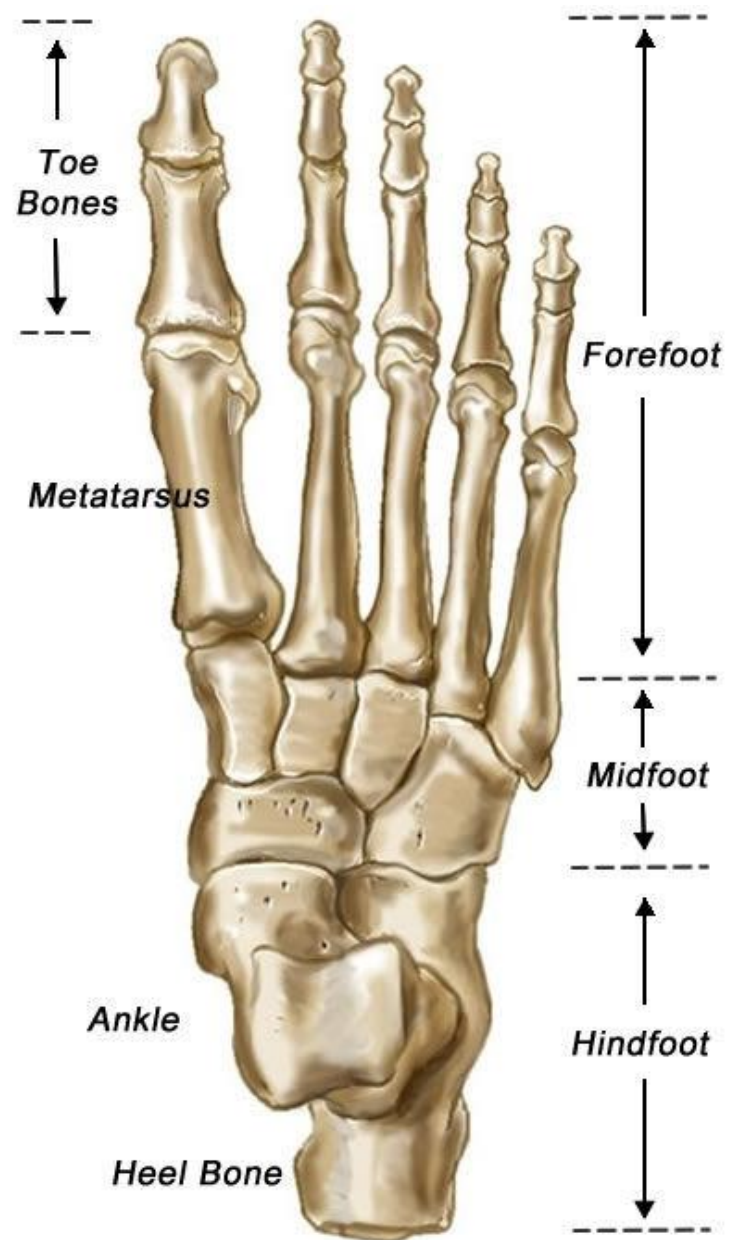


WHY THERE ARE ARCHES?

- **A segmented structure can hold up weight only if it is built in the form of arches**
- **Weight will be distributed on: 1) the heel (behind) & 2) heads of metatarsal bones (in front): pressure will be minimized on nerves & vessels in sole**
- **Forward propulsive action will be easier**

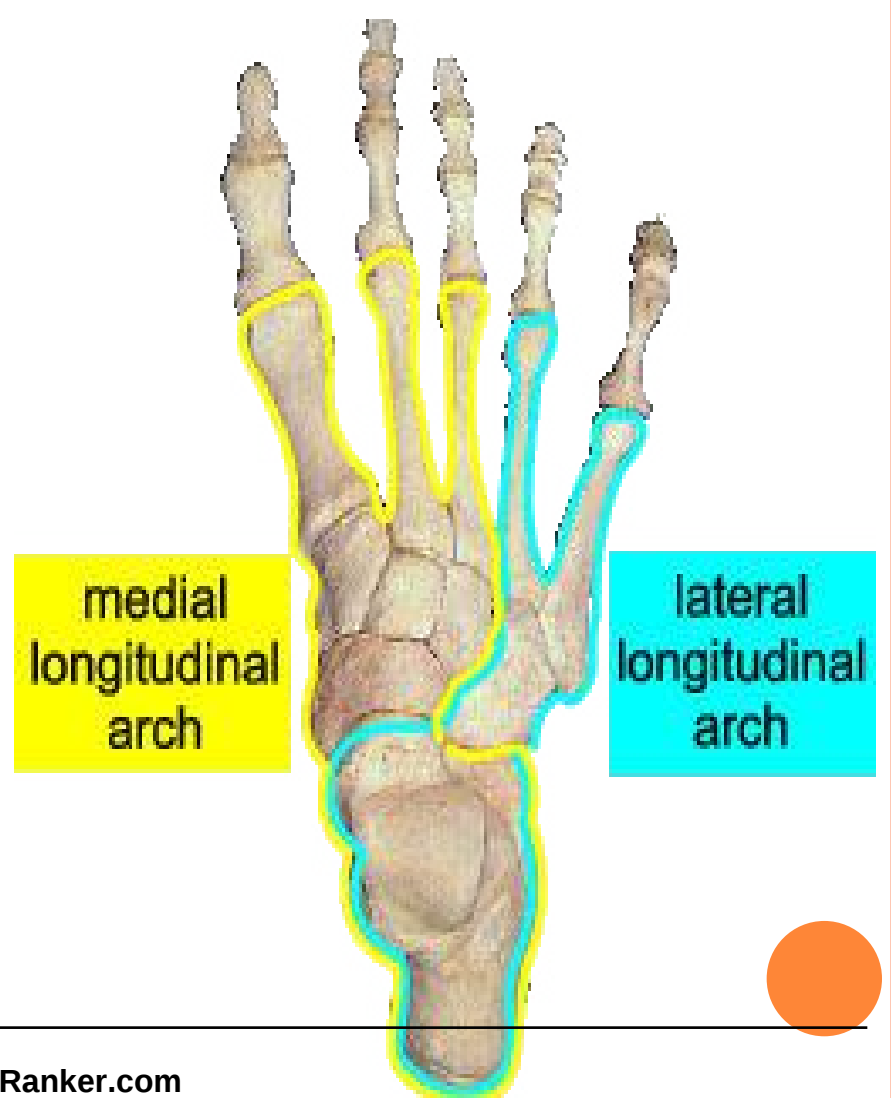
FOOT DIVISION

- Hind-foot
- Mid-foot
- forefoot



CLASSIFICATION OF ARCHES

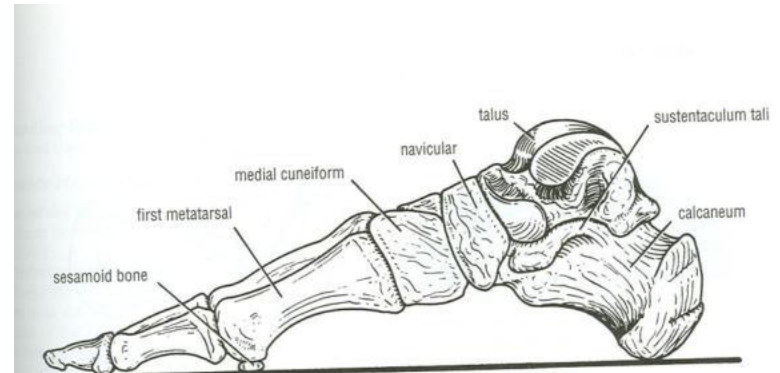
- A. Longitudinal
 1. medial
 2. lateral
- B. TRANSVERSE
 1. ANTERIOR
 2. POSTERIOR



ARCHES OF FOOT

MEDIAL LONGITUDINAL ARCH:

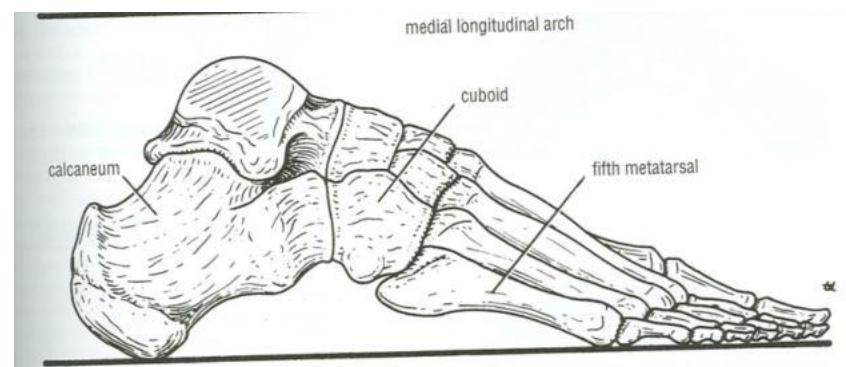
- Higher than lateral arch
- Formed of: calcaneum, talus (key stone), navicular, three cuneiform & first three metatarsal bones



ARCHES OF FOOT

LATERAL LONGITUDINAL ARCH:

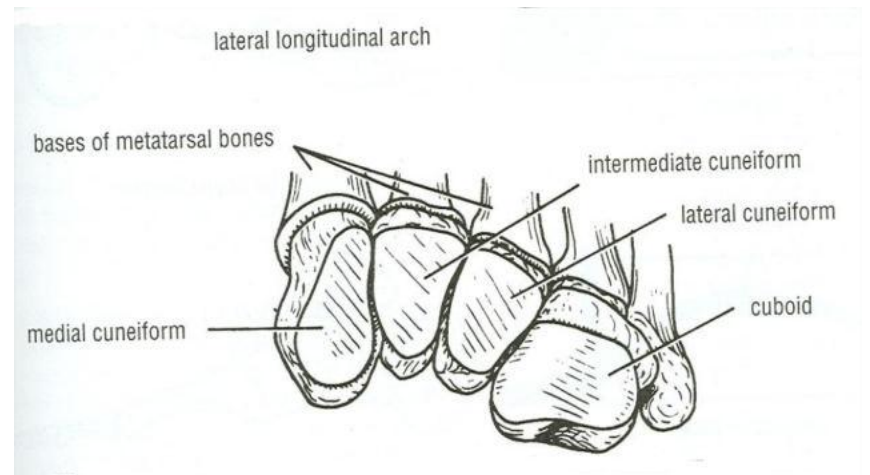
- Lower than medial arch
- Formed of: calcaneum, cuboid (key stone), fourth & fifth metatarsal bones



ARCHES OF FOOT

TRANSVERSE ARCH:

- It is only half an arch
- It is formed of: bases of metatarsal bones, cuboid & three cuneiform bones



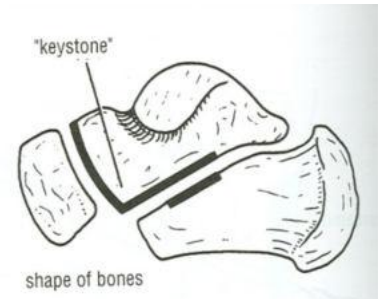
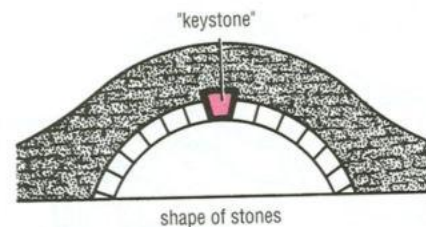
FACTORS MAINTAINING ARCHES OF FOOT

- Shape of bones
- Strength of ligaments
- Tone of muscles

MECHANISM OF ARCH SUPPORT

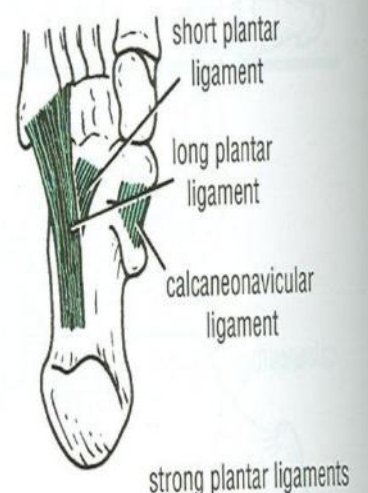
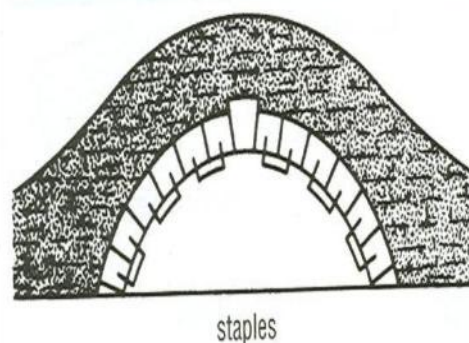
SHAPE OF BONES

- Bones are wedge-shaped with the thin edge lying inferiorly
- This applies particularly to the bone occupying the center of the arch **“keystone”**



MECHANISM OF ARCH SUPPORT

INFERIOR EDGES OF BONES ARE TIED TOGETHER



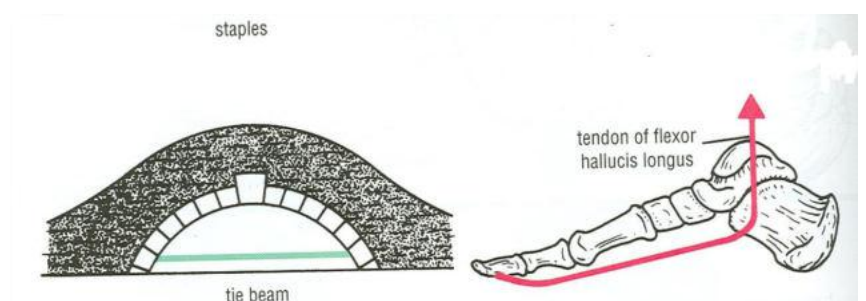
MECHANISM OF ARCH SUPPORT

INFERIOR EDGES OF BONES ARE TIED TOGETHER

- **Medial longitudinal arch:** plantar calcaneonavicular ligament, tibialis posterior
- **Lateral longitudinal arch:** long & short plantar ligaments
- **Transverse arch:** deep transverse ligaments, transverse head of adductor hallucis, dorsal interossei

MECHANISM OF ARCH SUPPORT

TYING THE ENDS OF THE ARCH TOGETHER



MECHANISM OF ARCH SUPPORT

TYING THE ENDS OF THE ARCH TOGETHER

- **Medial longitudinal arch:** plantar aponeurosis, medial part of flexor digitorum longus & brevis, flexor hallucis longus, flexor hallucis brevis, abductor hallucis
- **Lateral longitudinal arch:** plantar aponeurosis, lateral part of flexor digitorum longus & brevis, abductor digiti minimi, flexor digiti minimi
- **Transverse arch:** peroneus longus

MECHANISM OF ARCH SUPPORT

SUSPENDING THE ARCH FROM ABOVE



MECHANISM OF ARCH SUPPORT

SUSPENDING THE ARCH FROM ABOVE

- **Medial longitudinal arch:** tibialis anterior, tibialis posterior, medial ligament of ankle joint
- **Lateral longitudinal arch:** peroneus longus, peroneus brevis
- **Transverse arch:** peroneus longus

PES PLANUS (FLAT FOOT)

- A condition in which the medial longitudinal arch is depressed
- The forefoot is everted
- The head of talus is forced downward & medially
- The causes are both congenital and acquired