Bones of Foot
Lateral View
Arches of foot

• Foot serves two main functions:
  Support the body weight
  Serve as a lever to propel the body
Arches of foot

Integrity of foot is maintained by:

• Shape of the interlocking bones
• Strength of the plantar ligaments
• Plantar aponeurosis
• Action of Muscles
Bones of the Arches

**Medial:** Calcaneum, talus, navicular, three cuneiforms and first three metatarsals

**Lateral:** Calcaneum, cuboid and 4th & 5th metatarsals

**Transverse:** Bases of metatarsals, cuboid and three cuneiforms.
Mechanism of Arch support

- **Shape**: Wedge shaped. Central stone as keystone.
- **Staples**: Inferior edges of the stones are tied together.
- **Tie beam**: connecting the ends to prevent separation of pillars and sagging of the arch.
- **Suspension bridge**: Multiple supports suspending the arch from the cable above the level of bridge.
Maintenance of the arches

- **Medial**: **Shape** (key stone-talus)
  **Staples**: Plantar ligaments, Tendon of tibialis posterior
  **Tie beam**: Plantar aponeurosis, flexor dig. brevis, abductor hallucis, flexor hallucis longus, flexor dig. Longus, flexor hallucis brevis
  **Suspension arch**: Tibialis anterior, post. And medial ligaments of ankle joint.
Maintenance of the arches

- **Lateral: Shape** (key stone-cuboid)
  - **Staples:** Long and short plantar ligaments, short muscles of foot.
  - **Tie beam:** Plantar aponeurosis, abductor digiti minimi, flexor dig. brevis & flexor dig. longus (lateral part)
  - **Suspension arch:** peroneus longus and brevis.
Maintenance of the arches

• Transverse: **Shape** Wedge shape cuneiforms & bases of metatarsals.

**Staples:** deep transverse ligaments, plantar ligaments, short muscles of foot (dorsal introssei & adductor hallucis.

**Tie beam:** Tendon of peroneus longus

**Suspension arch:** peroneus longus and brevis.
Applied anatomy

• Pes planus (flat foot)
• Claw foot (pes cavus)
• Hallux Valgus
• Hammer toe
• Club foot (talipes equinovarus)
(A) Clubfoot or talipes equinovarus

(B) Ankle joint (plantarflexed)

Talus (deformed)

Tibionavicular ligament and tendons of extensor digitorum longus, tibialis anterior, and extensor hallucis longus tendons (note tightness)

Calcaneus (inverted)

Bones of forefoot (in extreme varus position)