

# ANATOMIA DEL PIEDE<sup>i</sup>

## Il piede

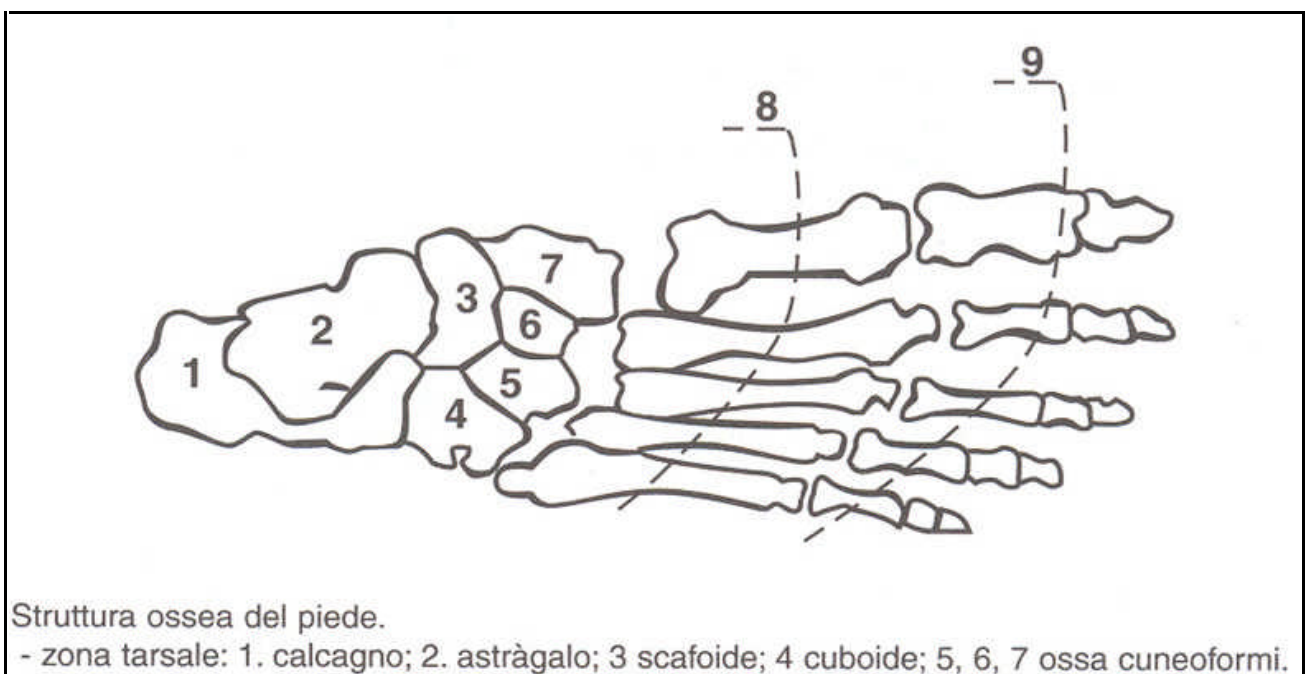
*“The human foot is a work of art and an engineering masterpiece”.*  
**Michelangelo Buonarroti.**

**When we study the foot anatomy we have to consider its constitutive parts:**

- **bones;**
- **muscles and tendons;**
- **ligaments;**
- **articulation;**
- **arches;**
- **nerves and blood vessels;**
- **sudoriferous glands.**

### 1. Osseous tissue.

**The human foot is a pair organ and is symmetric, made of 52 bones. We can divide the foot skeleton into three sections (figure 1).**

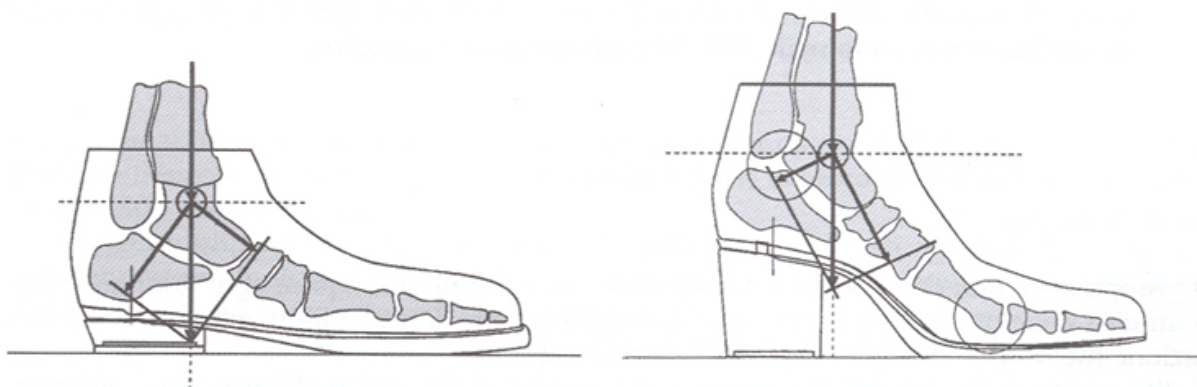


- **Tarsus, made of 7 bones: heel bone, talus, scaphoid, cuboid and three cuneiform bones;**
- **Metatarsus, made of 5 bones;**
- **Phalanx or Finger Bones, made of 14 bones.**



L'articolazione del piede nella sua struttura:

1. metatarsofalangica; 2. tarso/metatarsica; 3. medio/tarsica; 4. tibio/tarsica; 5. sotto/astragalica.

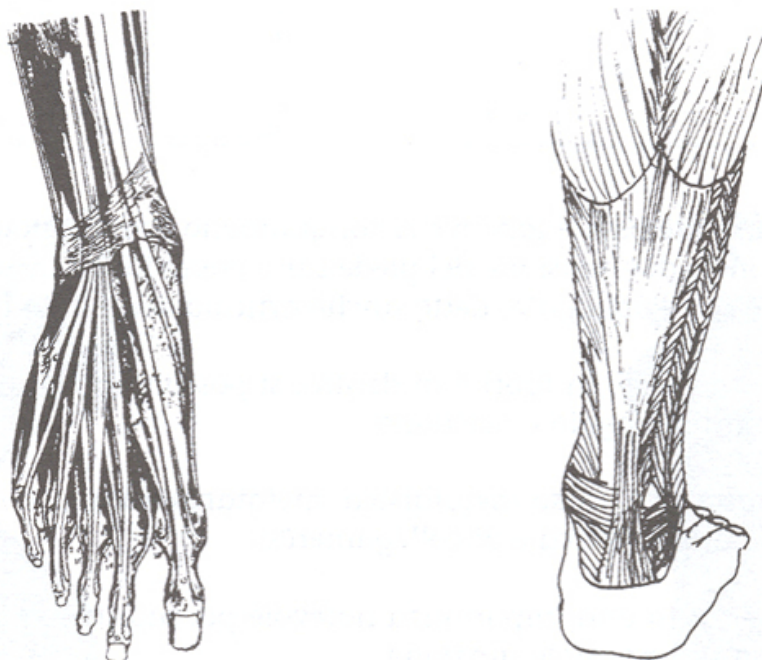


Ridistribuzione del peso del corpo fra la parte anteriore e quella posteriore del piede per due diverse altezze di tacco della calzatura.

## 2. Muscles and tendons.

**The foot is made of 32 muscles and tendons, 18 of them are placed in the sole and 13 start from the leg bones, mostly from the shin-bone.**

**They allow the foot to move in the zone which connects the leg to toes.**

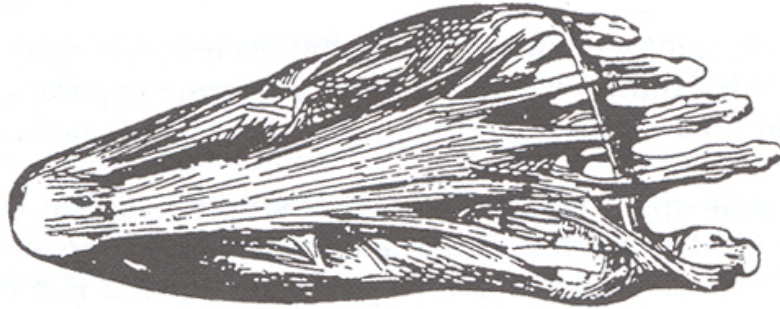


A sinistra: schematizzazione di muscoli e tendini della gamba che si estendono lungo la parte superiore del piede.

A destra: rappresentazione schematica di muscoli e tendini della parte posteriore della gamba e particolare del tendine di Achille.

### 3. Ligaments.

**The function of 107 ligaments of the foot, is to tie up junctions to allow them the necessary moves without creating relaxation of fibers.**



Rappresentazione schematica della "fascia plantare" di ligamenti che interviene sia nella veste di ammortizzatore di colpi che di aiuto nel dare stabilità e compattezza al piede.

### 4. Articulations.

**The foot is made up of many of bones where they joined together and they produce articulations. Thanks to tibiotarsal articulation which connect shin-bone, fibula and talus, foot-bends and extension of the foot are possible.**

### 5. Arches.

#### a) Internal longitudinal Arch.

**The foot shows a principal arch called "internal longitudinal arch" which starts from the heel bone to the first metatarsus. This arch is similar to a spring serves as absorber and attenuator of stress and shock.**

#### b) External longitudinal arch.

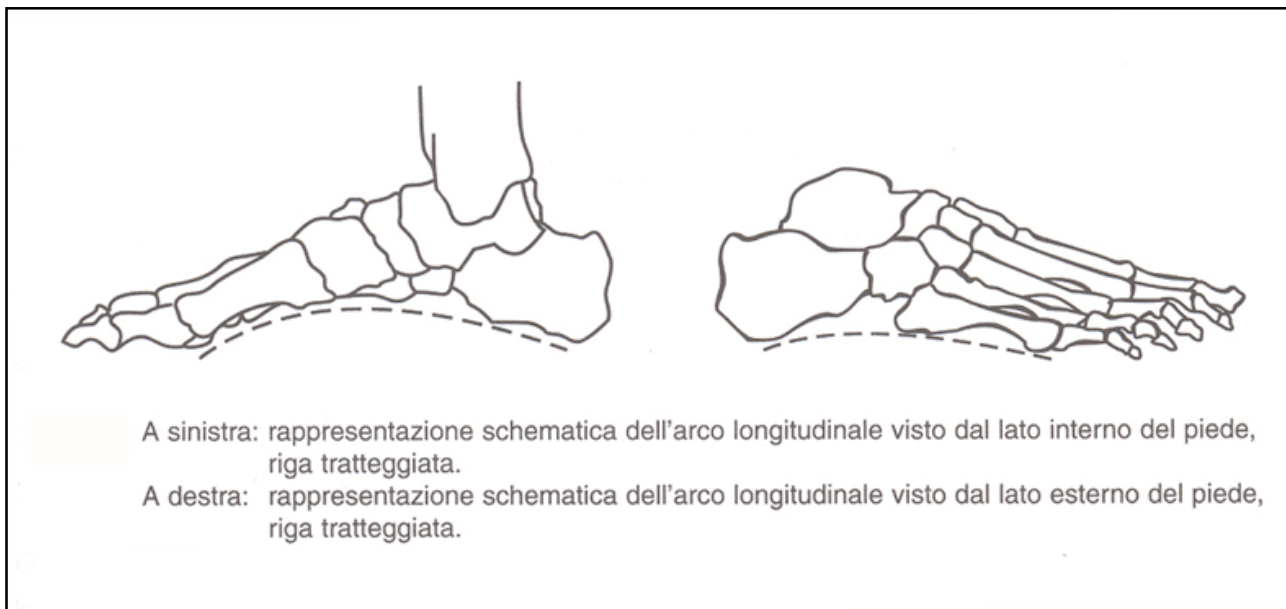
**In the foot skeleton the internal longitudinal arch, expands from the anterior part of the heel bone to the top of the fifth metatarsus.**

#### c) Anterior metatarsal arch.

**This arch involves the head zone of fifth of metatarsal bones and it is a light dome-shaped curve.**

**d) Transverse arch.**

**Transverse arch, interdependent with the internal longitudinal arch, involves the transversal section which concerns the bases of five metatarsal bones.**



## **6. Nerves and blood vessels.**

**Foot nerves can be distinguished as sensors of a electric system of impulses which allows to send messages inherent in warm, cold, pressure, pain, and general sicknesses.**

**Blood system transports from more than 50 litre to about 90 litre of blood which daily blow through each feet.**

## **7. Sudoriferous glands.**

**Sudoriferous glands are present at the foot in a great number, for unity of surface, more than in other parts of the human body.**

**A canal introduces from the gland and carries the humidity to the surface.**

**It is one way of eliminating undesired liquid and in this manner it preserves the skin's elasticity and helps it to check the body temperature. When the body becomes hot, for insulation, muscular efforts, or fever, a greater quantity of sweat is produced and this refreshes the body while it evaporates.**

---

<sup>i</sup> Stella, S. " *Notebooks Innovation For the Shoe Industry*", Vigevano, Assomac Edition, 2002.

Viladot, A. " *Pathology and clinical of the foot*", Verducci Publisher, 1991.

Morlacchi, A.; Belotti, G.; Gambino, F. " *The shoe enterprise: planning, technique and organization.* ", Three Score B. Publishing Saint Mark, 1998.