

Metatarsal bones

They are localized on the distal part of the back of the foot and the distal part of the foot. They are therefore connected to the tarsal bones (ossa tarsalia) and then pass into the bones of the phalanges of the fingers. There are 5 tarsal bones in total, they are referred to as the 1st to 5th tarsal bone (os metatarsal I-V) and together they form an area called the tarsus (lat. metatarsus).

Structure of tarsal bones

- Each bone consists of three parts:
 - Basis (base)** = wider proximal section of bone,
 - on the proximal edge there is a flat surface for articulation with the tarsal bone,
 - on the sides there are facets for articulation with the secondary tarsal bones (they are not constant in the metatarsal I axes).
 - Corpus (body)** = middle elongated narrower section of bone,
 - the body of the os metatarsal I is massive,
 - bodies in ossa metatarsalia II-V are distal narrowed and slender.
 - Caput (head)** = mounts distal to the body of the bone,
 - on the side edges it is sagged,
 - Distal has a convex articular surface. Between the individual bones of the instep are the spatia intermetatarsalia, these are the four spaces in which mm. interossei pedis are located.



Leg bones

Some bones have a characteristic structure:

- Os metatarsal I – shorter thick bone, at the proximal end of the base has a kidney-shaped articular surface for the cuneiforme mediale os and on the plantar side of the base juts out in tuberositas ossis metatarsi I.
- Os metatarsal II – the longest of the tarsal bones, is inserted between all three ossa cuneiformia (at the base it has 3 contact facets).
- Os metatarsal V – the lateral side of the base juts out in tuberositas ossis metatarsi V (palpable).



Metatarsal bones

Ossification of tarsal bones

Like the metacarpus, the metatarsus of the monoepiphyseal bone is metatarsus. Thus, ossification takes place from the diaphysis and from their single pineal gland. In the 1st metatarsus, the pineal gland is at the base (similar to the bones of the phalanges). In the 2nd-5th metatarsus, the pineal gland lies at the head of the bone. In the ends without pineal glands, their signs – pseudoepiphyses – may appear.

The process of ossification itself begins in the diaphyses around the 9th week of prenatal development (in the 1st and 5th metatarsus from the 10th week). Ossification nuclei appear in the epiphyses from the 3rd year postnatally. Diaphyses grow together with the pineal glands between 17 and 20 years of age.

Variation of tarsal bones

The most common is **os Vesali (os Vesalianum)** = separately ossifying tuberositas ossis metatarsi V. It arises as a result of phylogenetic development, because it is an element of the tarsus that connects to the 5th metatarsus only secondarily.

Os intermetatarsal (Gruberi) = temporary element of mesenchyma or cartilage. It occurs in embryonic development between the bases of the axes of metatarsal I and II (closely at ossa cuneiformia).

Articular connections

- Articulationes tarsometatarsales** – between the tarsus and the bases of the metatarsus. It consists of three joints:
 - medial cuneiforme bone – metatarsal bone bases I,
 - the cuneiforme intermedium et laterale – the metatarsale II et III,
 - the cuboideum s the metatarsale IV et V.

- strengthened with the help of tarsometatarsal ligaments (plantaria, dorsalia, interossea).
- **Articulationes intermetatarsales** – connect the bases of individual metatarsus.
- **Articulationes metatarsophalangeae** – connect the heads of the metatarsus with the sockets on the proximal phalanges of the fingers,
 - Strengthened with the help of metatarsophalangeal ligaments (collateralia, plantaria) and also with the help of the ligamentum metatarsal transversum profundum.
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Links

Related Articles

- - Joints of the foot
 - Bone
 - Articulationes

Bibliography

- ČIHÁK, Radomír. *Anatomie I*. 2. edition. Praha : Grada, 2001. 516 pp. ISBN 978-80-7169-970-5.