Foot 2

- Arches of foot
  - Medial longitudinal arch
    - higher than the lateral one
      - Construction
        - Formed by 9 bones
          - Calcaneus
          - talus
          - navicular
          - 3 cuneiforms and med
          - 3 metatarsals
      - pillars
        - Ant. pillar: Heads of med. 3 metatarsal bones
        - Post. pillar: calcaneus
      - Key stone
        - body of talus
      - Factors maintaining the arch
        - Bony factor
          - most of the bones are wedge shaped
        - inter-segmental ties
          - (uniting the different segments of the arch)
            - Ligaments
              - Spring ligament
              - interosseous ligaments
        - tie beams
          - (connecting the ends of the arch)
            - Ligaments
              - Plantar aponeurosis
            - Muscles
              - abd. Hallucis
              - flexor hallucis brevis
              - flexor digitorum brevis
              - flexor digitorum longus
  - lateral longitudinal arch
    - Construction
      - Formed by 4 bones
        - calcaneus
        - cuboid
        - 4th and 5th metatarsal bones
    - pillars
      - Ant. pillar : heads of 4th and 5th metatarsal bones
      - Post. pillar:calcaneus
    - Key stone
      - Cuboid
    - Factors maintaining the arch
      - Bony factor
        - most of the bones are wedge shaped
      - inter-segmental ties
        - Ligaments
          - short plantar ligament
          - long plantar ligament
          - interosseous ligaments
      - tie beams
        - Ligaments
          - Plantar aponeurosis
        - Muscles
          - abd. Digiti minimi
          - flexor digiti minimi brevis
      - slings
        - Muscles
          - peroneus longus
          - peroneus brevis
          - peroneus tertius
  - Transverse arch
    - Construction
      - Formed by
        - metatarsal bones
        - cuboid
        - the 3 cuneiform bones
    - Factors maintaining the arch
      - Bony factor
        - the bones are wedge shaped
      - inter-segmental ties
        - Ligaments: e.g. deep transverse metatarsal ligament
        - muscles : e.g. : interossei muscles
      - tie beams
        - Ligaments : e.g. Plantar aponeurosis
        - Muscles: e.g. Adductor hallucis
      - slings
        - Muscles: e.g. Peroneus longus tibialis Post
- ligaments of the SOLE
  - spring ligament
  - short plantar ligament
    - (plantar calcaneo cuboid) Extends from the anterior part of calcaneus to the cuboid
  - long plantar ligament
    - strongest in the sole
    - Extended from posterior part of the calcaneus to bases of 2nd ,3rd, 4th metatarsal bones
    - Crosses the plantar surface of cuboid converting its groove into a tunnel for peroneus longus
- Functions of the arches
  - Distribution of body weight to weight bearing areas:
    - Body weight reaching the talus is distributed as follows
      - 1/2 the weight is delivered backwards to calcaneus
      - While the other 1/2 is delivered anteriorly to heads of metatarsal bones
  - The concavity of the arches protect the soft tissue of sole.
  - Shock absorbers as in jumping.
  - Act as spring which helps in walking and running.

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