

# Acute Ankle Injury Assessment

## Utilizing the Ottawa Ankle Rules



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# Orthopedic Assessment Overview

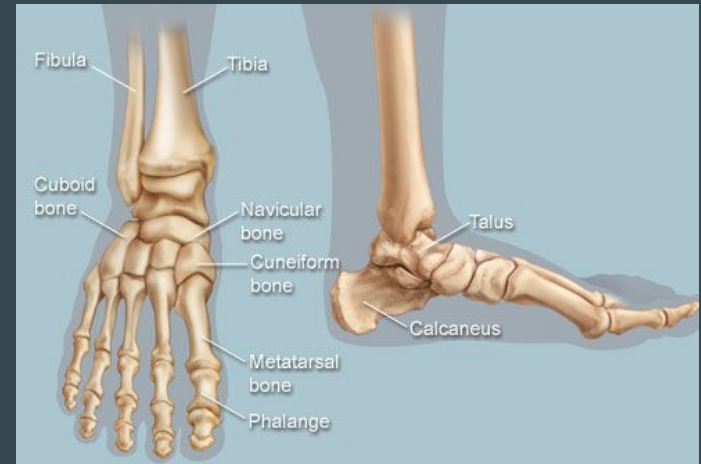
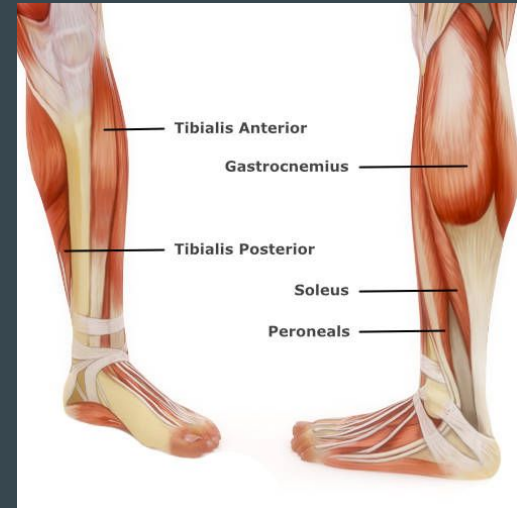
- 4 main tissue types in the orthopedic realm
  - Bone, ligament, muscle/tendon, vascular/nerve
- Goal is to rule in or rule out involvement of different tissues
- I speak about involvement of tissues in terms of “suspicion”
  - low vs moderate vs high
- Mechanism of Injury
  - If accurate, can be used to narrow down involved tissues

# Basic Steps in Orthopedic Assessment

- Observation
  - Deformity, Swelling, Discoloration
- Palpation
  - Quality of Tissue, Diffuse vs Point Tender
- Range of Motion
  - Active (AROM) vs Passive (PROM)
- Muscle Activation
  - Active vs Resisted
- Neurovascular
  - Numbness/Tingling/Shocks
  - Burning/Cold
  - Capillary Refill, Pulse Assessments
- \*Special Tissue Tests
  - Orthopedic-based
  - Joint Mobilizations
  - Nervous, Cranial

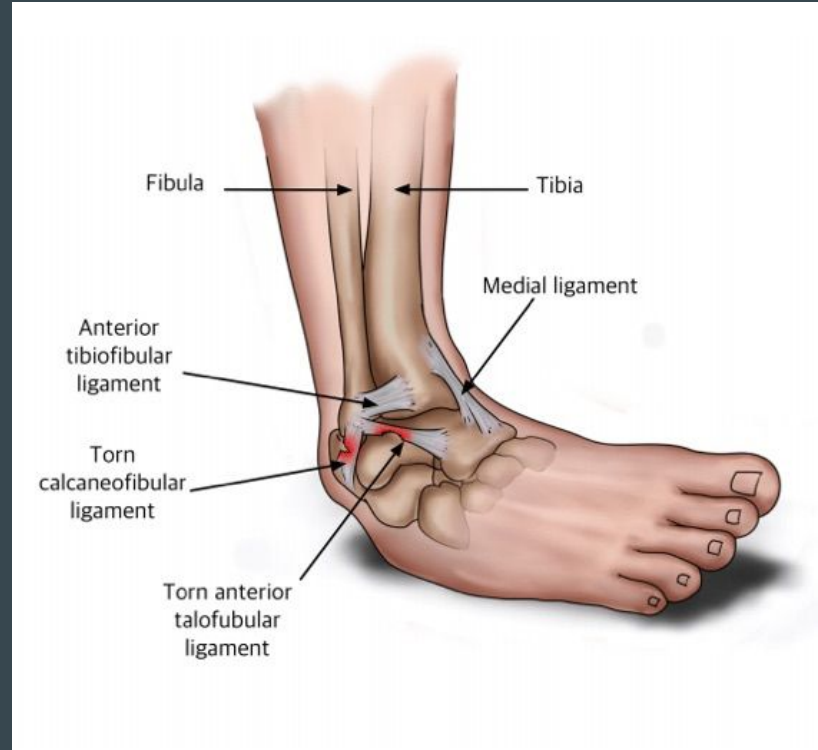
# Ankle / Lower Leg Anatomy

- Bones
  - Lower Leg: tibia, fibula
  - Foot: calcaneus, talus, tarsals, metatarsals
- Ligaments
  - Lateral: ATF, CF, PTF, tib-fib
  - Medial: Deltoid
- Muscles
  - Lower leg: gastrocnemius, soleus
  - Ankle / Foot: Tibial/Peroneal Bundles, Digitorum/Hallucis Bundles
- Nerves
  - Tibial, Super/Deep Peroneal
- Blood Supply
  - Ant/Post Tibial, Peroneal



# Ankle / Lower Leg Injuries

- Joint Dislocation
  - talocrural joint
- Fractures
  - tib-fib, base of 5th, navicular
- Ligamentous Sprains
  - lateral vs medial
- Muscle Strains
  - lateral vs medial
  - achilles tendon
- Contusions
- Nerve Irritation
  - acute vs chronic
  - drop-foot



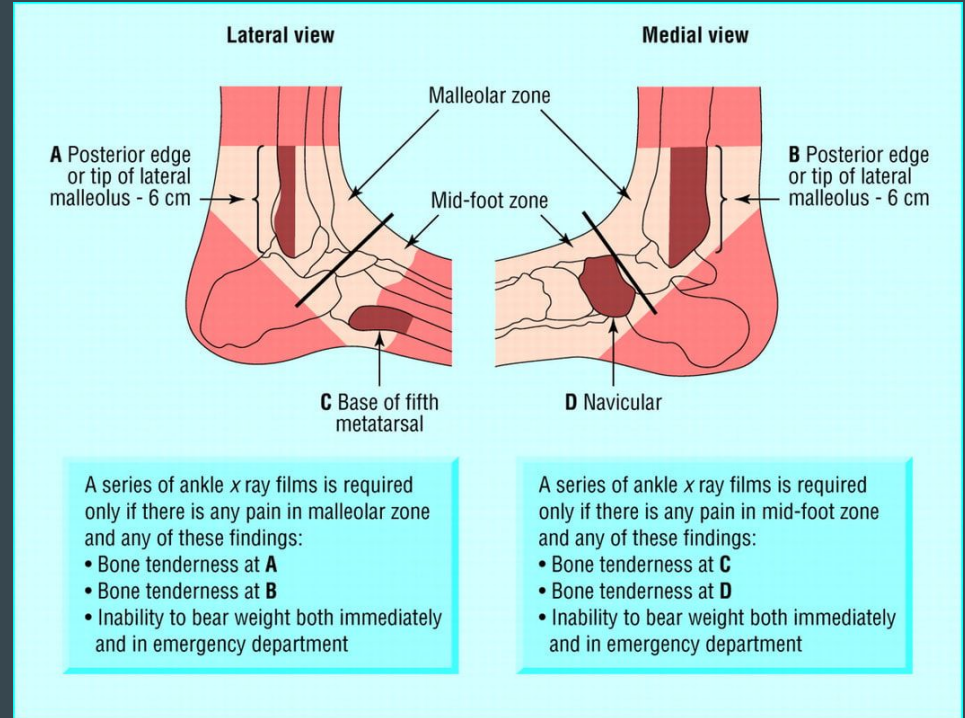
# Clinical Prediction Rules (CPRs)

- Definition: A research-based combination of medical signs, symptoms, and other clinical findings used to predict the probability of a specific pathology
- The Goal: Aid the clinician in diagnosing and/or selecting the most appropriate intervention for a given pathology
- Incorporating the Ottawa Ankle Rules into your lower leg assessment can aid in initial diagnostics and subsequent management recommendations (home/office care vs urgent care vs emergency care)
  - Dalla Ali S, Alhiraki O A, Naeem T (July 22, 2024) Evaluating Compliance With the Ottawa Rules: A Retrospective Clinical Audit at a District General Hospital in the UK. *Cureus* 16(7): e65115. doi:10.7759/cureus.65115
  - Kharel, P., Zadro, J.R., Chen, Z. *et al.* Awareness and use of five imaging decision rules for musculoskeletal injuries: a systematic review. *Int J Emerg Med* 16, 85 (2023). <https://doi.org/10.1186/s12245-023-00555-4>

# Ottawa Ankle Rules

- Estimated that approximately 25,000 ankle sprains occur per day
  - Females > Males, Pediatric > Adult
  - Healthcare \$\$
- OAR determines the need for radiographs following acute ankle injuries
  - Developed in the hospital setting to address the need for a rapid and accurate way to avoid unnecessary imaging
    - 0 symptoms = <1% chance of fx

USE THIS!



15 YO female is attended to on basketball court during a game after stepping on opponent's foot and twisting her ankle. No obvious deformity on observation, Ottawa Ankle rules 0/4, patient endorses normal sensation and movement in toes. Student is assisted non-weightbearing off court by AT and coach.

Off-court next steps:

1. Tender to palpation in diffuse nature over lateral ankle, malleolus to midfoot
2. AROM: evident but limited in all planes, painful in eversion and plantarflexion
3. Resisted muscle activation weak secondary to pain in eversion and plantarflexion
4. Pain rating 7/10 on NPRS, willing to attempt weightbearing, able to take multiple unassisted steps (final Ottawa: 0/5)

Initial management: ice x 15', compression wrap applied, picked up from school with recommendation to rest, ice, compress, gentle AROM at home as able

Follow-up: Next day 3/10 NPRS, increased swelling, improved AROM and muscle activation, able to weightbear around school with compression and ice throughout day