DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

Managing Common Foot & Ankle Injuries

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FastMed Urgent Care

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Pre-Test 1

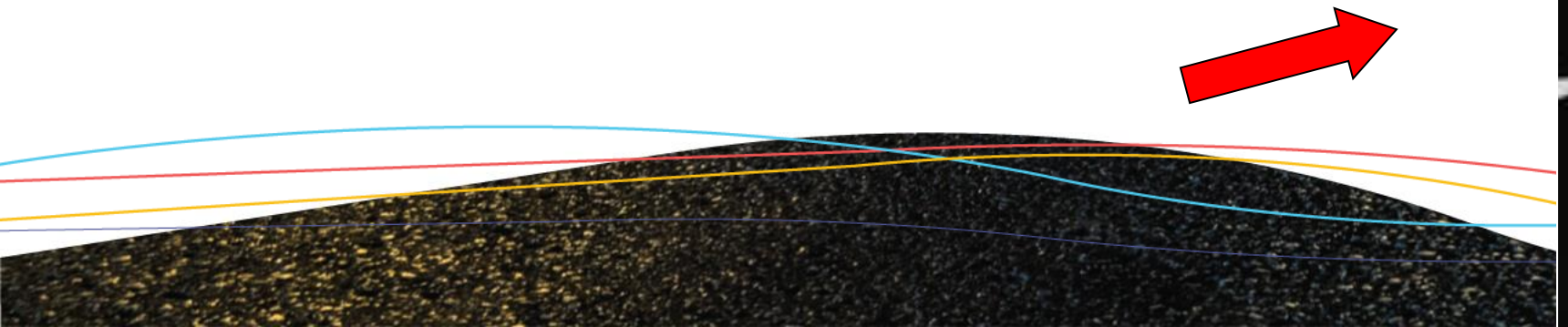
What is this called?

A. Jones Fracture

B. Metatarsal avulsion fracture

C. Salter-Harris II fracture

D. Metatarsal stress fracture



Pre-Test 2

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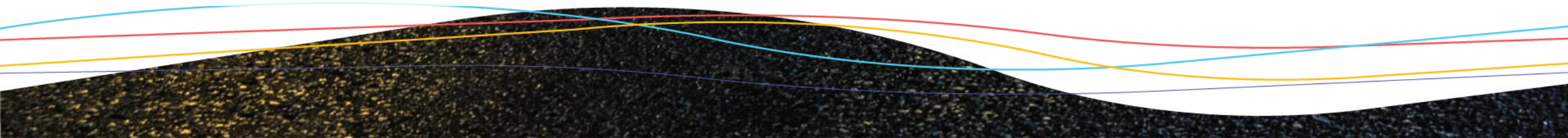
What is the most commonly injured ligament in an ankle sprain?

A. Posterior talo-fibular ligament
B. Calcaneofibular ligament
C. Anterior talo-fibular ligament
D. Deltoid ligament



Pre-Test 3

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What is this test called?

A. Appley's test
B. Talar Tilt test
C. Anterior Drawer test
D. Thompson Squeeze test

Pre-Test 4

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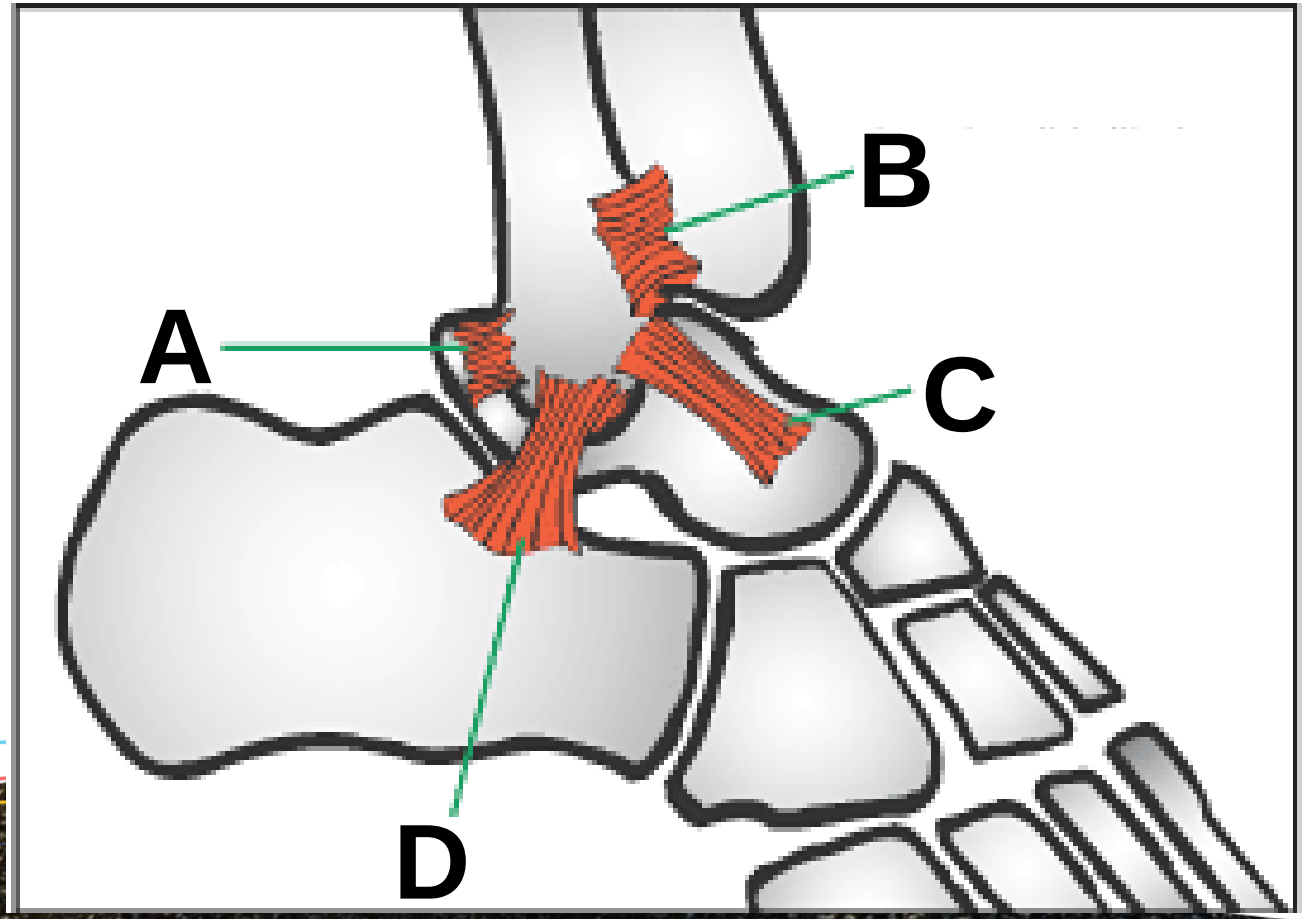
Which lateral ligament is injured in a High Ankle Sprain?



The Challenges…

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- Medical Training lacking for MSK system
- Clinicians don't develop exam confidence
- MSK problems #2 reason people seek care
- MSK exam has to hurt when patient is injured
- Clinicians worried about missing bad stuff
- Too easy to dump on ortho, so we do
- MSK care is not Rocket Science

What we are NOT going to cover

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- Things you can easily find online
- Lists of diagnosis and treatments

What we ARE going to cover

- Ways to apply your existing knowledge
- How to think differently about MSK injuries
- Techniques to improve your exam skills
- Practical but generalized approaches to foot and ankle injuries

Doc, I twisted my ankle…

Hx

- I twisted my ankle yesterday
- Swelled up immediately
- Hurts to walk on it
- I'm using ice and an ACE bandage

What is on the differential?

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- Ankle fracture
- Ankle sprain
- Tendonitis
- Contusion
- Foot fracture
- Foot sprain

What is next…

- Think horses not zebras (pretest probability)
- Gather data with the history
- Gather data with the exam
- Gather data with tests (xray)
- Test your hypothesis
- MSK medicine is easy…if you are methodical

Most Important Tools

1. Your Heart – You actually give a darn
2. Your Head – You THINK about each patient

How to form a working Differential

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- Take the 3 most likely conditions you think are at play
- Add the 2 diagnoses that if missed, can be devastating to the patient
- Use “data” to test your hypotheses…
- Hunt for horses
- Don’t let zebras sneak by (if things don’t add, up, keep thinking or gathering data)

1. Likely
2. Likely
3. Likely
4. Worrisome
5. Worrisome

MSK Exam Principles

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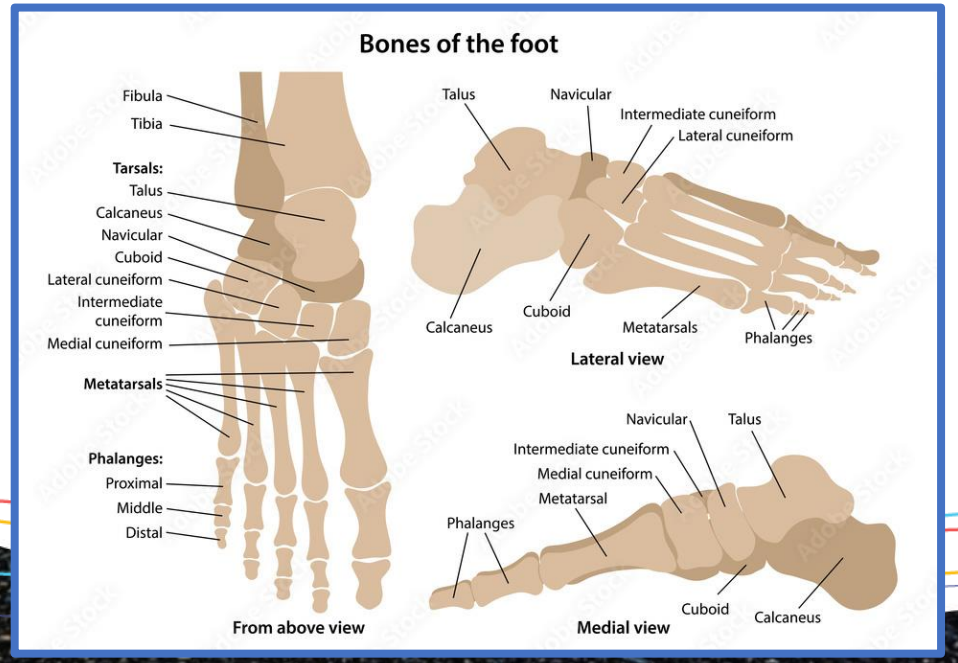
- Exams of injuries ARE painful
- It takes a lot of force to test MSK tissues (many providers too gentle)
- More bones in the feet and hands than the rest of the body combined
- Discreet palpation is a must

52 Bones

66 Joints

214 Ligaments

38 Muscle/Tendons



Two concerns I hear about this…

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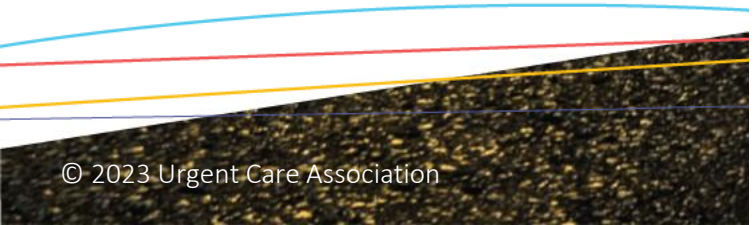
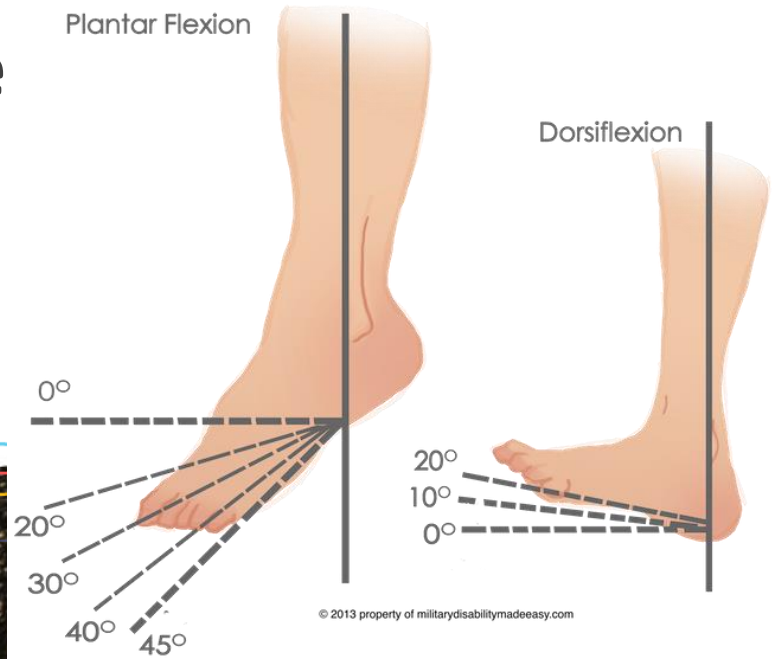
1. **"I don't want to hurt my patient"**
   - Be kind – alert patients to what you are doing
   - Focus on the important parts of the exam and save less important for last/follow-up
2. **"I don't want to injure my patient"**
   - As long as the patient is aware and has time to stop you -**THEY WILL NOT LET YOU HURT THEM**

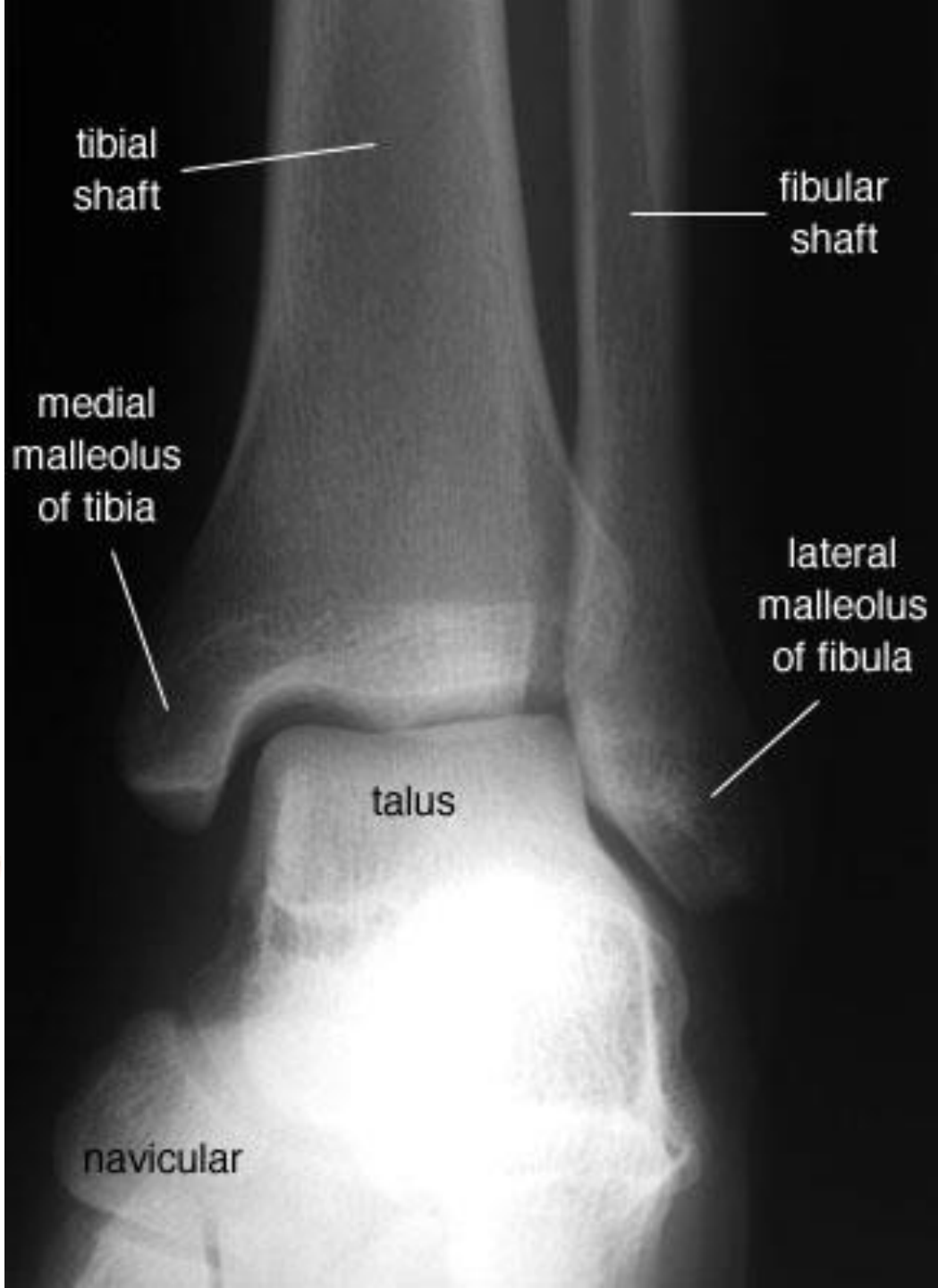
No sneak attacks
No rapid application of force

Anatomy

- Ankle is only 3 bones
- **Tibia** – medial and proximal
- **Fibula** – lateral
- This "Mortise" sits on top of the **Talus**
- Moves in 1 plane





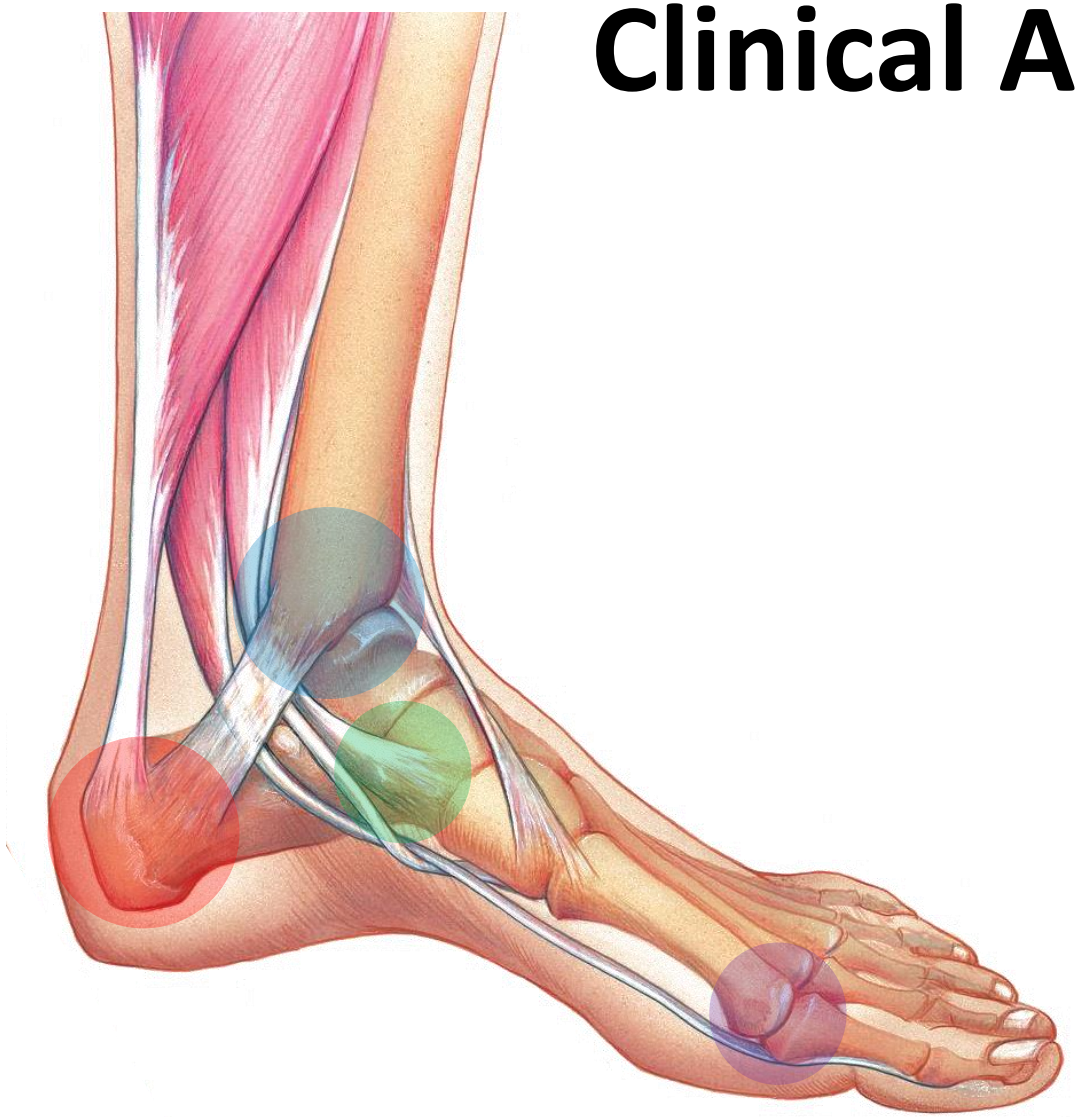


Anatomy

- Divide the foot into 3 sections and use medial and lateral to describe 6 zones.
- Hindfoot
- Midfoot
- Forefoot

- Subtalar joint- articulation between the **TALUS** and **CALCANEUS**.
- Inversion – combination of Internal Rotation and Supination
- Eversion – combination of External Rotation and Pronation
- Subtalar and midfoot.

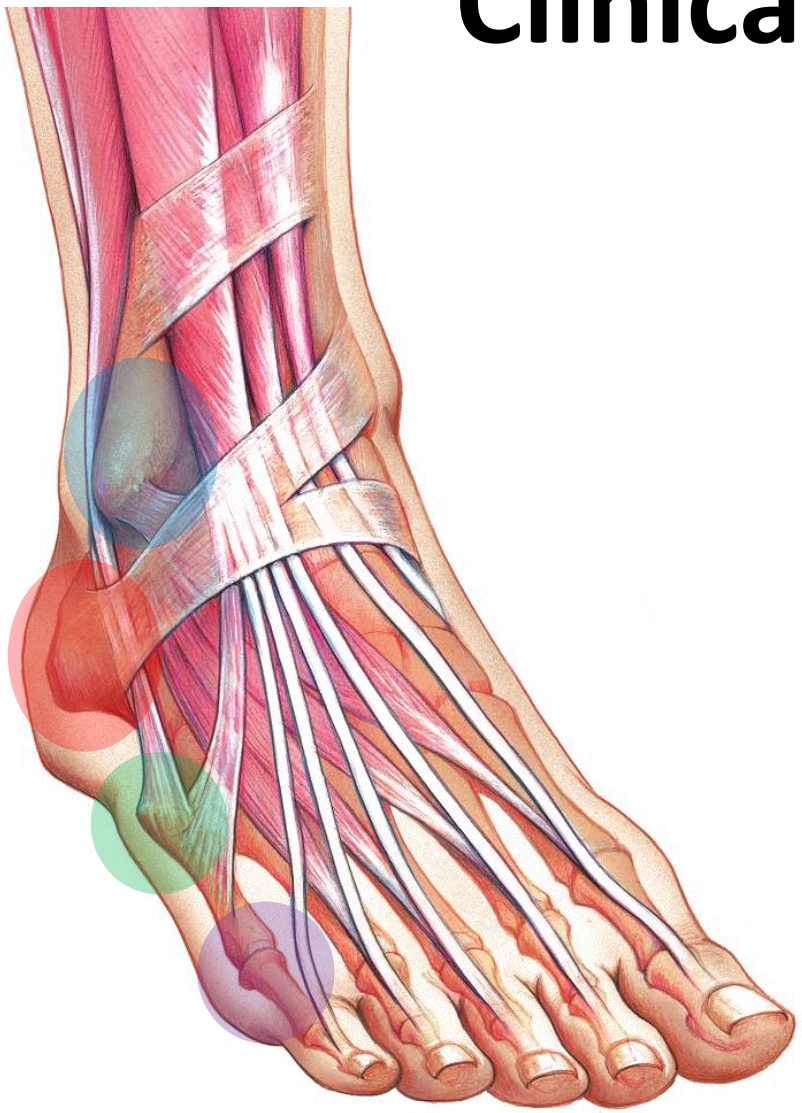
Clinical Anatomy



Make sure you palpate these structures medially

- Calcaneus
- Medial Malleolus
- Navicular Tuberosity
- 1st MP Joint

Clinical Anatomy



Make sure you palpate these structures laterally

- Calcaneus
- Lateral Malleolus
- Styloid Process of 5th Metatarsal
- 5th MP joint

How to find the Navicular

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- Cross your leg
- Start at the medial malleolus and move toward the great toe
- When you feel the bone sticking up you are on it

Palpation – use the right tool

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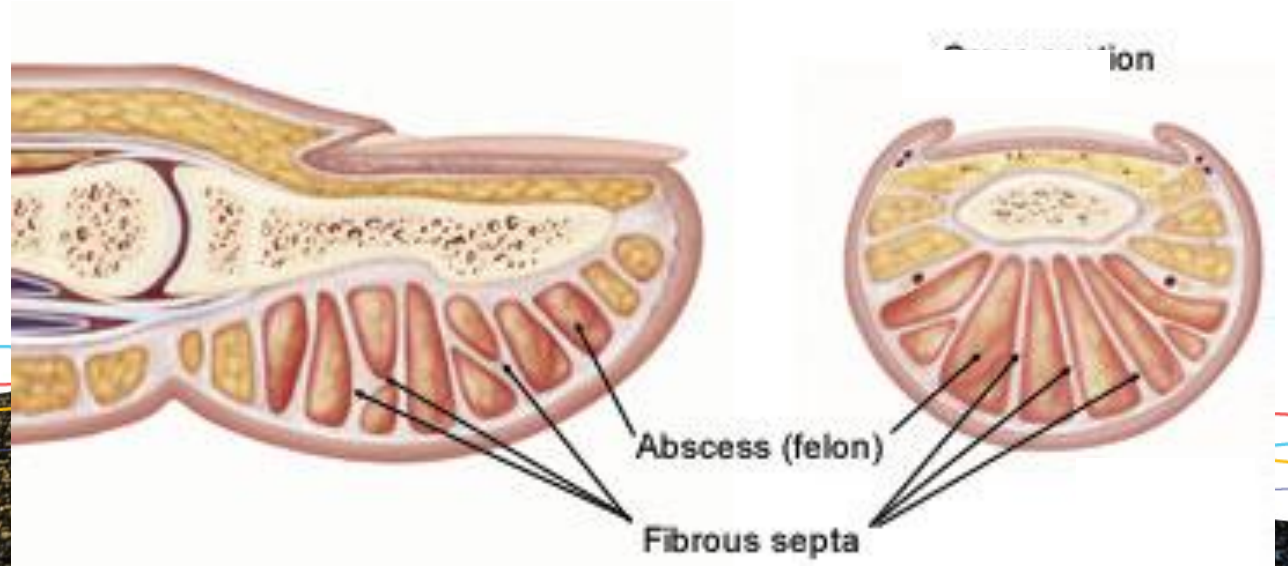
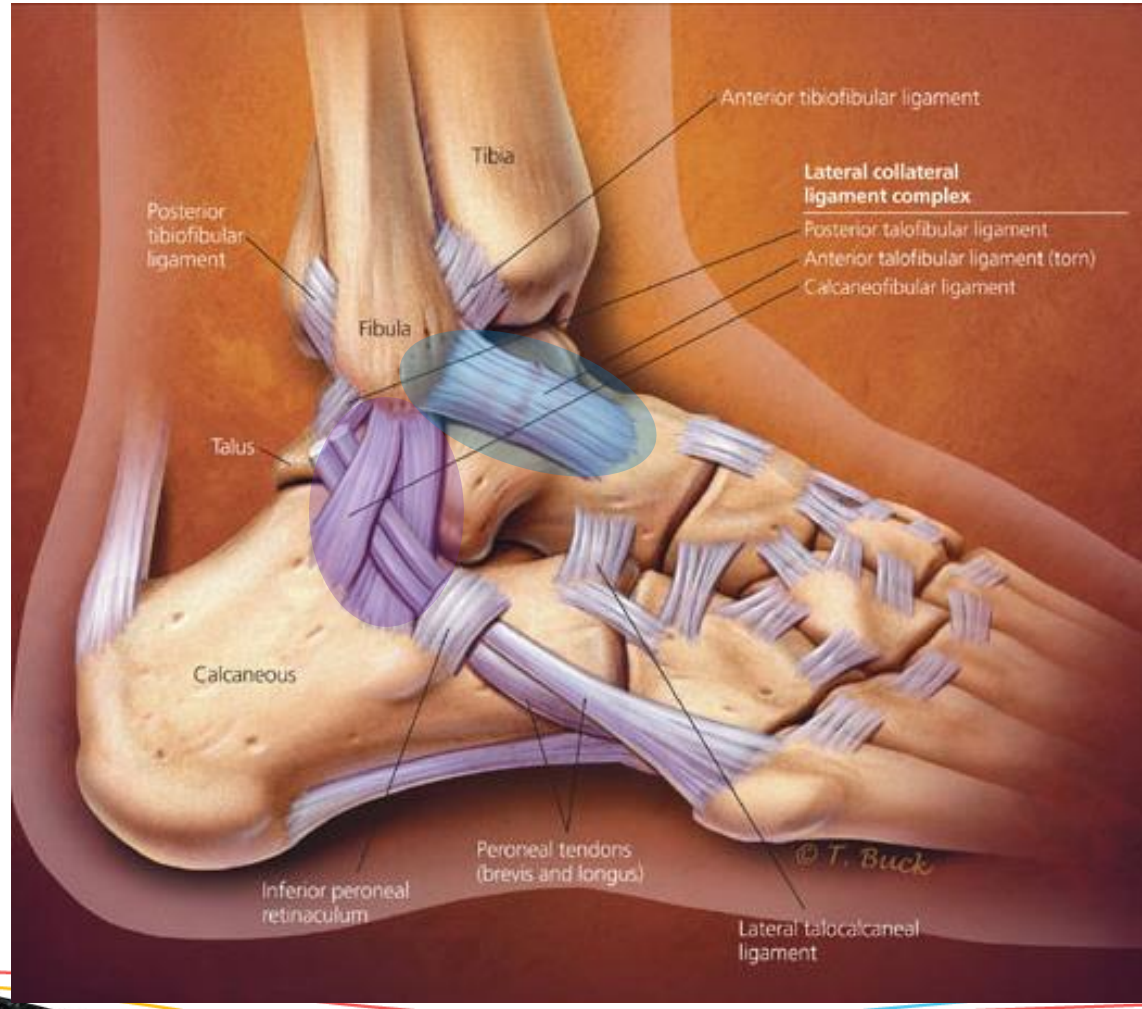
- Soft feels soft (subtle differences)
  - Muscles, muscle spasm, fluid, lipomas
- Firm feels firm (harsh differences)
  - Bone, tendon, ligament

- Use the tip of the thumb/finger to palpate for firm and pads for soft

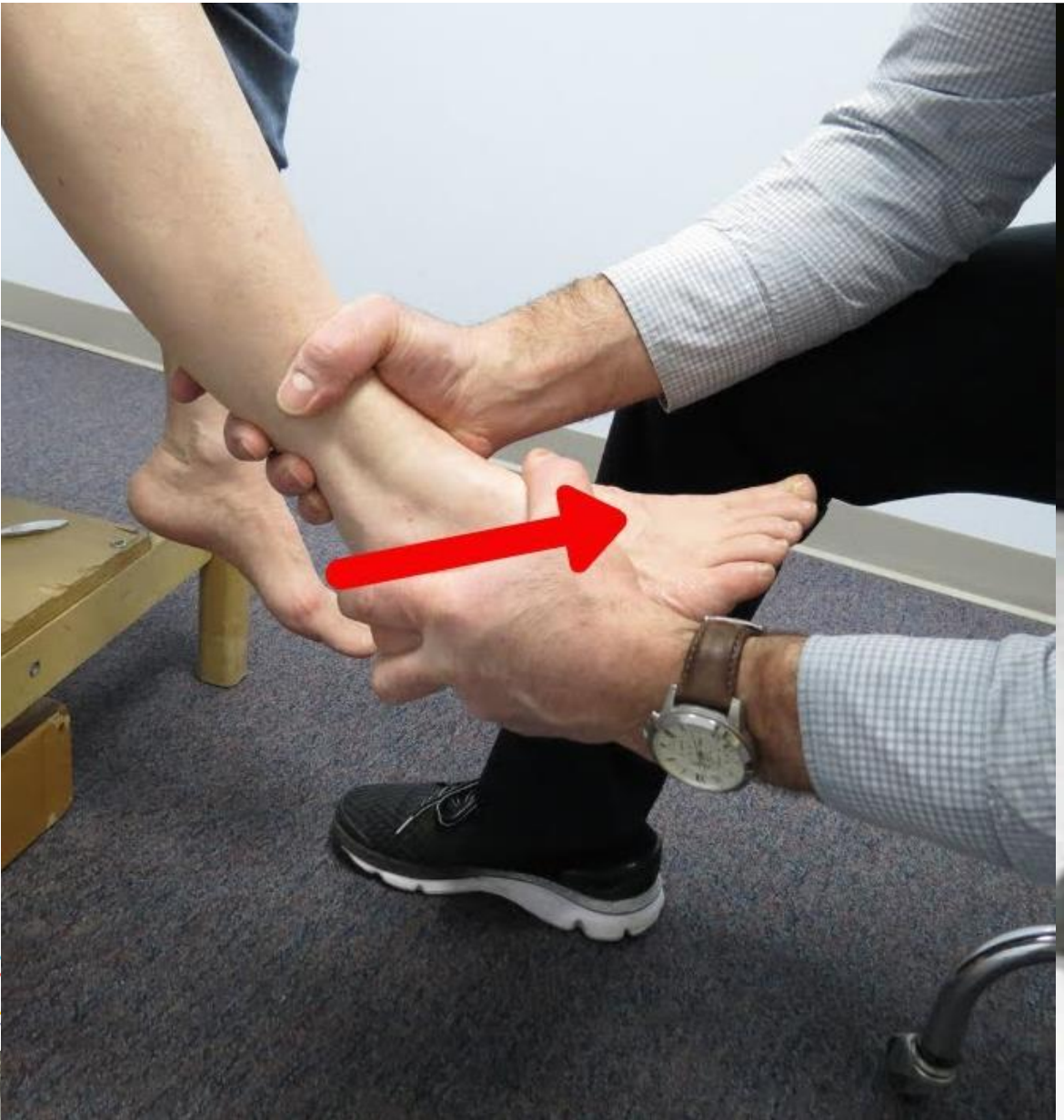


Lateral Ligaments

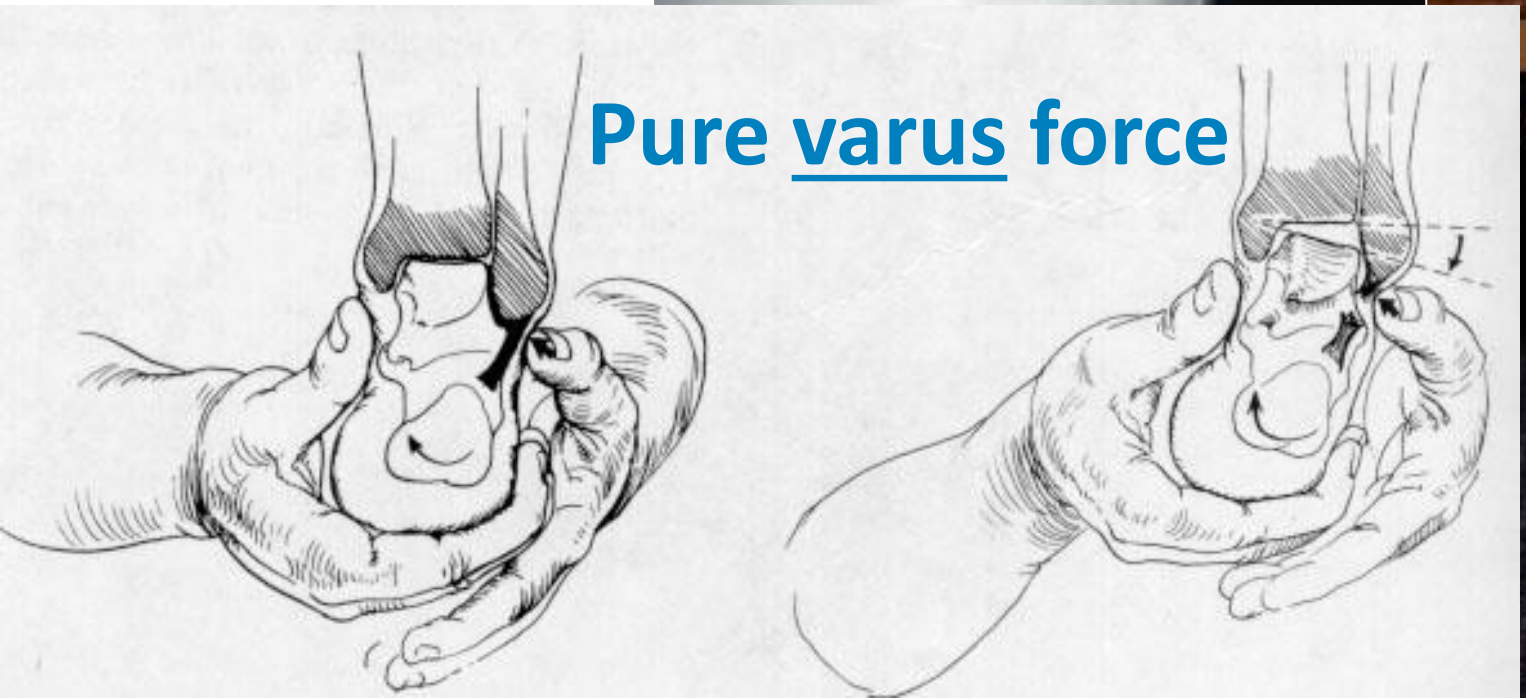
- **Anterior Talofibular**
  - Most injured
  - Go to end of lateral malleolus and forward 1.5 cm and you are on top of it
  - Anterior Drawer test
- **Calcaneofibular**
  - 2nd most injured
  - Directly inferior to lateral malleolus
- ~~**Posterior Talofibular**~~ **(IGNORE IT)**



Anterior Drawer test



Talar Tilt test



MINIMAL EFFORT

Minimum MSK Exam

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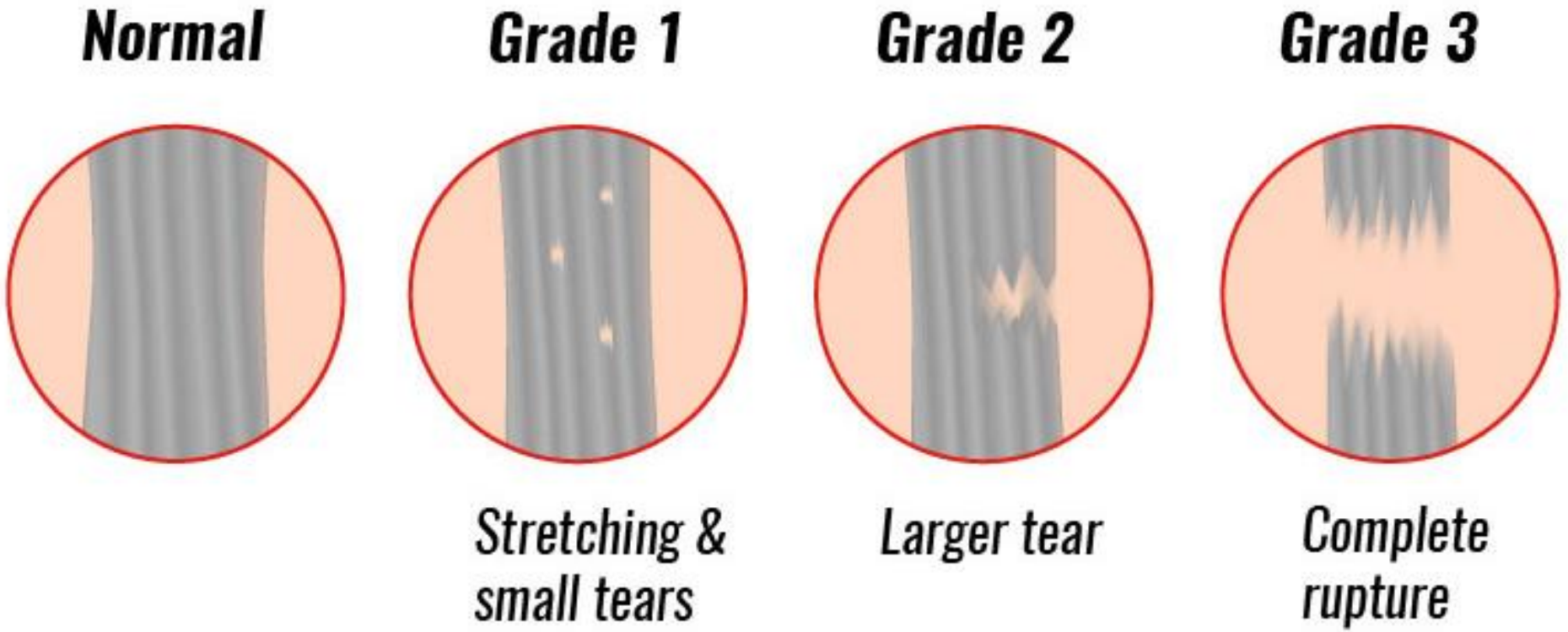
- Range of Motion
- Palpation for tenderness
- Strength Testing (most often forgotten)

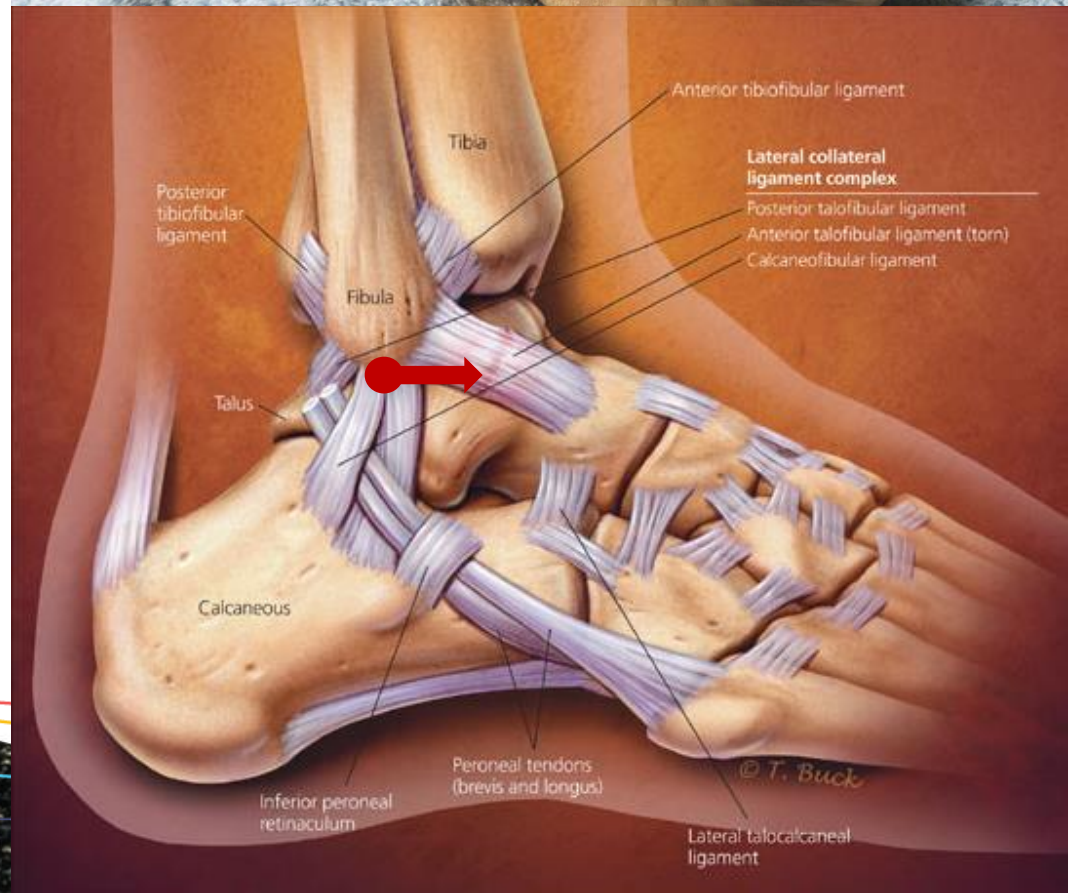
- Without thinking about these, every time, you just can't assess the MSK system well.
- Exam results are the key to diagnosis



Degrees of tissue injury	• Painful to load • Stable • Microscopic damage	• Very painful to load • Mild laxity • Macroscopic damage	• ? painful to load • Mild laxity • Macroscopic damage

Palpate for ATF Ligament

- Find the tip of the lateral malleolus – the end of the bone, not the part most protruding out laterally
- Always palpable even with edema
- **Move forward 1.5 cm** and you are over the ATF



Should you get an X-ray?

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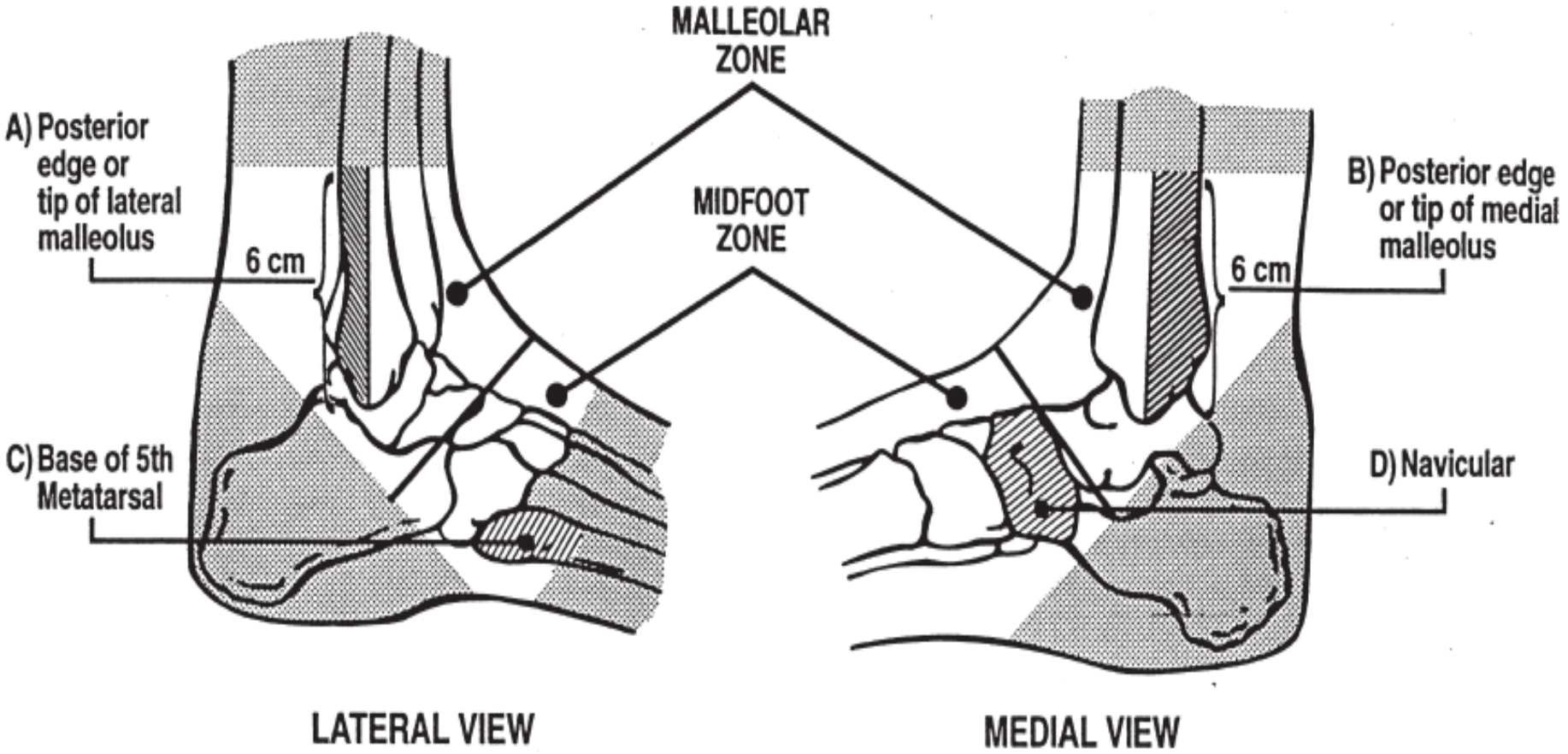
Estimated 15% of ankle sprains in the ER setting involve a fracture

Ottawa Ankle Rules

- **First published 1992**
- **Systematic Review found Ottawa Ankle Rules almost 100% sensitive and reduced unnecessary radiographs by 30-40%**

Bachmann *BMJ* Feb. 2003;326:417

OTTAWA
ANKLE RULES
For Ankle Injury Radiography

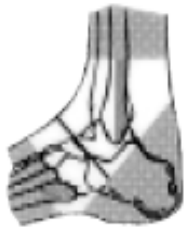


Stiell IG, McKnight RD, Greenberg GH, et al. Implementation of the Ottawa Ankle Rules. JAMA 1994; 271:827-832.

OTTAWA

ANKLE RULES

For Ankle Injury Radiography



2023

ONVENTION

a) An ankle x-ray series is only required if
there is any pain in malleolar zone and any of these findings:

1. bone tenderness at A

OR

2. bone tenderness at B

OR

3. inability to bear weight both immediately and in ED

b) A foot x-ray series is only required if
there is any pain in midfoot zone and any of these findings:

1. bone tenderness at C

OR

2. bone tenderness at D

OR

3. inability to bear weight both immediately and in ED

Foot & Ankle X-ray Anomolies

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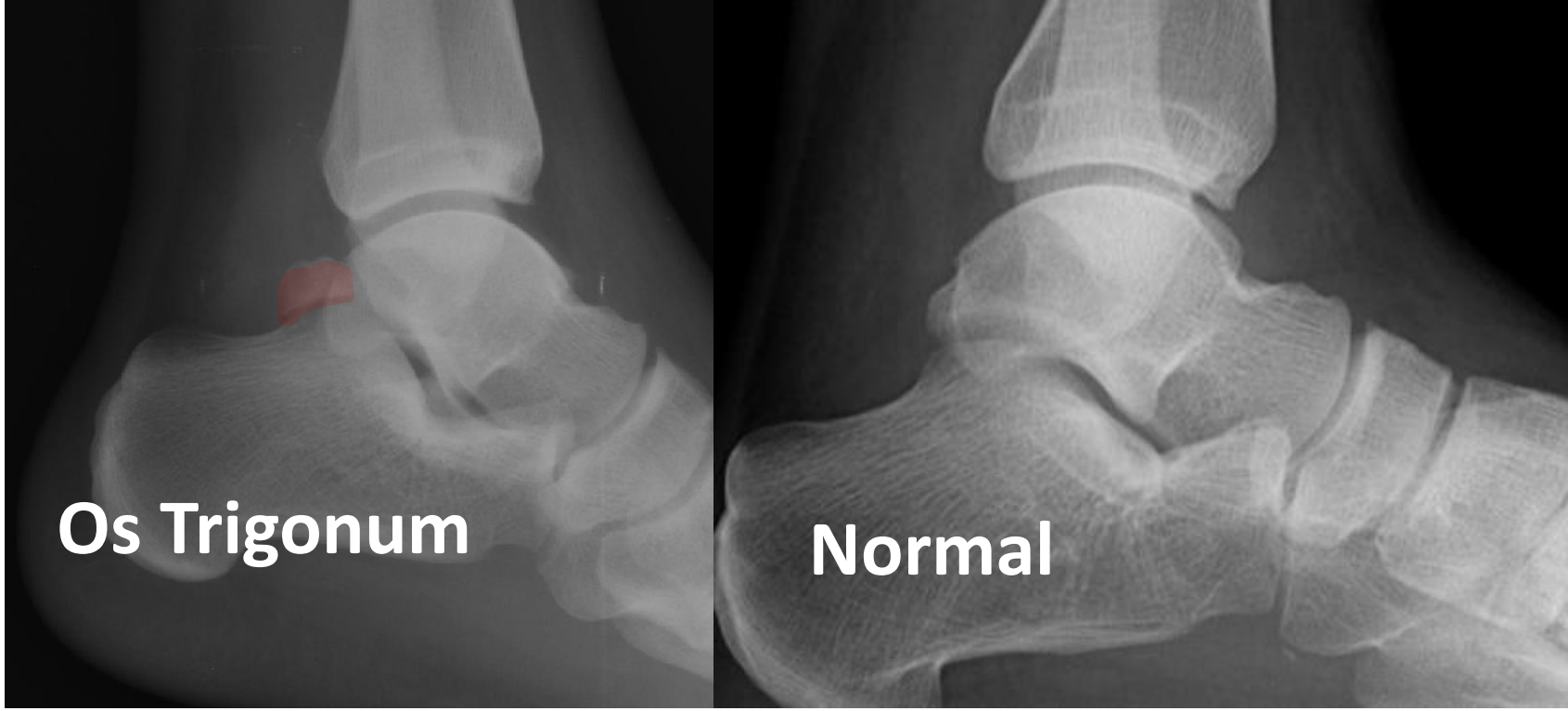
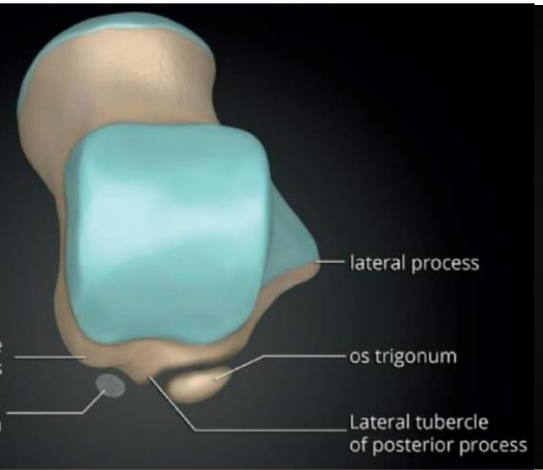
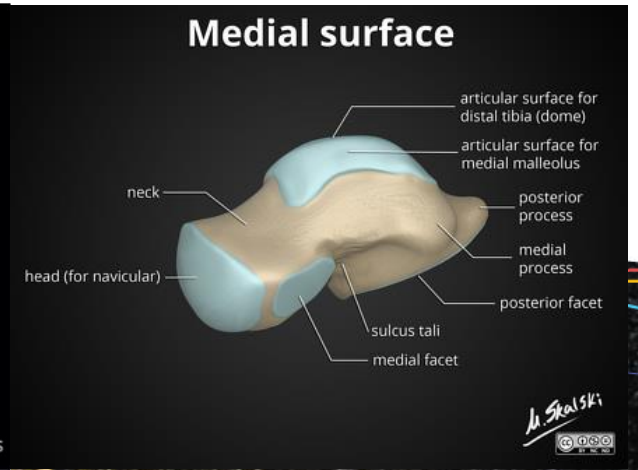
- Not uncommon variations of normal x-rays findings
- Confusing – difficult to tell if new or old and may change the treatment plan significantly
- Os Trigonum
- Os Peroneum
- Os Naviculare
- Os Subfibulare

Os Trigonum

- Lateral Tubercle/Posterior Process of the talus develops a secondary center for ossification







Os Peroneum

Os Naviculare

Os Subfibulare

Ossicle vs Avulsion Fracture

Ossicle

- Smooth
- Round
- Conforming
- Cortical Edges
- Homogenous density
- Puzzle pieces

Avulsion

- Jagged edges
- Angular
- Non-Conforming
- Cortical & Cancellous Edges
- Heterogenous density
- Broken pieces

In Kids with open growth plates

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- Usually impossible to tell

Let's get back to our patient…

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- Tender over ATF and CF ligaments.
- Positive Ant. Drawer, Negative Talar Tilt
- ROM limited in all directions
- X-rays negative

Ankle sprain

Ankle Sprain

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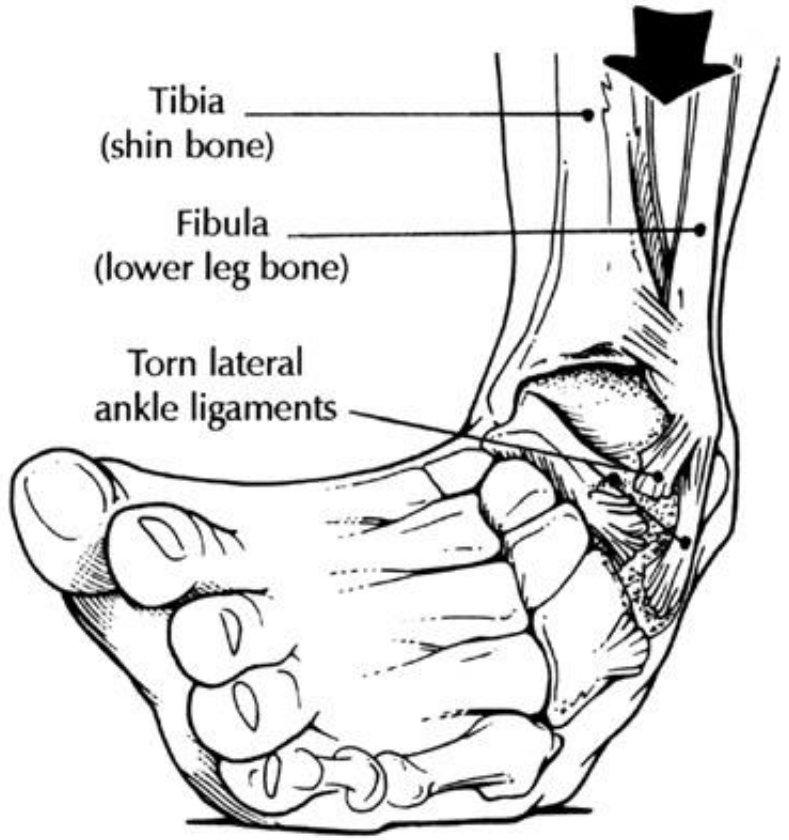
- Estimated 25,000 ankle sprains daily in US
- Most common orthopedic injury in most sports
- About 90% are inversion injuries
- 73% are isolated ATF injury
- Small, thin, individual lateral ligaments
- Strong, thick, broad medial ligaments
- Typical resolution 2-4 weeks



West Point Grading system

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- **Severity does not matter much initially**
- Don't kill patients with ligament testing
- 2 months out surgery may be indicated for grade 3 tears
- Scar tissue functions like ligament

	Grade 1	Grade 2	Grade 3
Location of Tenderness	ATF	ATF, CF	ATF, CF, PTF
Edema or ecchymosis	Slight local	Moderate local	Significant diffuse
Weight bearing	Full or partial	Difficult w/o crutches	Significant pain
Ligament damage	Stretched	Partial tear	Complete tear
Instability	None	None or slight	definite

How to treat an ankle sprain?

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Protection

Rest

Ice

Compression

Elevation

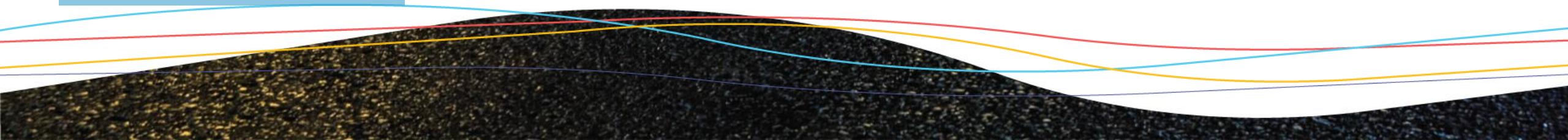
NSAIDS- standard

Crutches- when needed (judgement)

Brace

Early ROM

Cast boot? – Occasionally when function matters in the early part of recovery



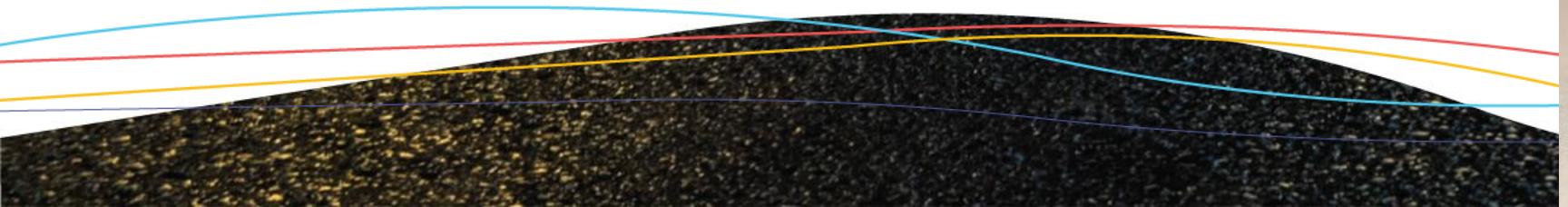
Stirrup brace

“Sweed-O” type brace

Recovery and Rehab

- Follow-up in 2-4 weeks
- PT if not improving
- MUST re-learn PROPRIOCEPTION (fibers located in ligaments)

- Retraining balance is the key to preventing re-injury
- Sweed-O brace prevents re-injury for up to 12 months



“I twisted my ankle a few weeks ago and it is not getting better…”

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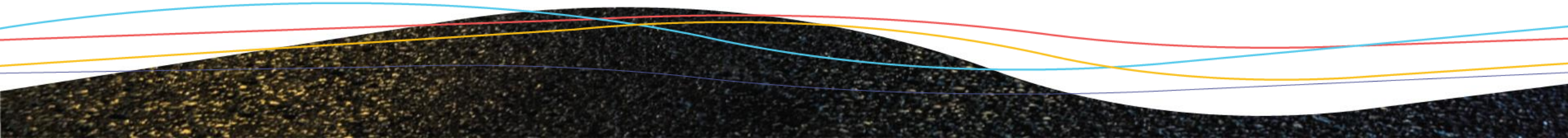
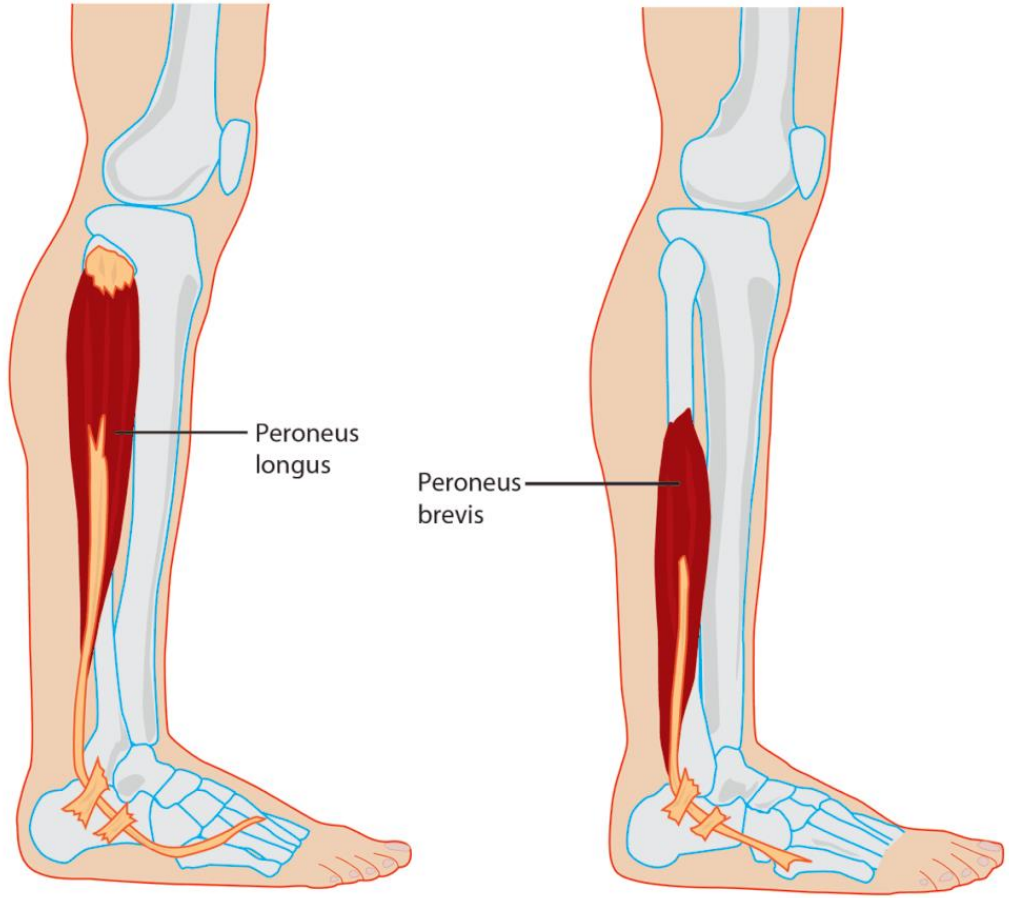
- Inversion ankle injury 5 weeks ago
- Initially couldn‘t walk for a few days but now walking normally
- Pain on the side of the ankle (malleolus) that radiates up the side of the leg a little

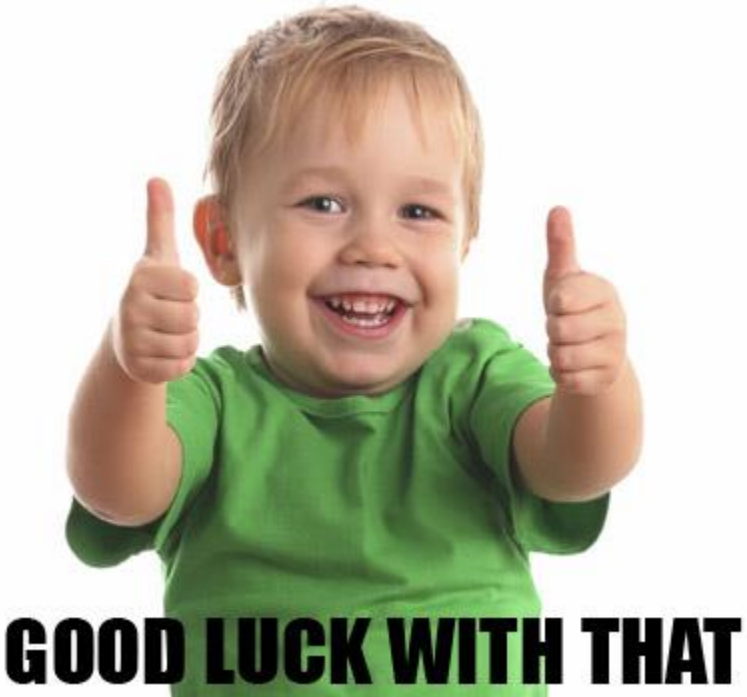
Think about peroneal tendonitis



Peroneal Tendonitis

- Everts and Plantar Flexes ankle/foot
- Primary weapon used against ankle sprains





- No studies done but my estimate is **20-25%** of typical ankle sprains have simultaneous peroneal tendonitis

Exam findings

- Focal area of tenderness behind lateral malleolus (**NOT the Posterior Talo Fibular Ligament**)
- Pain with resisted **Active Resistance** (toes pointed down and out)
- Pain with resisted **Passive Stretch** (toes pointed up and in)

Peroneal Tendonitis

- Recovery is typically 4-6 weeks
- **PRICE**
- NSAIDS
- Physical Therapy (earlier, more common)
- Cast boot might be indicated initially to rest and protect while maintaining function
- Diagnose this in addition to ankle sprain to set expectations

[redacted] Air Boot Tall CAM Boot | Orthopedic Walking Boot for Sprained Ankle with Air Pump | Foot Brace for Injured Foot, Ankle Sprain, Broken Toe & Post Surgery | Fracture & Cast Boots (Medium)

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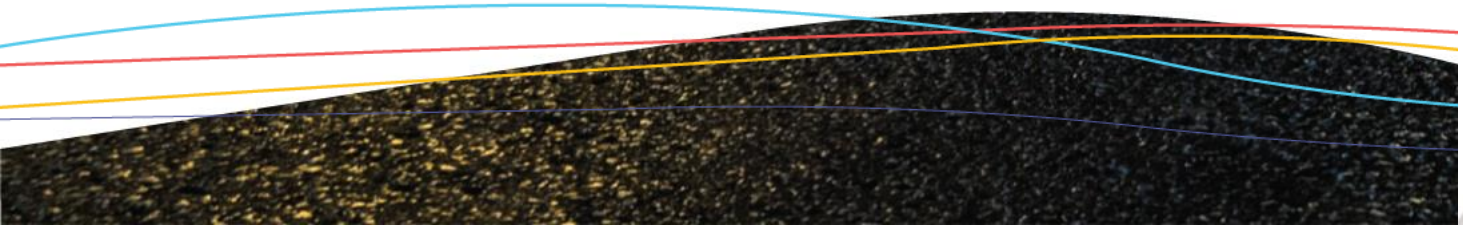
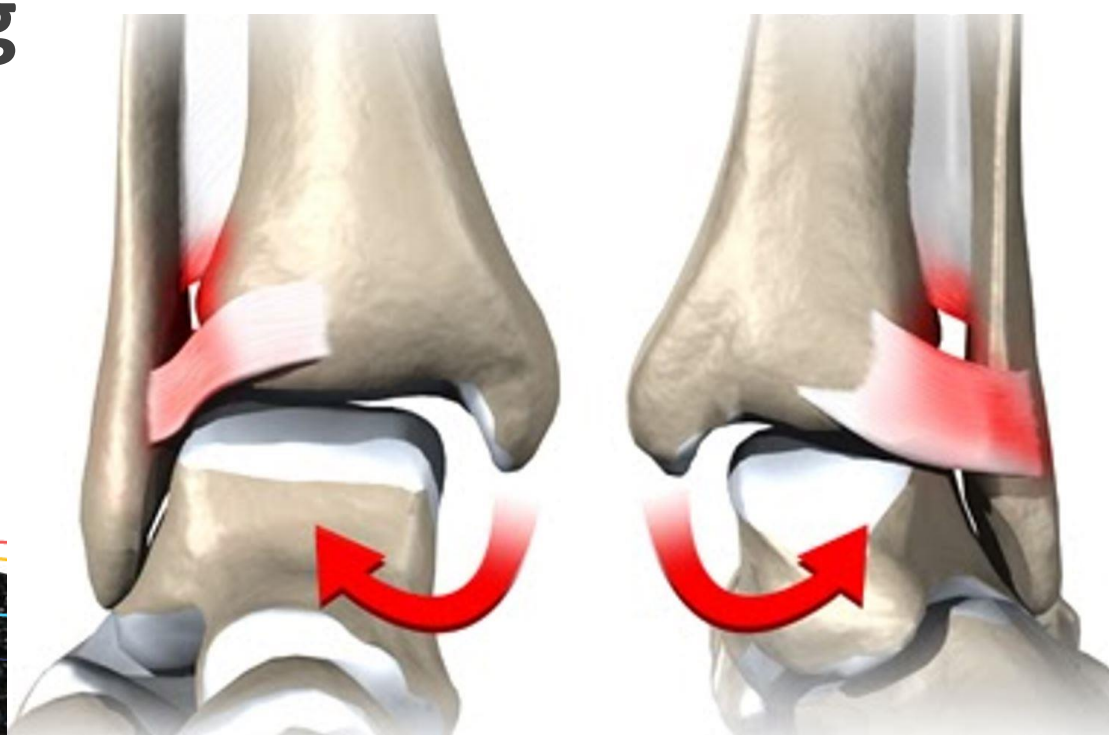
High Ankle Sprain

- Injury to the Anterior Inferior Tibio-Fibular ligament (AITF) and the Tib-Fib syndesmosis
- Foot on the ground when hit from the side and twisted while falling
- Immediate swelling and intense pain
- Pt. will not weight bear at all

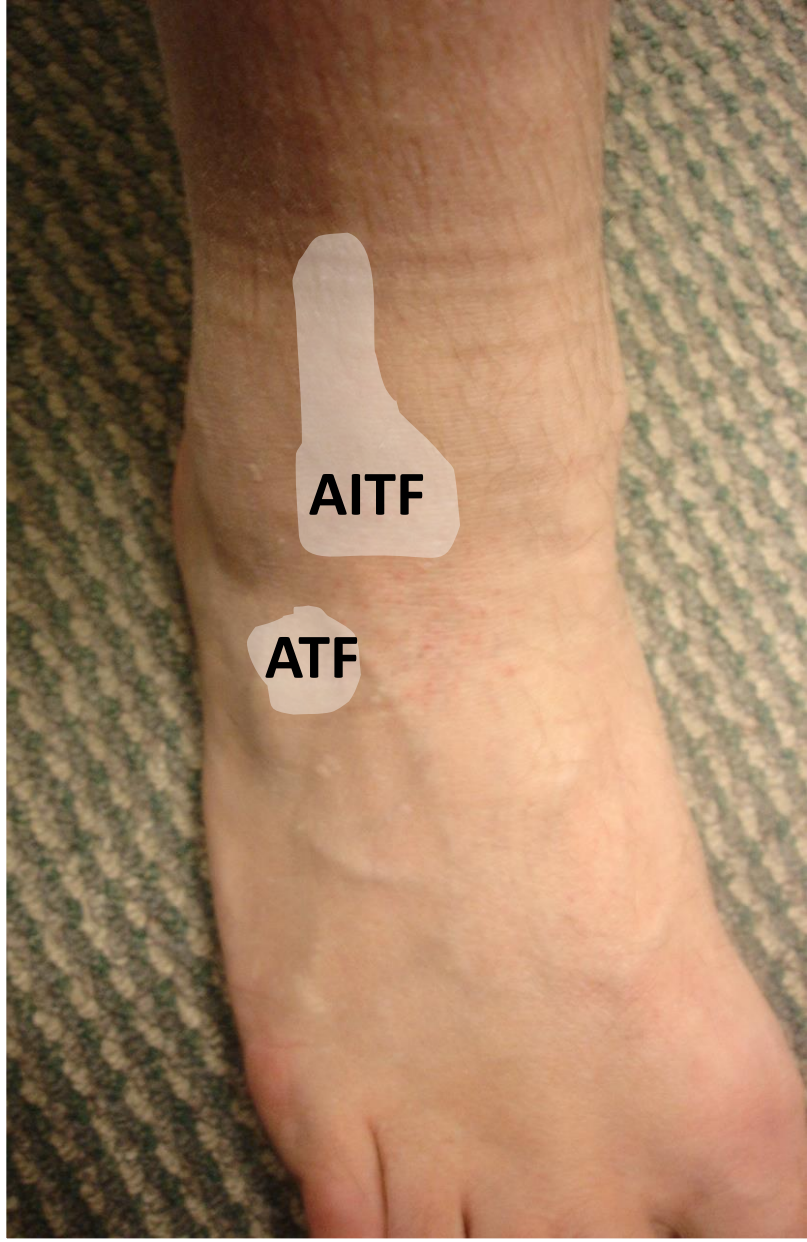




High Ankle Sprain on Exam

- Pain with dorsiflexion
- Pain with pushing up on the heel
- Pain with external rotation of foot
- Talus acts as a wedge
- Pain with compressing the lower leg side to side which buckles the syndesmosis

Syndesmosis Squeeze Test



Blood flows downhill over time

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High ankle sprain

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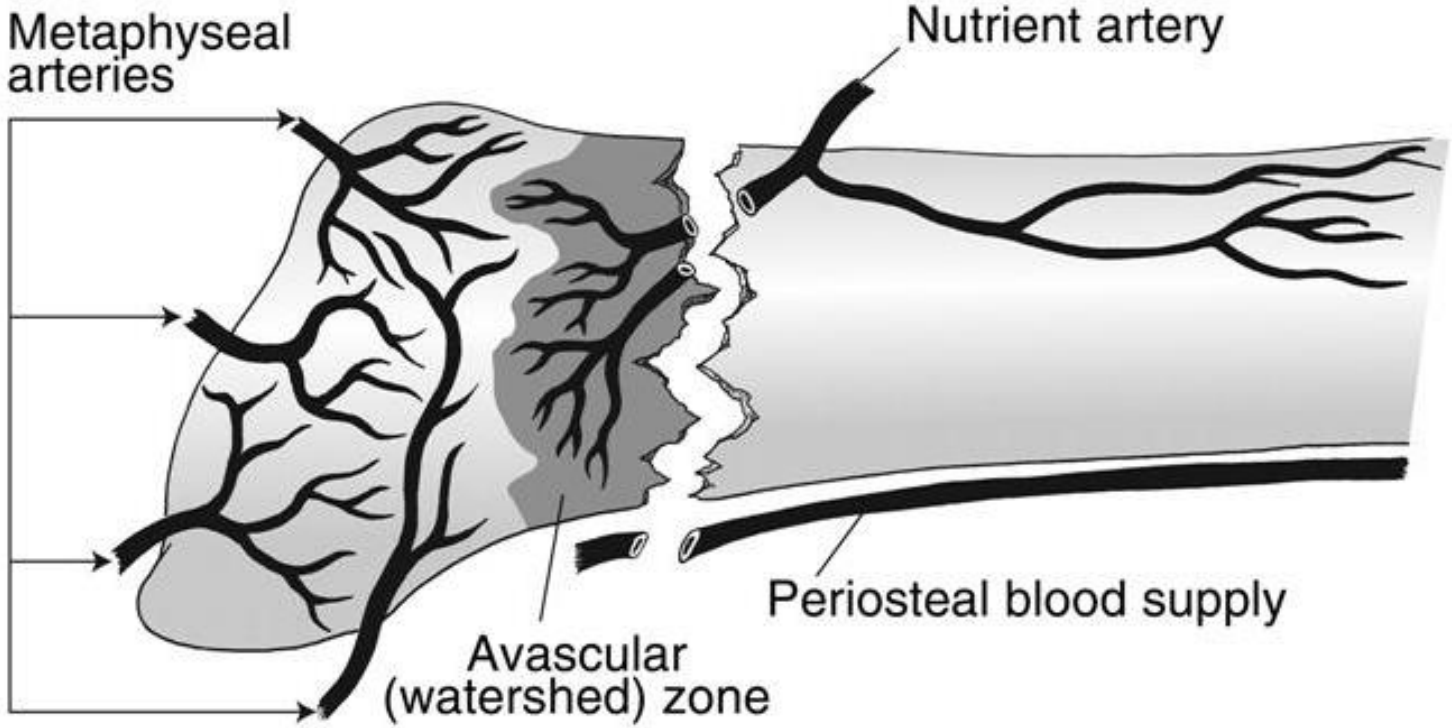
- Treat initially as a typical Grade 3 ankle sprain
- Always get x-rays
- Follow Up in 10-12 days with ortho
- Typical 4-6 weeks recovery
- Cast boot initially
- Crutches if needed
- Early PT if not improving

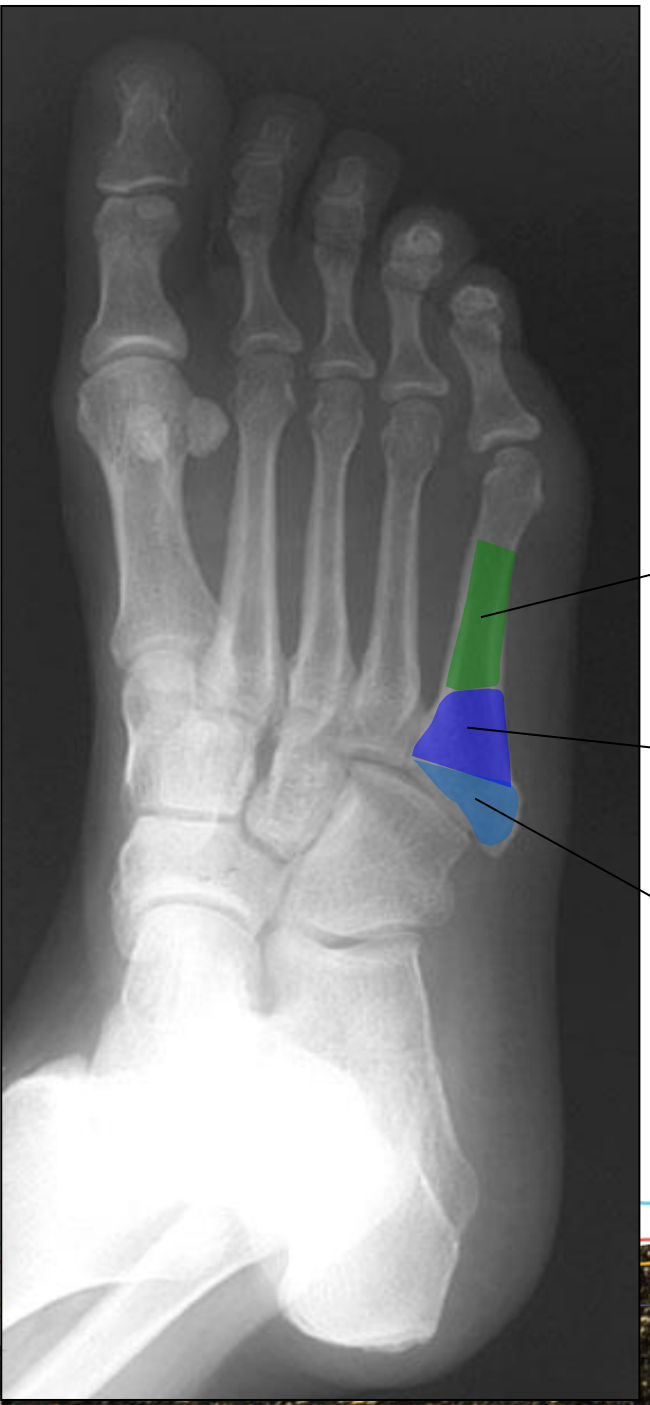
I twisted my ankle and it really hurts…

- Can’t bear weight
- Mild tenderness over ATF
- Mild swelling
- Tender over base of 5th metatarsal
- Peroneal tendon inserts here

Jones Fracture

Jones Fracture





5th Metatarsal Fractures

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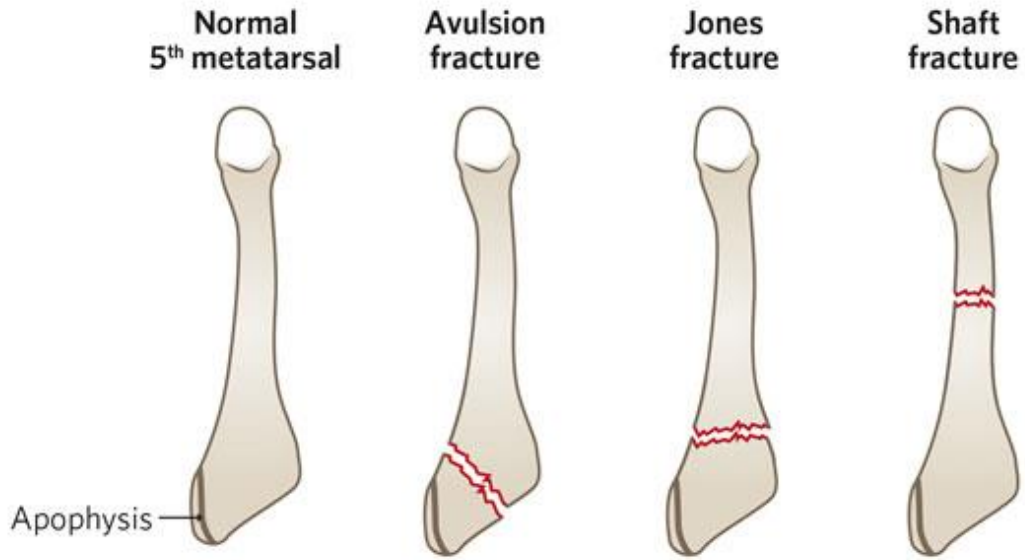
Shaft

Jones

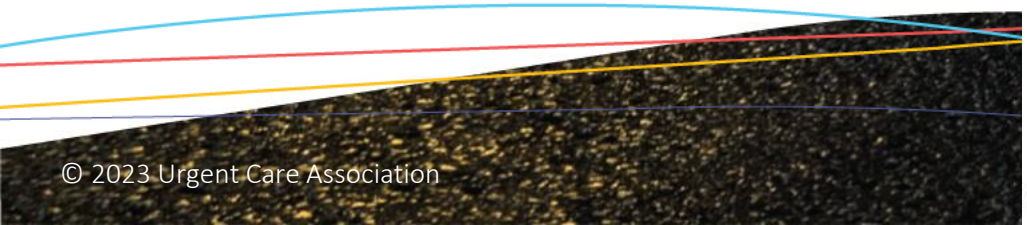
Dancer's (avulsion)

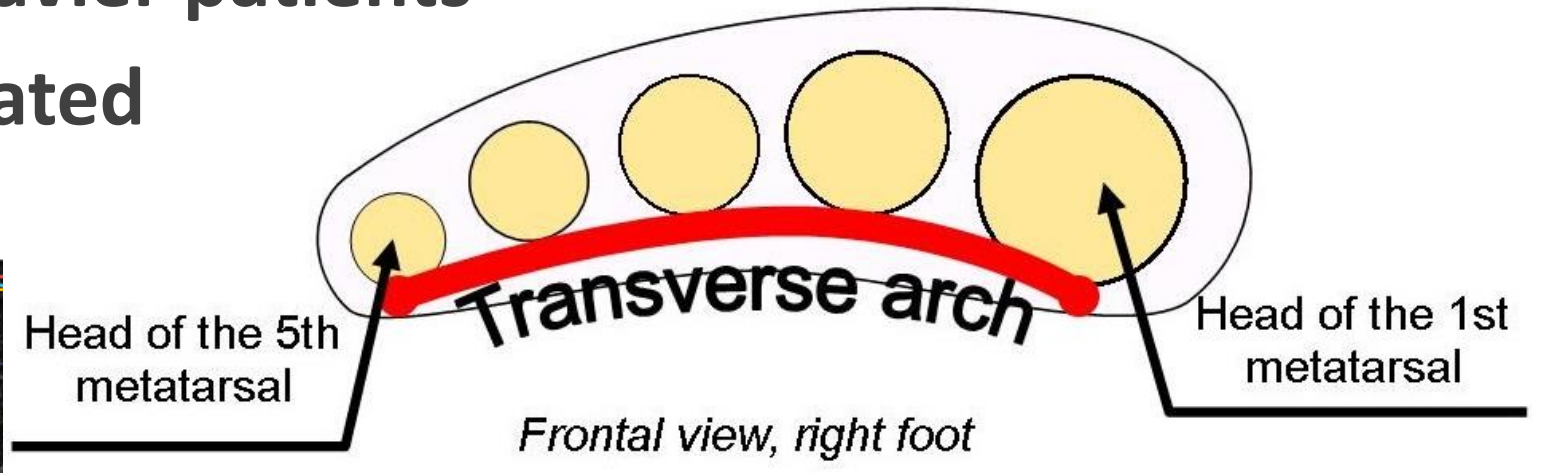


Metatarsalgia

- Pain in the central ball of the foot at the 2nd and 3rd metatarsal heads
- Usually associated with collapse of the transverse arch
- More common with Morton's Foot anatomy
- Typically seen with prolonged time on feet, pes planus, and older heavier patients
- Pain typically activity related

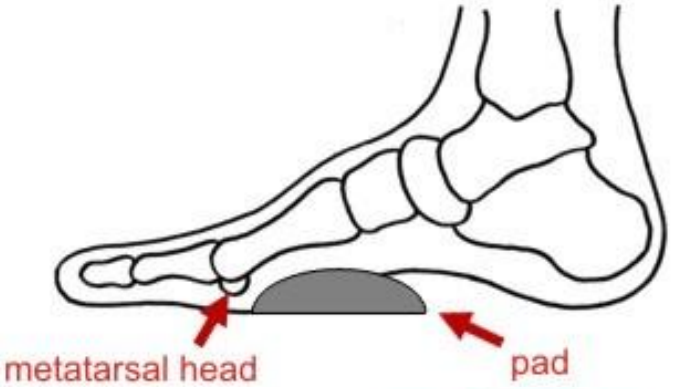
Morton's Foot



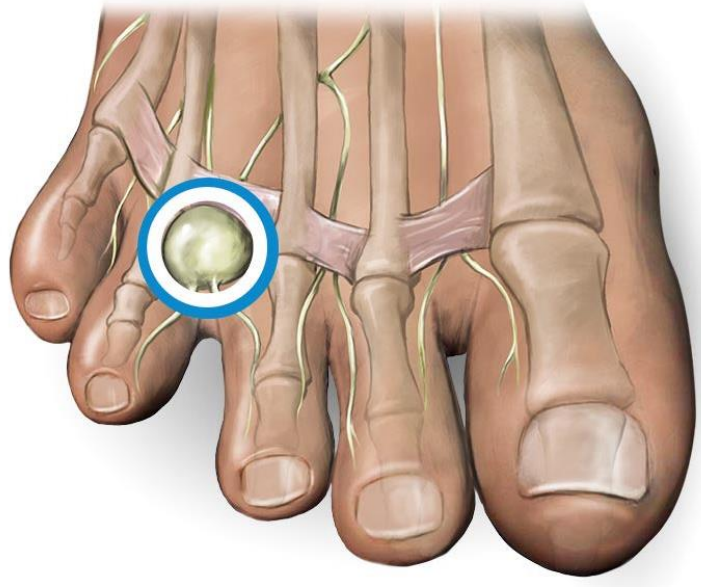


Metatarsalgia

- Tenderness, callous at 2nd/3rd metatarsal heads
- Treatment
  - Acetaminophen and NSAIDs
  - Rest (get off feet)
  - Arch support
  - Metatarsal padding
  - Surgery not typically successful long term unless correcting associated anatomic abnormality
  - Podiatry referral not orthopedics



Morton's Neuroma



- Entrapment or chronic compression of interdigital nerve at the level of the MTP joint
- Pain, numbness, parasthesias, in the ball of the foot joint radiating to toes
- Sensation of a "hot poker" between the toes
- Worse with activity and tight shoes
- Most common between 3rd/4th metatarsals

Morton's Neuroma

- On exam there is tenderness between but usually not over the metatarsals
- Positive Squeeze Test
- Treatment is similar to metatarsalgia with orthotics/inserts
- Rest the area and get off the balls of the feet
- Steroid injection beneficial for up to 3 months
- Podiatry referral instead of orthopedics

Post-Test 1

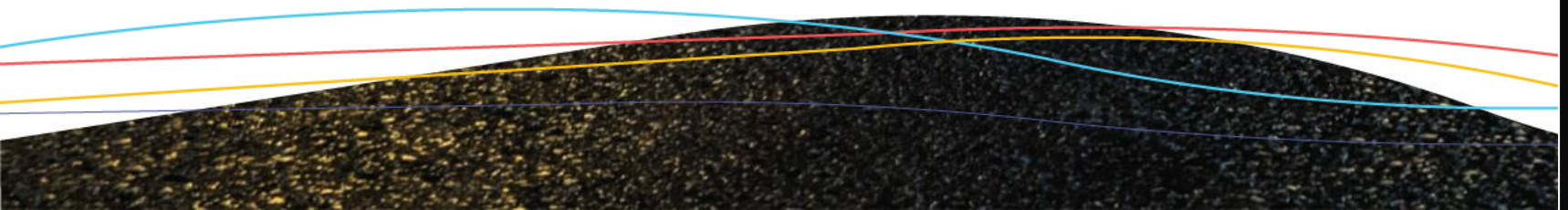
What is this called?

A. Jones Fracture

B. Metatarsal avulsion fracture

C. Salter-Harris II fracture

D. Metatarsal stress fracture



Post-Test 2

DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

What is the most commonly injured ligament in an ankle sprain?

A. Posterior talo-fibular ligament
B. Calcaneofibular ligament
C. Anterior talo-fibular ligament
D. Deltoid ligament

Post-Test 3

DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

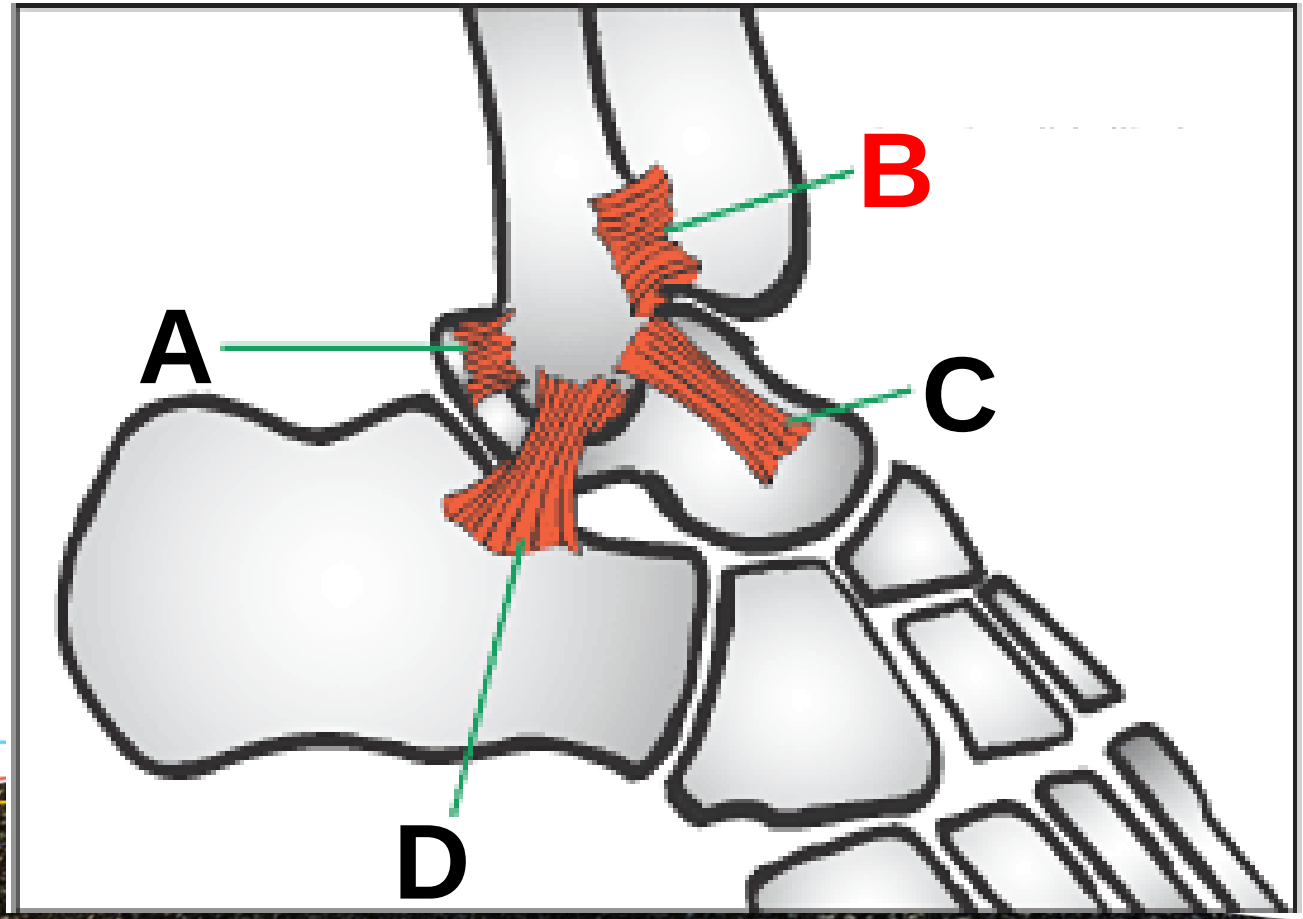
What is this test called?

A. Appley's test
B. Talar Tilt test
C. **Anterior Drawer test**
D. Thompson Squeeze test

Post-Test 4

DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

Which lateral ligament is injured in a High Ankle Sprain?



DRIVING CHANGE 2023

THE URGENT CARE CONVENTION

How you can drive change:

- Ankle injuries are very common, most are sprains, and primary care clinicians can manage most adequately. Don’t over-depend on orthopedics; get better.
- Look for and treat peroneal tendonitis
- Recognize ossicles from avulsions fracture

DRIVING CHANGE 2023