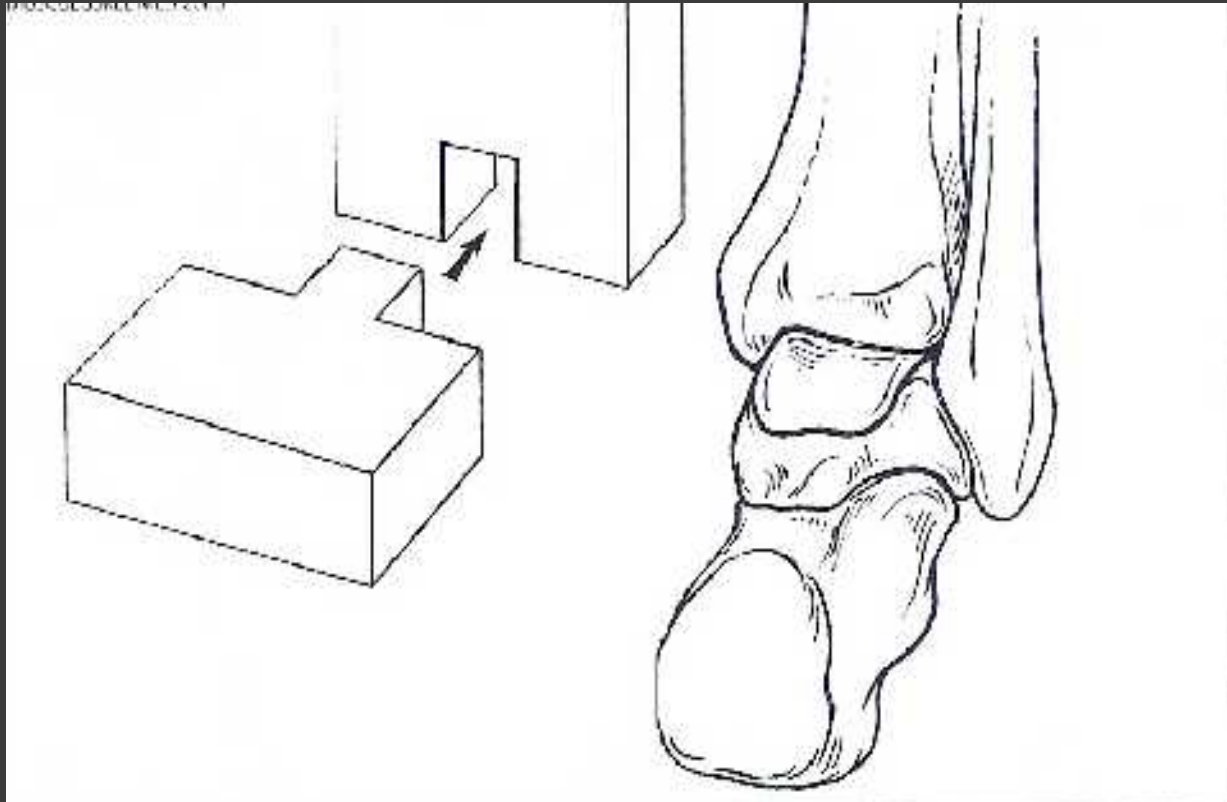


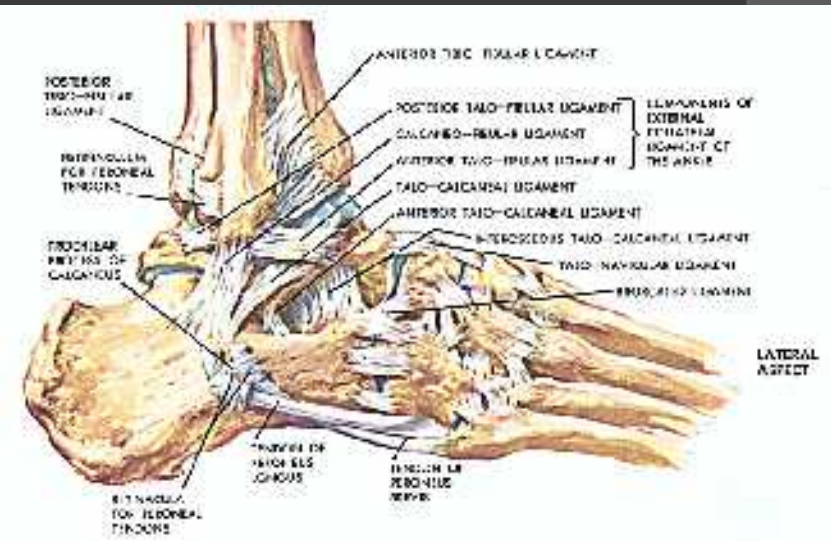
ANKLE INJURIES: SPRAINS AND MORE

Mortice and Tenon Joint



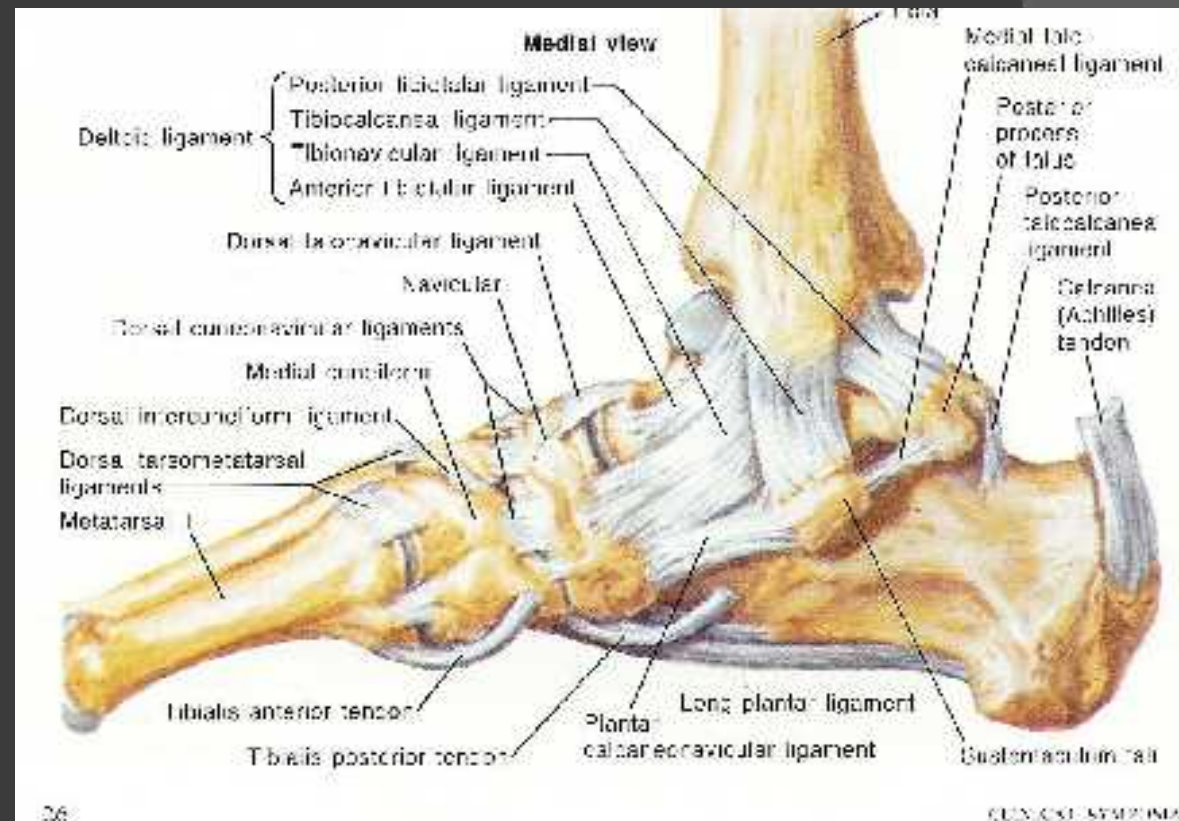
Lateral Ligaments

- Anterior talofibular
- Calcaneofibular
- Posterior talofibular



Medial ligaments

□ Deltoid

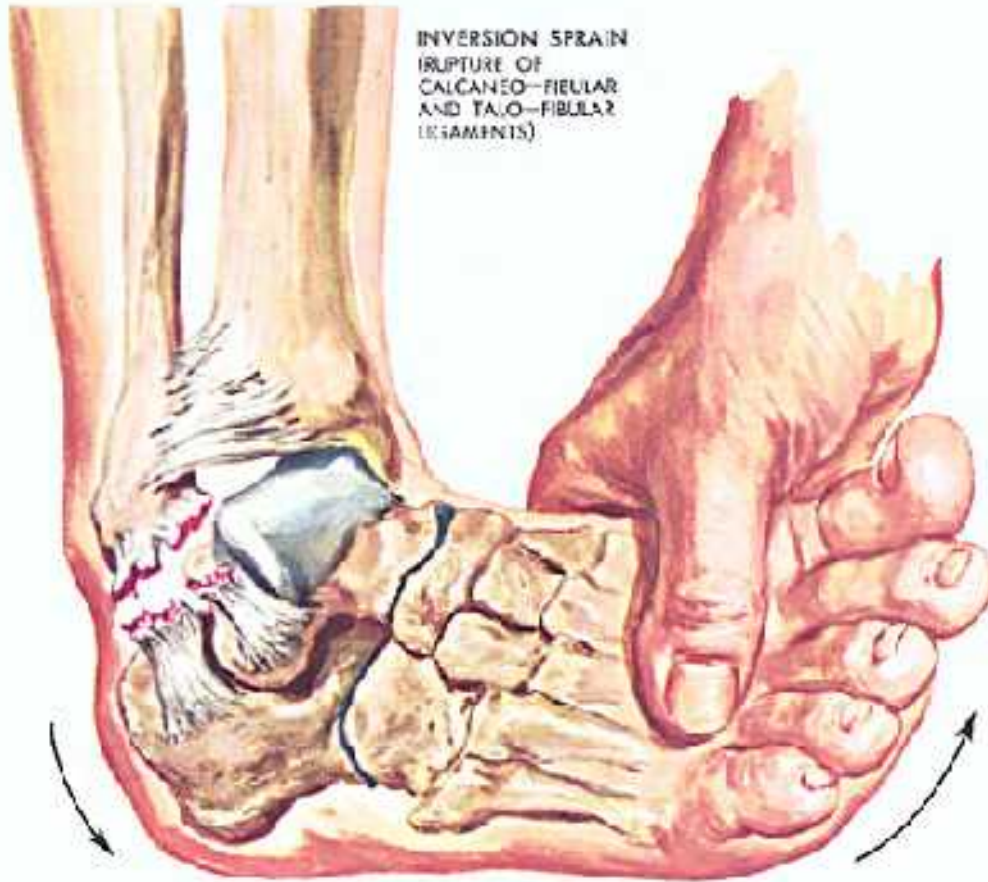


Mechanism of Injury

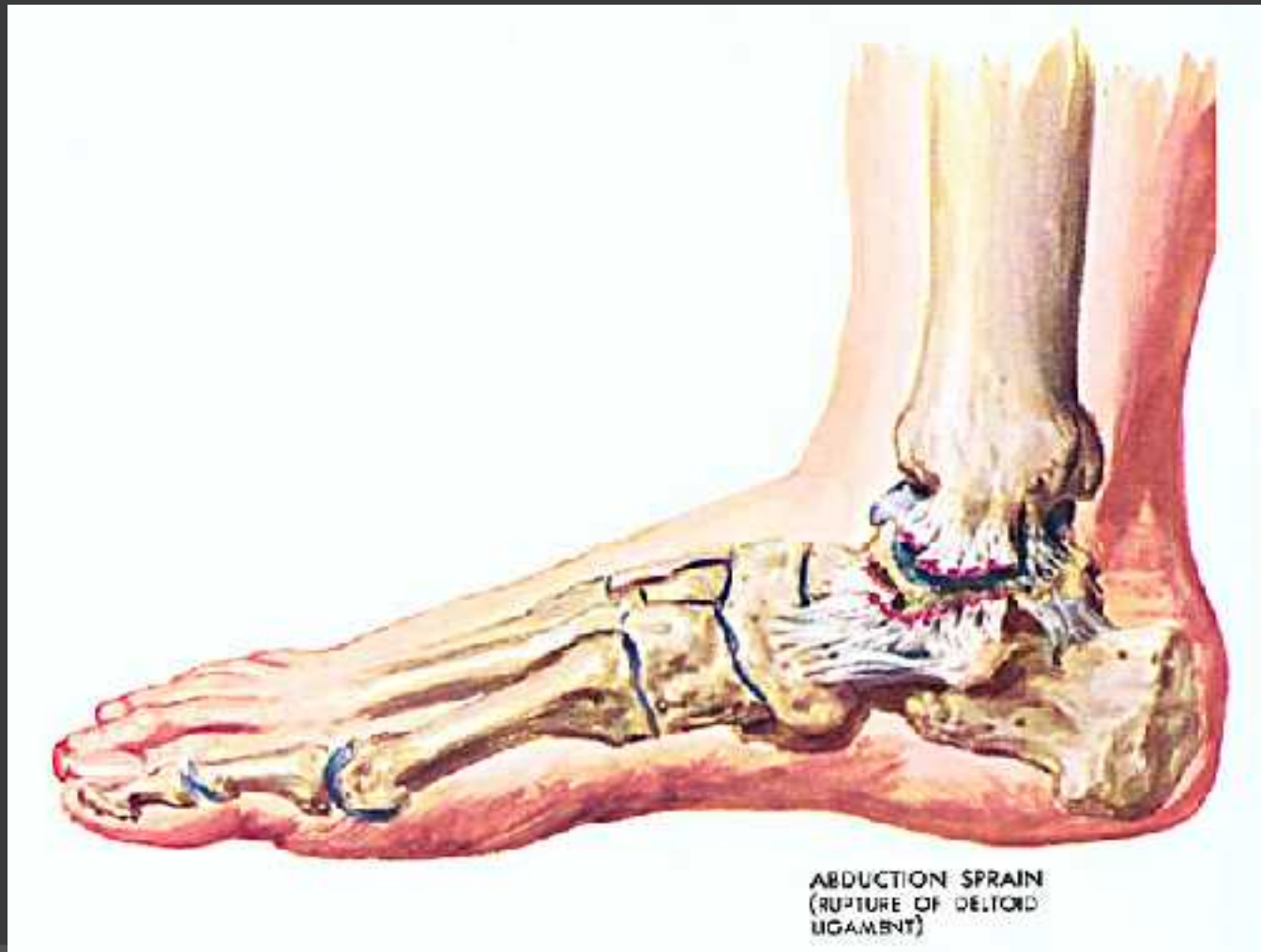
Definitions

- Plantar flexion: toes down
- Dorsiflexion: Toes up
- Inversion: Heel in
- Adduction: Heel in
- Eversion: Heel out
- Abduction: Heel out

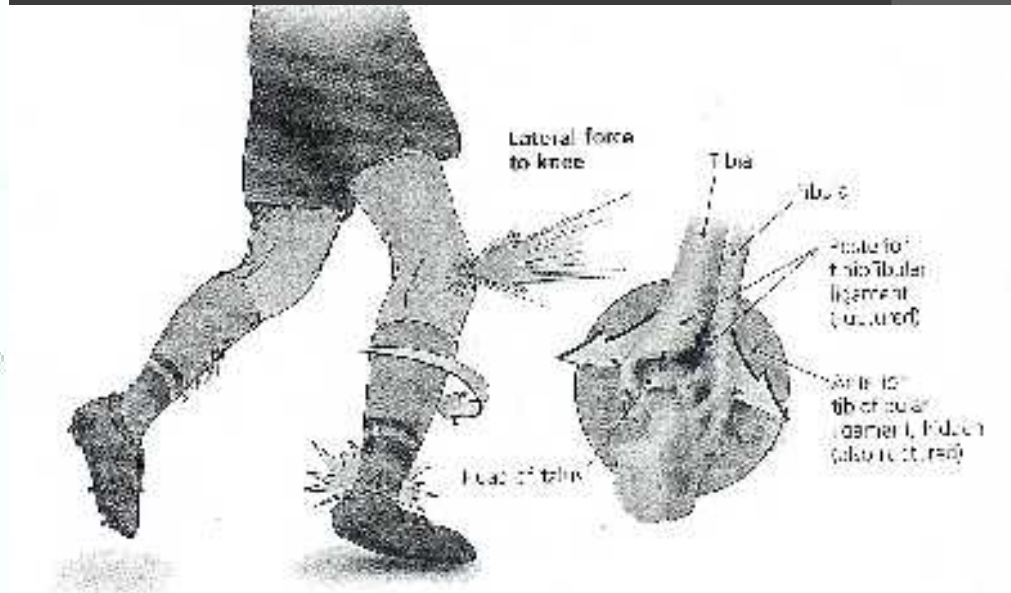
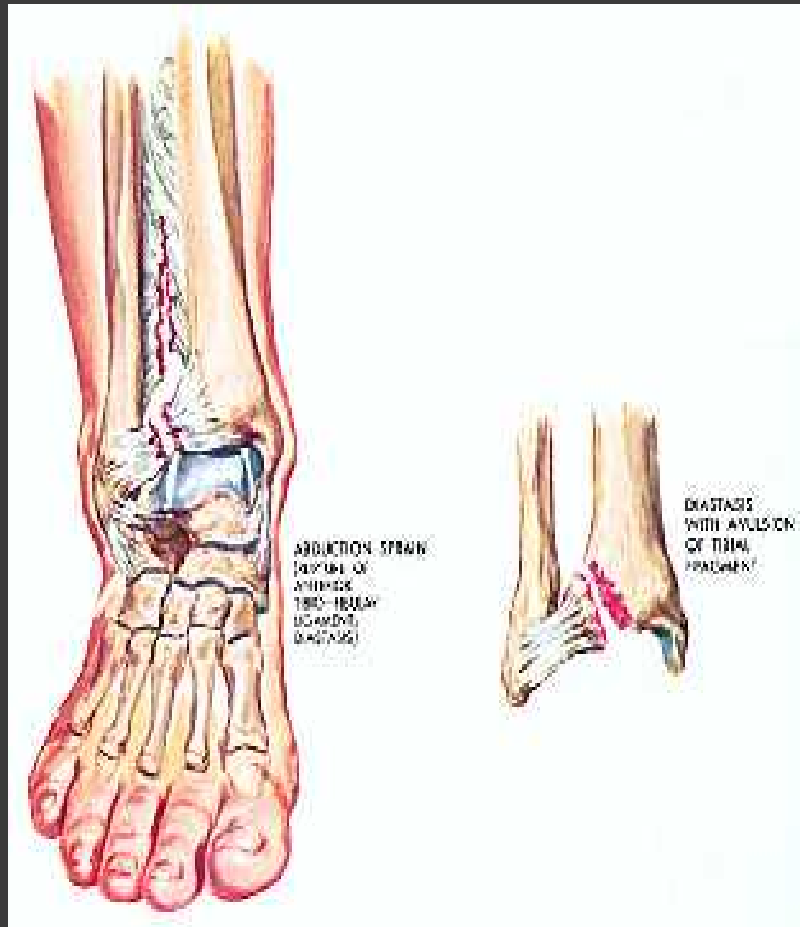
Inversion Injury



Eversion Injury



External Rotation Injury



External Rotation



FIBULAR FRACTURE



TIBIAL AND FIBULAR FRACTURES



TIBIAL AND FIBULAR FRACTURES,
DIASTASIS AND DISPLACEMENT

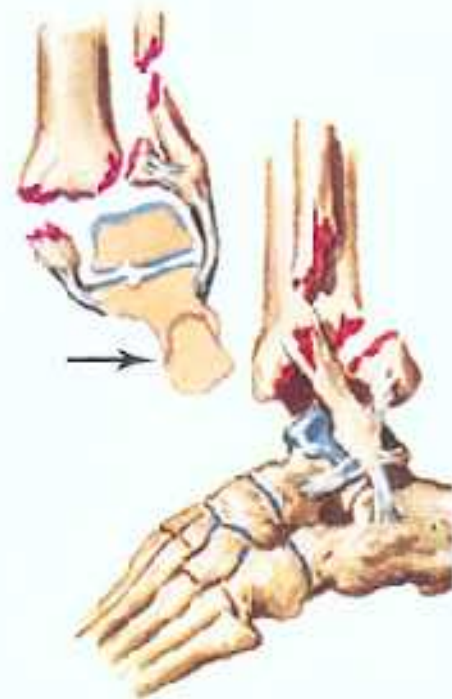
Abduction



TIBIAL FRACTURE



TIBIAL FRACTURE PLUS DIASTASIS



TIBIAL AND FIBULAR FRACTURES
DIASTASIS, MARKED ABDUCTION
AND RETRODISPLACEMENT

Adduction



FIBULAR FRACTURE



TIBIAL AND FIBULAR FRACTURES



TIBIAL AND FIBULAR FRACTURES,
WITH MARKED DISPLACEMENT

Abduction and External Rotation



Vertical Compression



MARGINAL FRACTURE



COMMINUTED FRACTURE

Ankle Sprain Occurrence

- ▣ 27,000 ankle ligament injuries per day in United States
- ▣ Ankle sprains are more than 25% of injuries in football, basketball, soccer and volleyball

Making The Diagnosis

History

- Mechanism of injury
 - Plantar flexion and inversion
 - Uneven terrain-stepping in a hole
 - Landing on another player's foot
 - Teammate on back of ankle while foot is externally rotated

Making The Diagnosis

History

- Audible pop
- Immediate swelling
- Inability to bear weight
- These are all signs of a more severe injury

Physical Examination

- Observe for:
 - Swelling
 - Deformiity
- Palpate for tenderness
 - Ligaments
 - Bones

Physical Exam

Drawer test

- ATFL
- >4mm difference



Physical Exam

Talar Tilt Test

- CFL
- $> 6^\circ$ difference



Physical Exam

Squeeze Test

- Anterior tibiofibular ligament
- High ankle sprain



Physical Exam

External Rotation Test

- Anterior tibiofibular ligament
- High ankle sprain



Physical Exam

Palpation

- Length of tenderness predicts severity
- One week for each cm above ankle joint



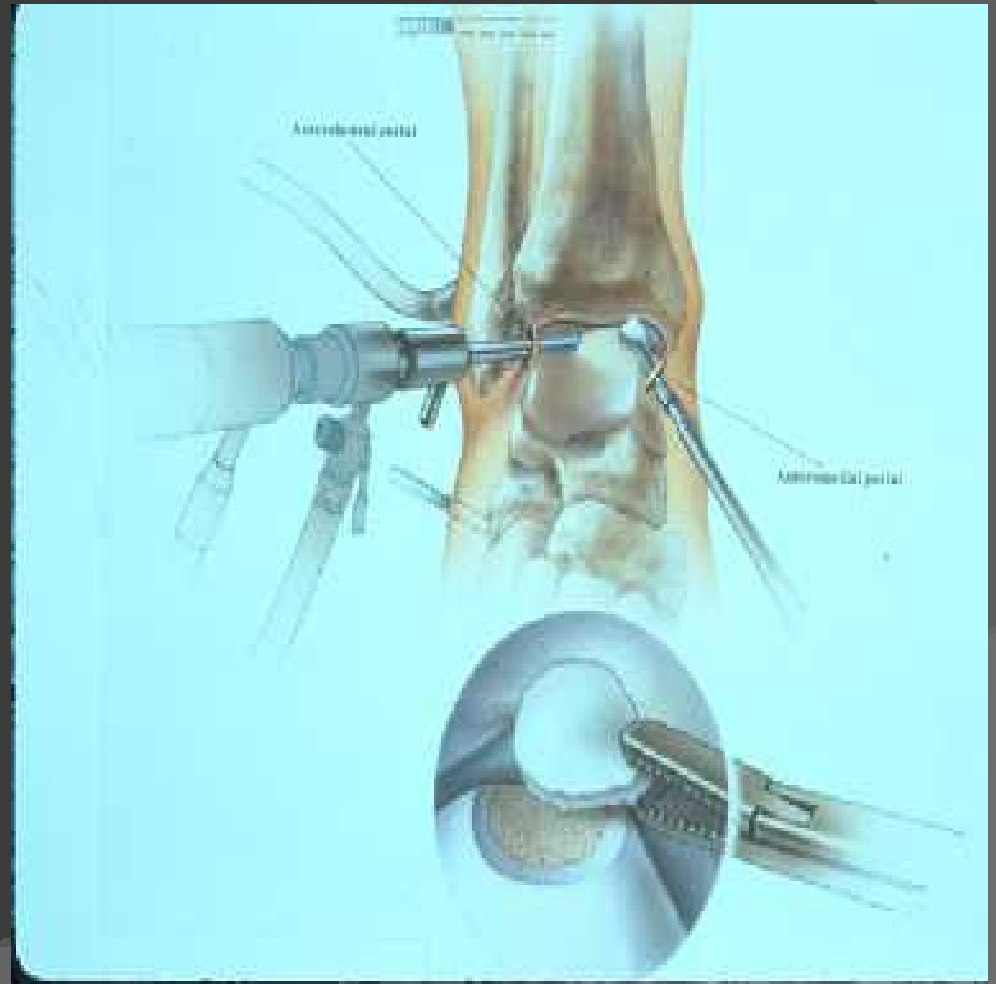
Classification of Ankle Sprains

<i>Grade</i>	<i>Signs and symptoms</i>
I: partial tear of a ligament	Mild tenderness and swelling Slight or no functional loss (i.e., patient is able to bear weight and ambulate with minimal pain) No mechanical instability (negative clinical stress examination)
II: incomplete tear of a ligament, with moderate functional impairment	Moderate pain and swelling Mild to moderate ecchymosis Tenderness over involved structures Some loss of motion and function (i.e., patient has pain with weight-bearing and ambulation) Mild to moderate instability (mild unilateral positivity of clinical stress examination)
III: complete tear and loss of integrity of a ligament	Severe swelling (more than 4 cm about the fibula) Severe ecchymosis Loss of function and motion (i.e., patient is unable to bear weight or ambulate) Mechanical instability (moderate to severe positivity of clinical stress examination)

Classification and Return to Sport

- Grade I 7-14 days
- Grade II 2-6 weeks
- Grade III 4-26 weeks
- High ankle sprain 1 week per cm

Differential Diagnosis Physal Fractures OCD

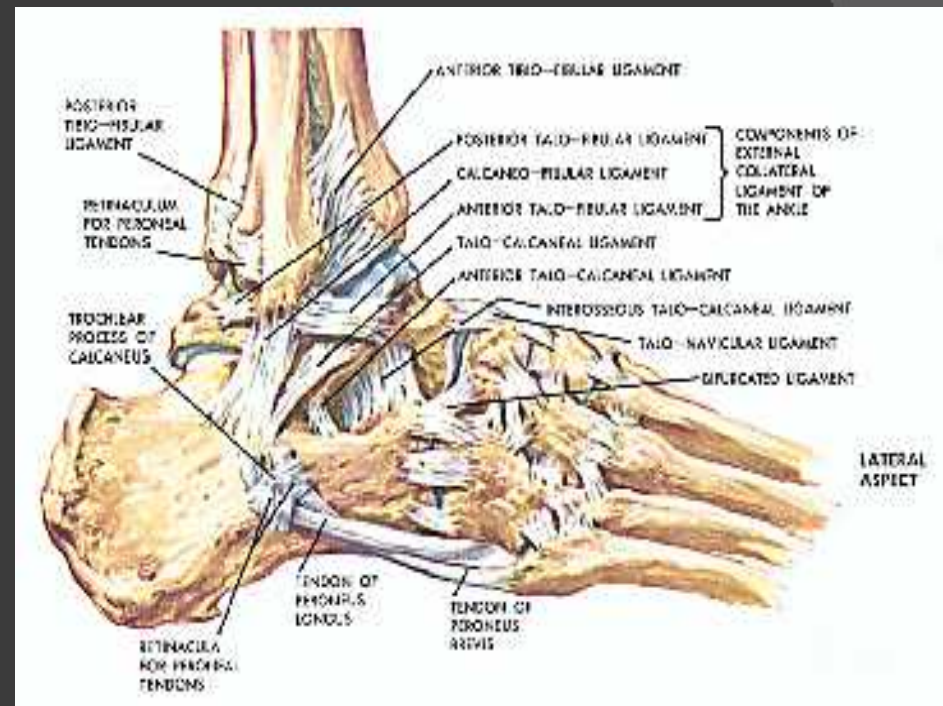


Differential Diagnosis

Jones Fracture



Peroneal Tendon Subluxation



Treatment RICE

- Rest
- Ice
- Compression
- Elevation

Treatment Grade I and II Functional Bracing



Treatment Grade III and Syndesmosis



Surgery or cast – NO!

Functional Bracing –YES!

- Return to work 2 to 4 times sooner
- No difference in long term stability
- No surgical complications
- 87% excellent and good results with bracing
- 60% excellent and good results with surgery

Rehabilitation

- Decrease swelling
- Regain range of motion
- Strengthen muscles
- Balance and proprioceptive training
- Functional drills

Balance and Proprioception



Return to Play

- Run without pain or limitations
- Sport specific movements without pain or limitation
- 90% strength
- Protective brace



Failure to Recover Giving Way and Recurrent Sprains

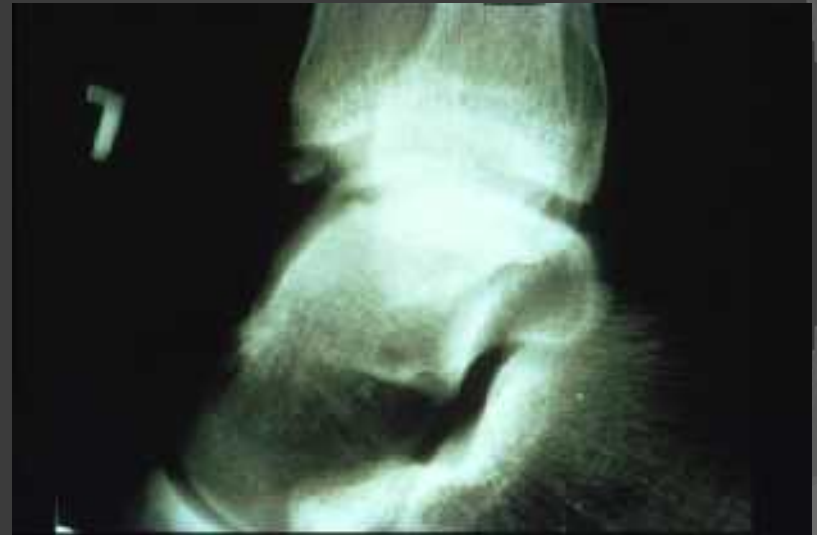
- Rehabilitation
- Bracing
- Surgical reconstruction of ligaments



Failure to Recover

Intra Articular Problems

- OCD
- Loose bodies
- Bone spurs
- Arthritis
- Soft tissue impingement



Prevention

- High top shoes
- Taping
- Shoes and tape
- Braces



Prevention

- Conditioning
 - Agility
 - Flexibility
- Proprioception
- Strengthening
- Stretching and warming up
- Recognize effects of fatigue

