**Ankle and Lower Leg Chapter 17**

**Ankle Bony Anatomy**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (link between lower leg & foot)
* Tibia
	+ Medial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Fibula
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ malleolus
* Mortise
* Tibial tuberosity
* Tibial condyles

**Bony Anatomy**



**Functional Anatomy**

* Ankle is a stable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ joint
* Medial/lateral dislocation is prevented by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Square shape of talus adds \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of ankle
* Most stable during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, least stable in plantar flexion

**Ankle Motions**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Flexion
* Dorsiflexion
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Eversion
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Supination

**Ankle Articulations**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Joint (Talocrural joint)

* Tibia & fibula with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Dome of talus articulates with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formed by tibia & fibula
* *Motions*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & plantar flexion

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Joint

* Articulation of talus with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* *Motions*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & eversion

**Soft Tissue**

* Gastrocnemius
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Tibialis posterior
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Peroneus longus
* Peroneus brevis
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Plantar fascia
* Anterior talofibular
* Anterior \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Calcaneofibular
* Posterior \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Deltoid ligament
	+ Tibionavicular
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Anterior talotibial
	+ Posterior talotibial

**Muscles of the Lower Leg**

* Flexor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ longus
* Flexor digitorum longus
* Anterior \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Muscles of the Lower Leg**

* Peroneus tertius
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Peroneus brevis

**Muscles of the Lower Leg**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Compartments of the Lower Leg**

* Anterior
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Extensor digitorum longus
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Extensor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ muscles
* Peroneal
	+ Peroneus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Peroneus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Deep Posterior
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Flexor digitorum longus
	+ Flexor hallucis longus
	+ Tibialis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Superficial Posterior
	+ Gastrocnemius
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Plantaris

**Ligaments**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ aspect
	+ Anterior talofibular (ATF)
	+ Anterior \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Calcaneofibular (CF)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ talofibular
* Medial aspect
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Ligament

**Common Injuries to the Ankle & Lower Leg**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Occur most often on tibia
* Can be painful and disabling
* Complication🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Muscle Strains**

* Most common in \_\_\_\_\_\_\_\_\_\_\_\_\_
* Result from:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contraction
	+ Overstretching
	+ Continued \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Usually occur in area of MTJ or insertion of Achilles tendon
* Result from:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ overuse
	+ Single \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contraction
* Acute strain to Achilles have tendency to become chronic

**Cramps**

* A sudden, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contraction of a muscle
* Contributing factors include:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Fractures
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Lack of nutrients in diet
	+ Poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Improperly fitted equipment

**Cramps—Treatment**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stretching
* Fluid replacement
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Sports drink
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Ice

**Achilles Tendonitis**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Achilles tendon
* Tearing of tendon tissues caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stress
* Occurs at point where tendon attaches to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Achilles Tendonitis**

* Symptoms develop \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Repeated or continued overstress increases \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Pain, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, redness
* Treatment
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Stretching
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ problems
	+ Ice/Rest
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Heel lift/Achilles taping

**Achilles Tendon Rupture**

* Rupture occurs w/in tendon, approx 1-2” proximal to insertion
* Eccentric force applied to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ foot
	+ Poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Overexertion
* Direct\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ repaired
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = 1yr +
* Thompson test

**Medial Tibial Stress Syndrome**

* aka \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ splints
* Catchall term for pain that occurs below knee
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shin
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shin
* Result of doing too much too soon
* Associated with:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ activity on hard surface
	+ forcible excessive use of leg muscles (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, jumping)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of gastroc and/or soleus muscles
	+ improper \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ running biomechanics

**MTSS Treatment**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Reduce activity level
* Gentle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ assessment
* Orthotics
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Strengthening and flexibility program

**Stress Fractures**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crack in bone
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fractures in bone that will eventually lead to full fracture if left untreated
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stress placed on bone greater than body’s ability to heal it

**Stress \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—S/Sxs**

• “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” of sharp, intense pain upon palpation

* **Shin-splint**

**Stress Fx**

* Pain worse in \_\_\_\_\_\_
* Pain more generalized
* Pain worse in \_\_\_\_\_\_\_\_

**Compartment Syndrome**

* \_\_\_\_\_\_\_\_\_\_\_\_\_ within one or more of the compartments of the lower leg
* Caused by:
	+ \_\_\_\_\_\_\_\_\_\_\_
	+ Fracture
	+ Crush injury
	+ Localized infection
	+ Excessive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Overstretching

**Ankle Sprains**

* MOI: combo of excessive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and PF
	+ aka lateral ankle sprain
* Anterior Talofibular Ligament (ATF)
	+ Calcaneofibular (CF)
	+ Posterior talofibular (PTF)
* Eversion (\_\_\_\_\_\_\_\_\_\_\_\_) ankle sprain less common
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ligament

**Ankle Sprains**

* Injury to ligamentous and capsular tissue
* Traumatic joint twist that results in stretching of total tearing of the stabilizing connective tissue
* One of most common & disabling sports injuries
* General Symptoms:
	+ Point tenderness
	+ Skin discoloration
	+ Joint swelling
	+ Local temperature increase
	+ Pain

**Ankle Sprains**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Anterior Talofibular
	+ Calcaneofibular
	+ Posterior Talofibular
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Deltoid Ligament
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ High ankle sprain

**Ankle Sprain—S/SXS**

* Grade 1
	+ Some pain
	+ Minimum LOF
	+ Mild point tenderness
	+ Little or no swelling
	+ No \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Grade 2
	+ Pain
	+ Moderate LOF
	+ Swelling
	+ Slight to \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Grade 3
	+ Severe sprain
	+ Extremely painful initially
	+ LOF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Tenderness
	+ Swelling
		- * + May represent subluxation that reduced spontaneously

**Ankle Sprain—Treatment**

* Splint, tape, brace
* Compressive wrap
* Horseshoe
* \_\_\_\_\_\_\_\_\_\_\_\_
* Crutches
* \_\_\_\_\_\_\_\_\_\_\_\_

**Special Tests & Rehabilitation**

**Anterior Drawer**

* Tests integrity of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ligament

**Talar Tilt**

* Tests integrity of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ligament

**Squeeze Test**

* Squeezing the tibia and fibula together
* Can indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or high ankle \_\_\_\_\_\_\_\_\_\_\_\_\_

**Bump Test/Tap Test**

* Bump calcaneus
	+ Indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to tibia/fibula
	+ Indicate high ankle \_\_\_\_\_\_\_\_\_\_\_
* Tap mallelous
	+ Indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of particular bone

**Ankle Rehab**

* 4-way \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Heel walks/Toe walks
* 3-way \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Unilateral Balance
* 3-way Tramp throw