

Advances in Treating Foot Pain: Diagnosis, Treatment, and Prevention

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Education, Training & Affiliations

MedStar Union Memorial Hospital
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Orthopedic Foot and Ankle Surgery
Fellowship

University of Washington
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Orthopedic Surgery Residency

University of Louisville School of Medicine
Louisville, KY
Doctor of Medicine

The University of Texas at Austin
Austin, TX
Bachelor of Science

Specialties

- Achilles tendon reconstruction
- Ankle arthroscopy
- Arthritis care
- Bunion & hammertoe surgery
- Cartilage repair and restoration
- Flatfoot reconstruction
- Joint injections
- Minimally invasive surgery
- Surgical fracture care
- Total ankle replacement



About Me

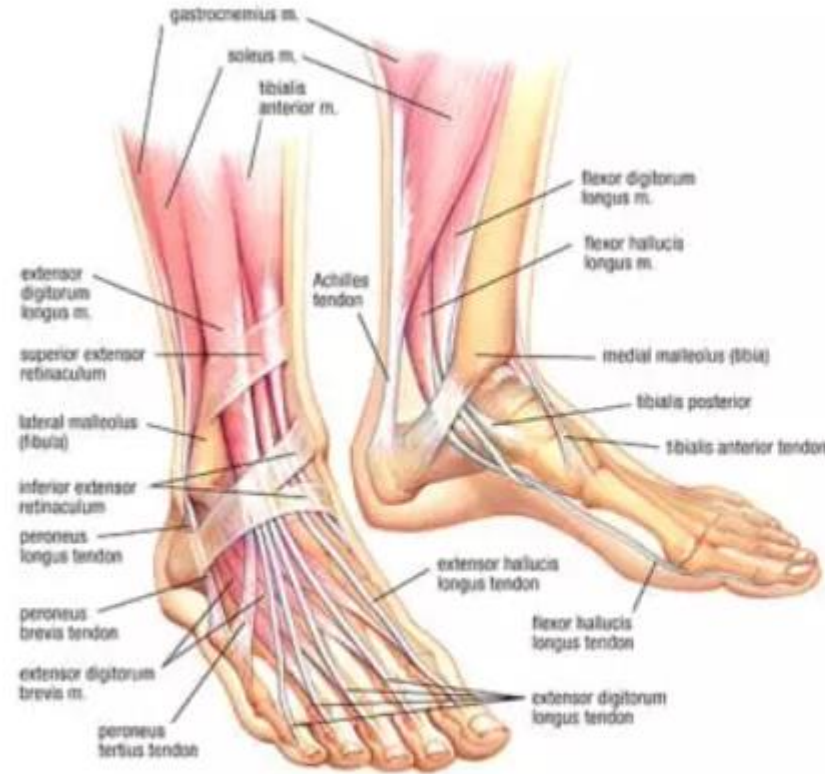


- Anatomy of the Foot & Ankle
- Common Foot & Ankle Conditions
- Nonsurgical Treatments
- Operative Treatments
- Preventative Care / Physical Therapy

- **Anatomy of the Foot & Ankle**
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Anatomy of the Foot and Ankle

- 30 bones (at least)
- Over 33 joints/articulations
- Over 100 muscles, tendons, ligaments, soft tissue connections
- Complex!



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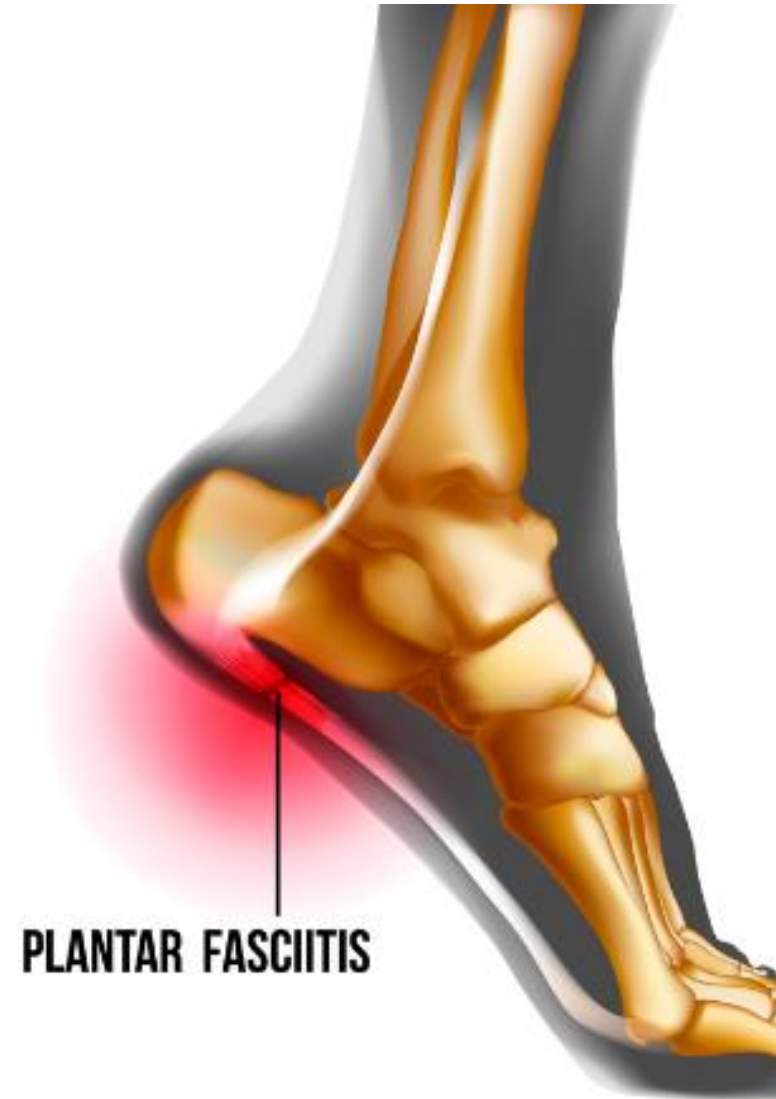
Plantar Fasciitis

- Thick band of tissue supporting the arch of the foot
- Repetitive overuse can cause microtears resulting in inflammation
- Very common condition



Plantar Fasciitis

- Pain usually in plantar heel
 - Can also be in arch of foot plantarly as well
- Often worst pain in the morning, after prolonged sitting
 - Prolonged ambulation
- Risk factors
 - Obesity
 - Calf tightness
 - Endurance activities (dancing, running)



Ankle Sprains

- Most common reason for missed athletic participation
- Typically from inversion injury
- Sprains on a spectrum
 - Mild -> Severe



Ankle Sprains

- Bruising
- Swelling
- PAIN!
 - Often on lateral side of ankle
- May or may not be able to bear weight
- Symptoms can mimic a fracture
 - When in doubt, get an X-RAY!



Tendinitis

- What is tendinitis?
 - Inflammation of tendons resulting in pain, swelling
- Common locations:



Peroneal Tendinitis



Posterior Tibial Tendinitis



Achilles Tendinitis

Tendinitis

- Overuse related condition
- Activity-related pain
 - Often improves with rest
- Can be associated with swelling over affected tendon
- May have underlying partial tearing of tendon
- Often responds to anti-inflammatories



- Cartilage loss over time
 - Traumatic
 - Degenerative
 - Infectious/Inflammatory
- Results in pain, swelling, dysfunction
- Common condition
 - Will eventually happen to all of us



- Common Locations
 - Great toe
 - Ankle
 - Midfoot
- Pain
 - With activity
 - Startup pain
 - Can last days/weeks



Fractures

- Resulting from trauma
 - Sometimes with minimal energy
- Can involve any bone in the foot & ankle



Fractures

- Severe swelling, bruising
- Pain
- Typically unable to bear weight
 - But bearing weight does not rule out fracture!
- Recommend urgent X-RAY
- Treatment can be operative or non-operative



Achilles Rupture

- Sudden dorsiflexion of ankle
- Typically with higher intensity of activity
 - Trail running
 - Sports
 - Technical hiking



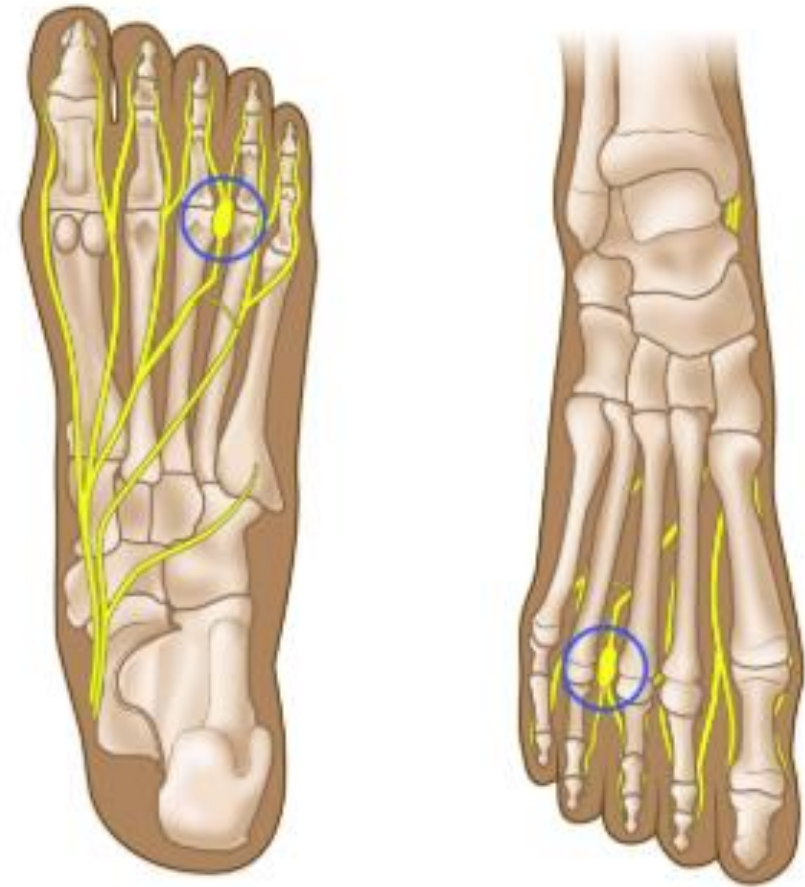
Achilles Rupture

- Swelling along Achilles tendon
- Palpable defect within tendon
- Still able to bear weight
 - Often not painful



Morton's Neuroma

- Pain/numbness/tingling
 - Radiating into toes
- Most commonly 3rd and 4th toes
 - Sometimes 2nd and 3rd
- Sometimes associated with clicking
- Risk factors
 - Narrow shoes



Bunions (Hallux Valgus)

- Lateral deviation of the great toe w/ medial prominence
- Causes
 - Narrow shoewear
 - Genetics
 - Trauma
- Pain w/ narrow shoes
 - Often improves when barefoot



Bunions (Hallux Valgus)

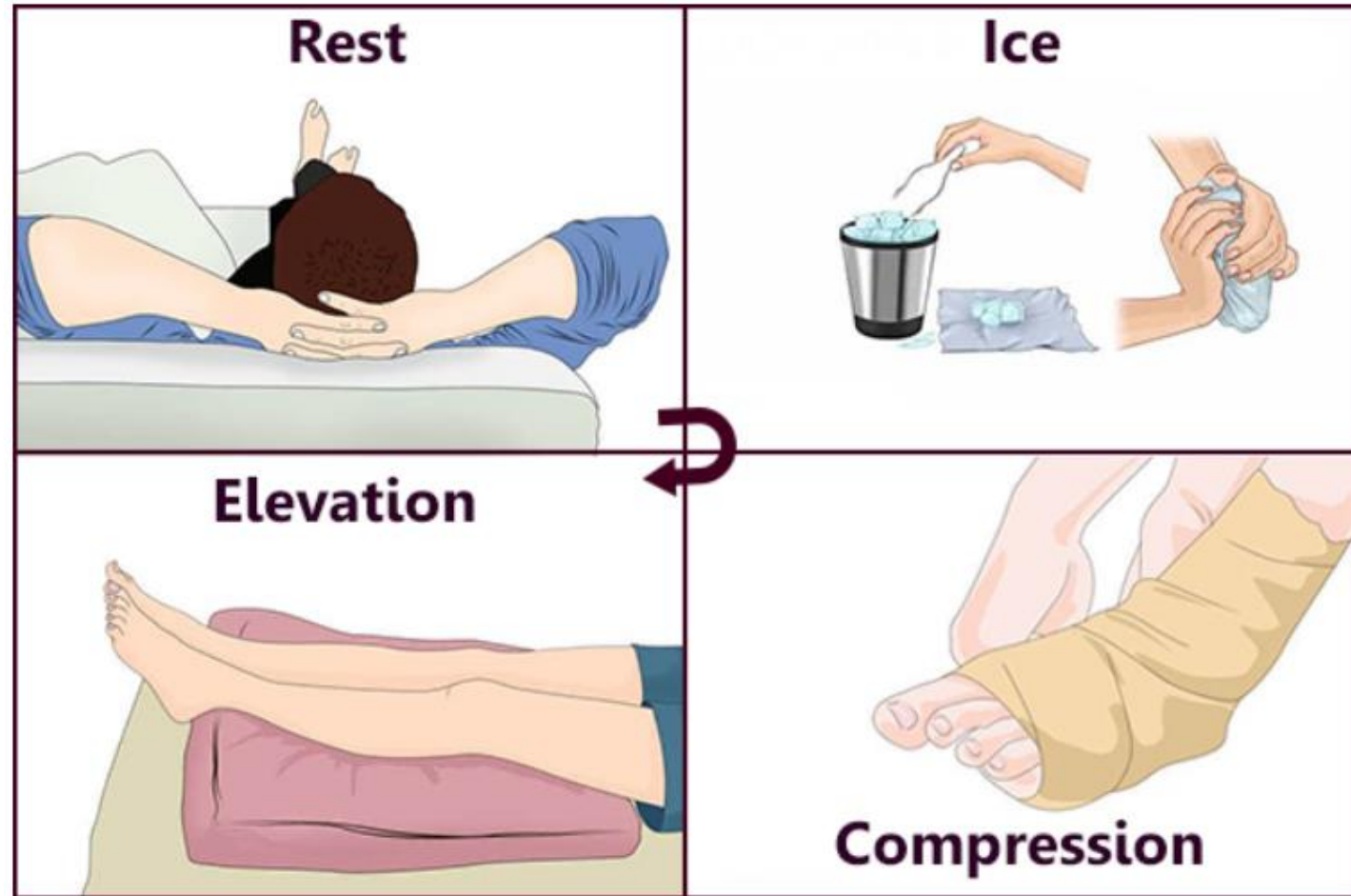
- Spectrum of disease
 - Significant range in severity
- Can result in:
 - Hammertoes
 - Cross-over toes
 - Great toe arthritis



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Nonsurgical Treatment

- 1st line treatment for any condition
 - RICE!
- Rest
- Ice
- Compression
- Elevation



Nonsurgical Treatment

- Rest
 - Many conditions are from overuse
 - Important!
- Ice
 - Often more beneficial than heat in acute inflammatory phase
- Compression
 - Helps with swelling
- Elevation
 - Helps with swelling and pain
 - Above the level of the heart



Nonsurgical Treatment

- Anti-inflammatories
 - Critical for pain relief and swelling aid
- NSAIDs
 - Non-Steroidal Anti-Inflammatory Drugs
 - Mainstay of treatment
 - i.e., ibuprofen (Advil), naproxen (Aleve)
 - Oral version may cause GI upset
 - Topical versions exist
 - Recommend 2-3 week continuous course for most conditions



Nonsurgical Treatment

- Immobilization
 - Helpful in the initial stages of pathology
 - Particularly if symptoms are getting worse
 - Cast, boot, brace
- Theory is to stabilize foot & ankle and allow for healing to occur
 - Can result in stiffness (by design)
 - Often helps pain significantly



Nonsurgical Treatment

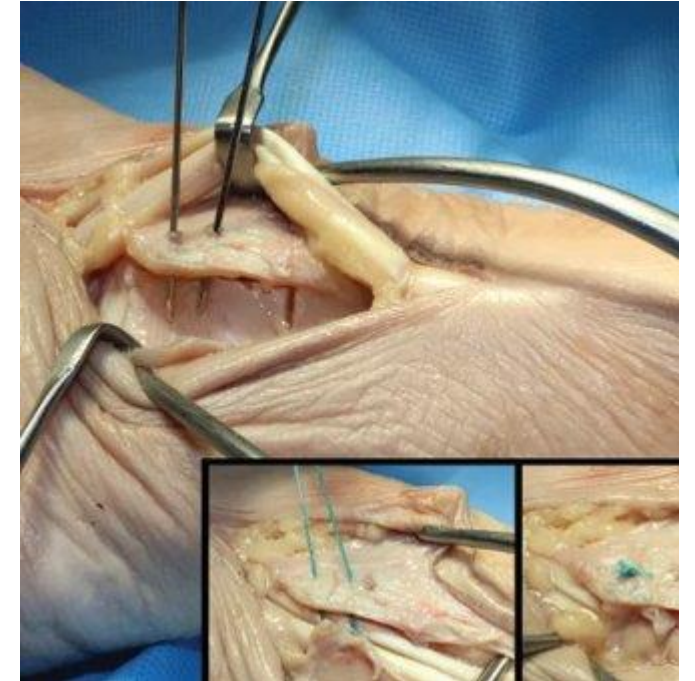
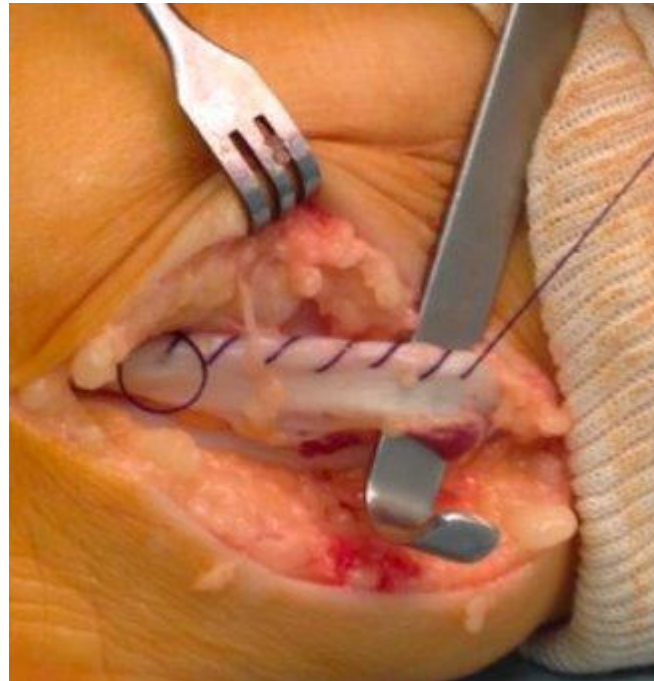
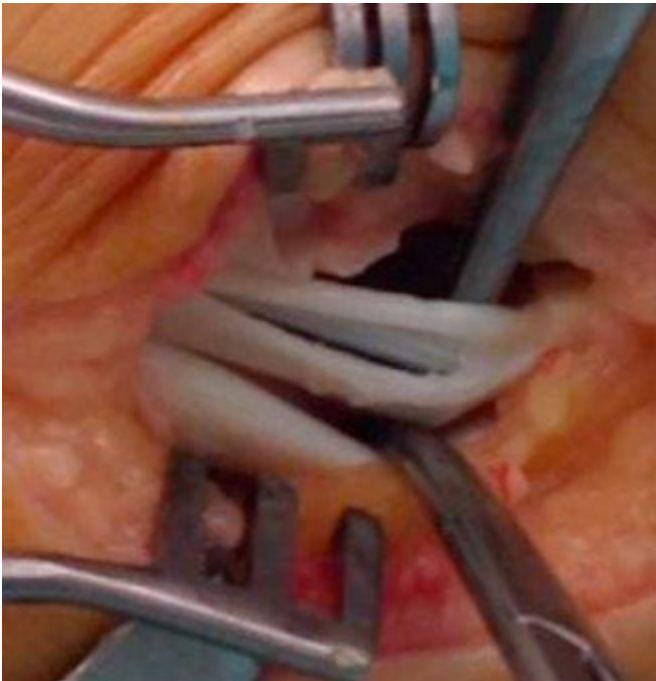
- Type of immobilization depends on severity of condition
- In general, will transition from boot to a brace as condition improves
 - Often may start with a brace if symptoms not severe



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- **Operative Treatments**
- Preventative Care / Physical Therapy

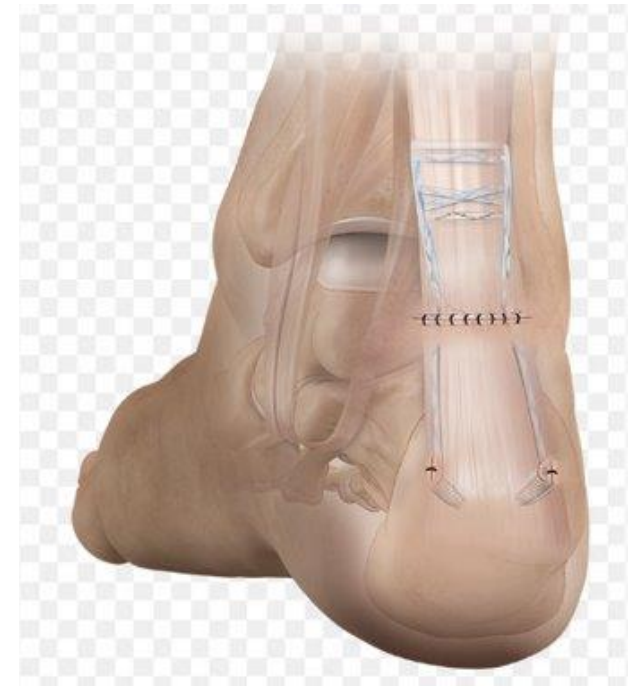
Operative Treatment

- Peroneal Tendinitis
 - Typically associated w/ tears or instability (if progressing to operative)



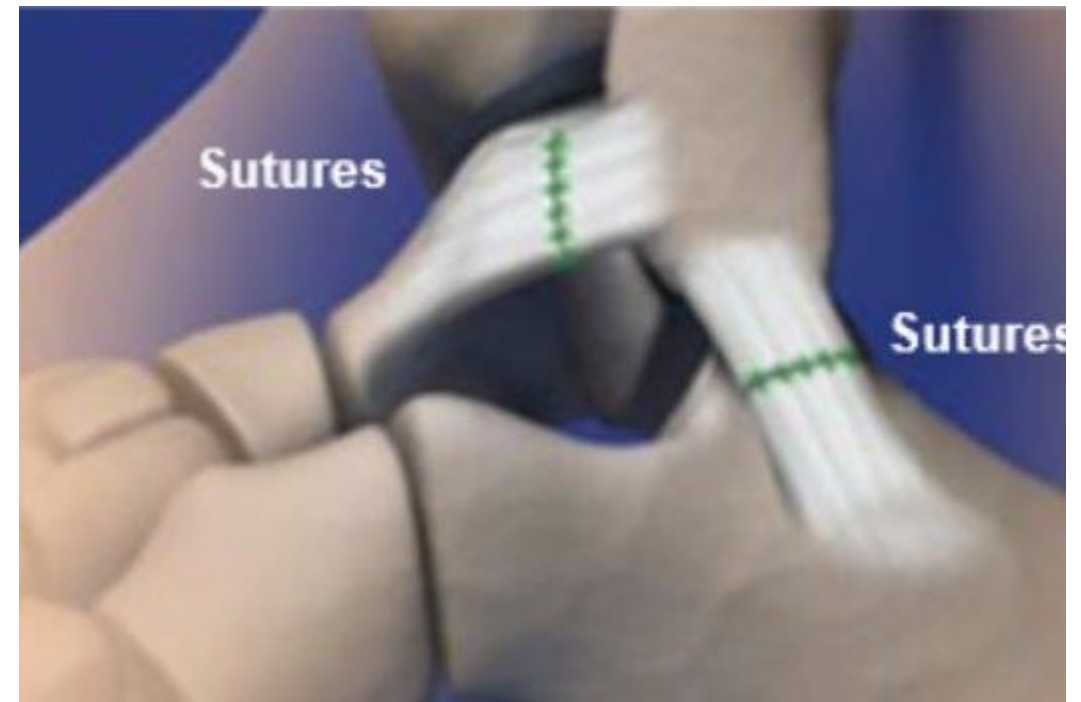
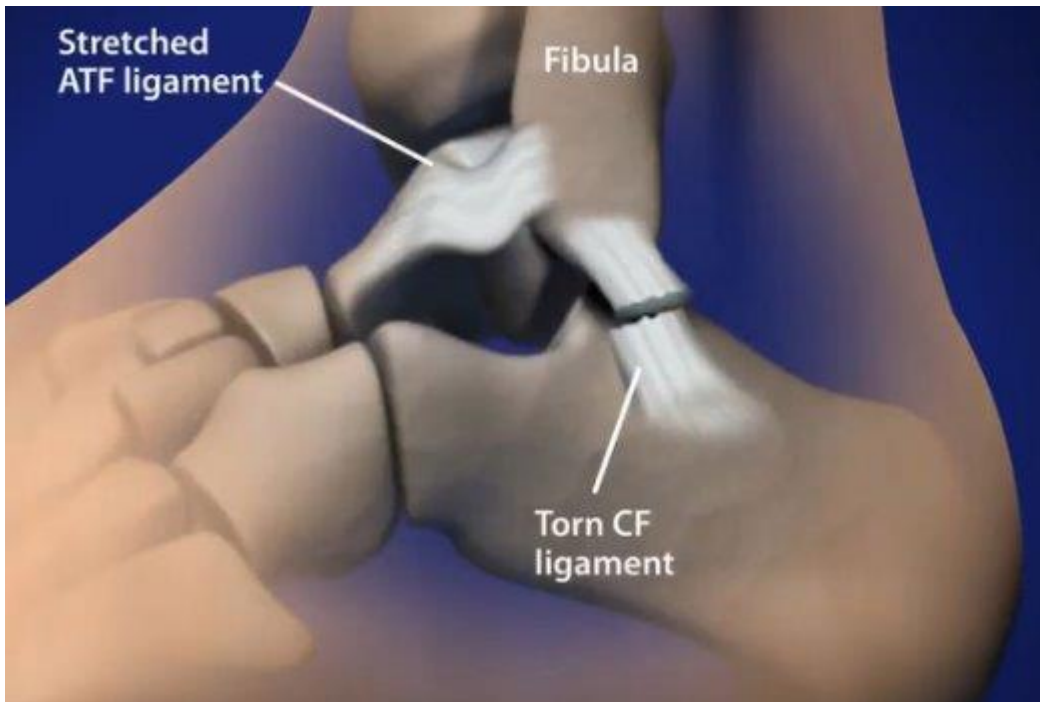
Operative Treatment

- Achilles Tendinitis and/or Rupture
 - Minimally invasive or open options



Operative Treatment

- Ankle Sprain Surgery
 - For those with recurrent instability



Operative Treatment

- Bunion Surgery



Operative Treatment

- Fracture Surgery



- Arthritis Surgery



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- Operative Treatments
- **Preventative Care / Physical Therapy**

Preventative Care

- Supportive Shoes
 - Generally good for overall foot & ankle hygiene
- The thicker the sole, the more support given
 - Cushions the foot
- Less flexibility in the shoe/sole, the better
 - Offers less motion through the foot, thus less painful



- Orthotics
 - Over the counter versions work for most people
 - Unless have unique foot shape or severe pathology
 - Goal is to provide cushion and support
- Many different types exist
- Recommend trying several different styles and see what feels best!



Preventative Care

- Metatarsal pads
 - Correct location is critical
- Can be built into orthotics
- Metatarsalgia
- Morton's neuroma



Preventative Care

- Ankle Braces
 - Huge variety
 - Protect against rotation injury
- Taping



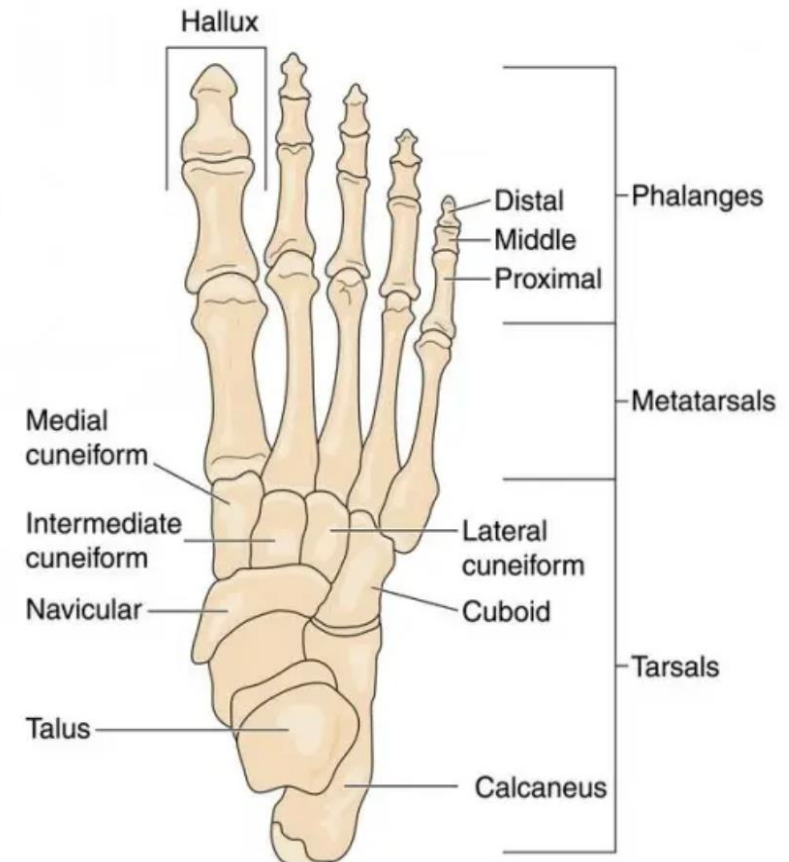
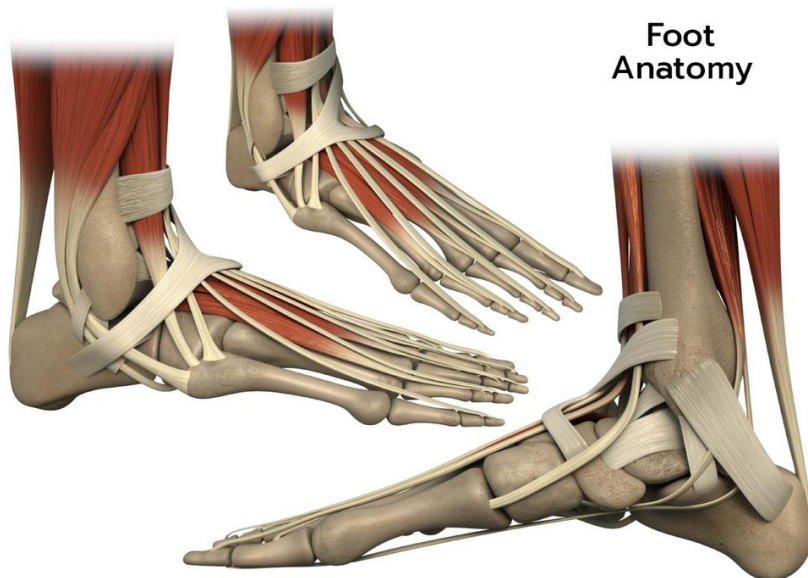
- Physical Therapy
 - Important part of preventing AND recovering from any condition!
 - Typically, do not begin immediately, wait until after period of immobilization to decrease inflammation
 - Home Exercise Program
- Preventative Stretching
 - Recommend incorporating into daily routine
 - Particularly calf stretches



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- **Physical Therapy**

Anatomical Overview

- 26 bones
- 33 joints
- 19 intrinsic muscles
- 10 extrinsic muscles



- Acute:
 - Sprain (twisted ankle)
 - Strain
 - Muscle
 - Tendon
- Fracture
- Chronic:
 - Arthritis
 - Tendinopathy
 - Bunions
 - Plantar Fasciitis
 - Morton's Neuroma

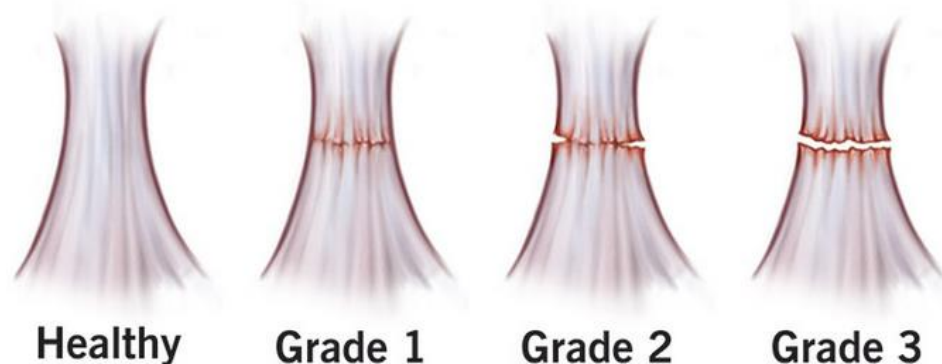
Sprains & Recovery Time

- Grade 1
 - 1-2 weeks
- Grade 2
 - 3-6 weeks
- Grade 3
 - Up to 3 months
- Potential need for surgical intervention



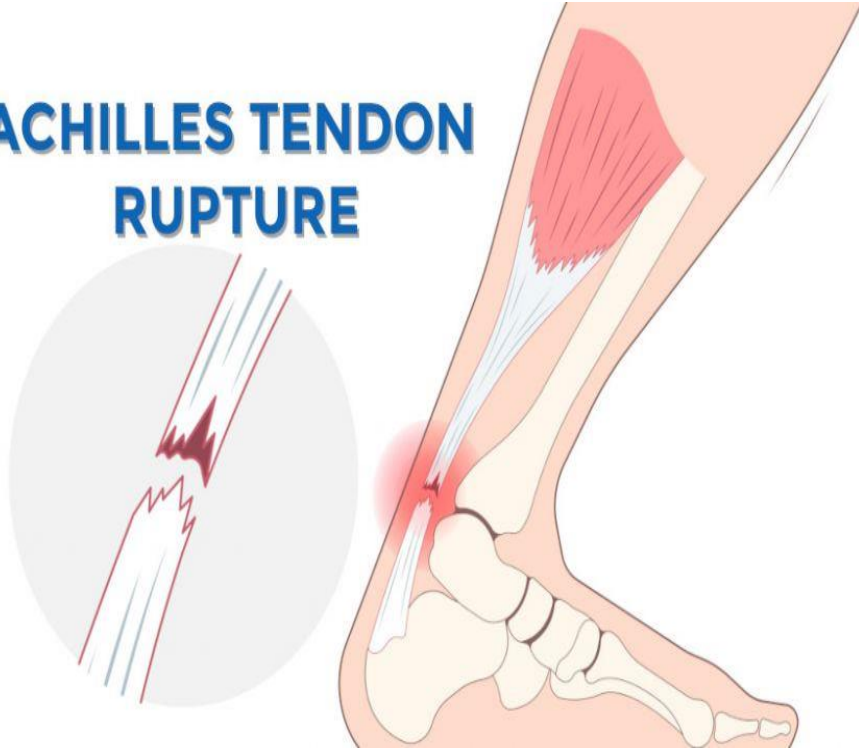
Strains: Muscles & Tendon

- Grade 1 (mild)
 - Still typically have normal range of motion and strength
- Grade 2 (moderate)
 - Acute and significant pain
 - Swelling and mild decrease in strength
- Grade 3 (Severe)
 - A complete rupture with significant pain, swelling, and loss of function

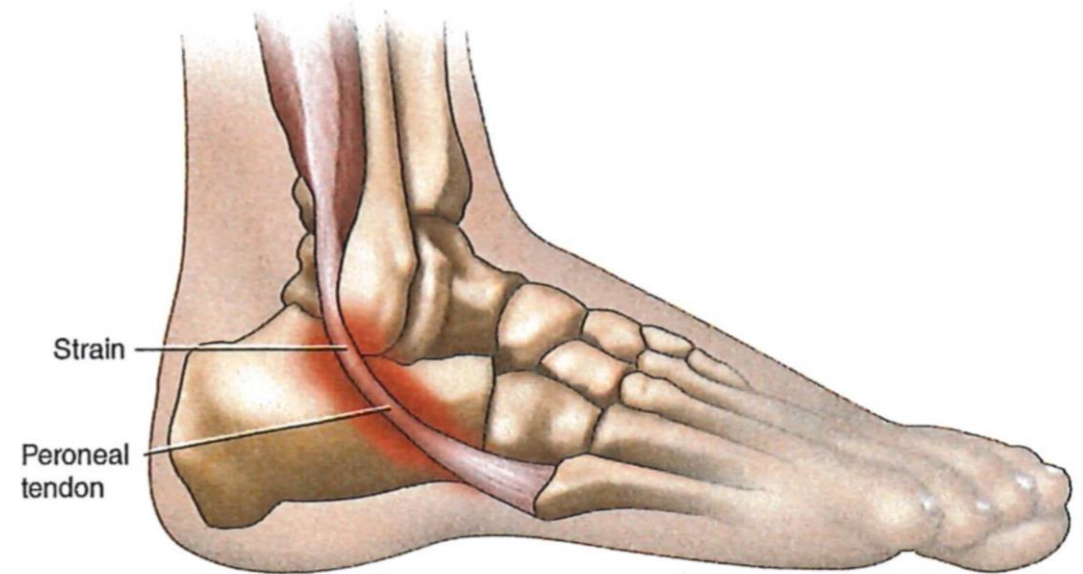


Strains & Ruptures

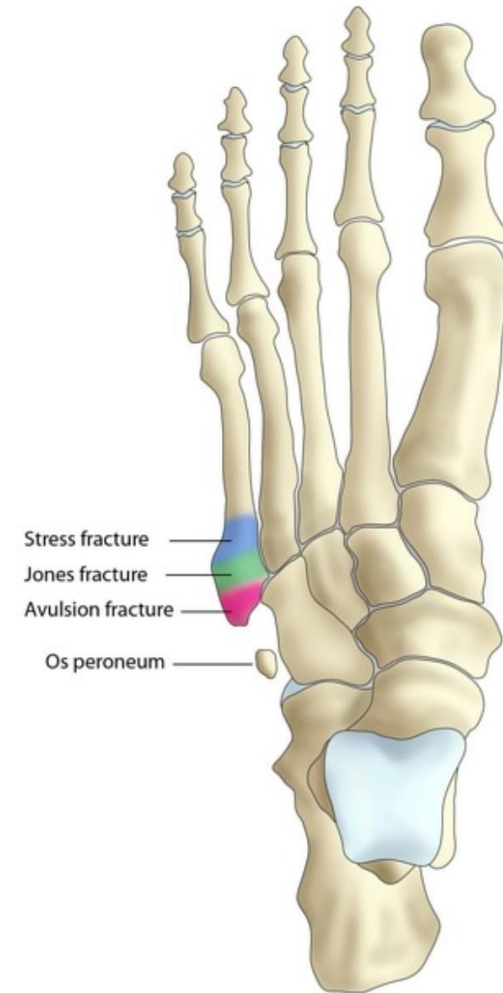
**ACHILLES TENDON
RUPTURE**



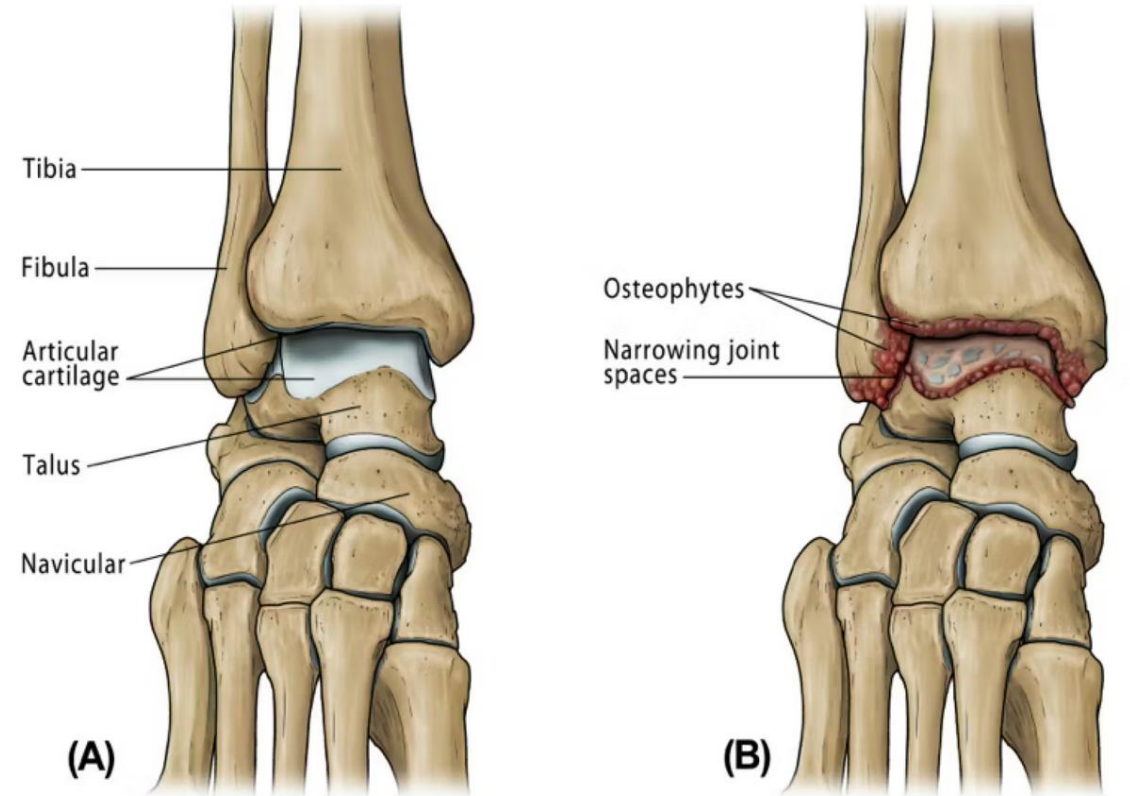
PERONEAL TENDON STRAIN



- Trauma
 - Severity will determine if surgery is necessary
 - Bracing or casting
 - Reloading, balance, gait
- Stress Fracture
 - Activity modification
 - Treat impairments
 - Reloading

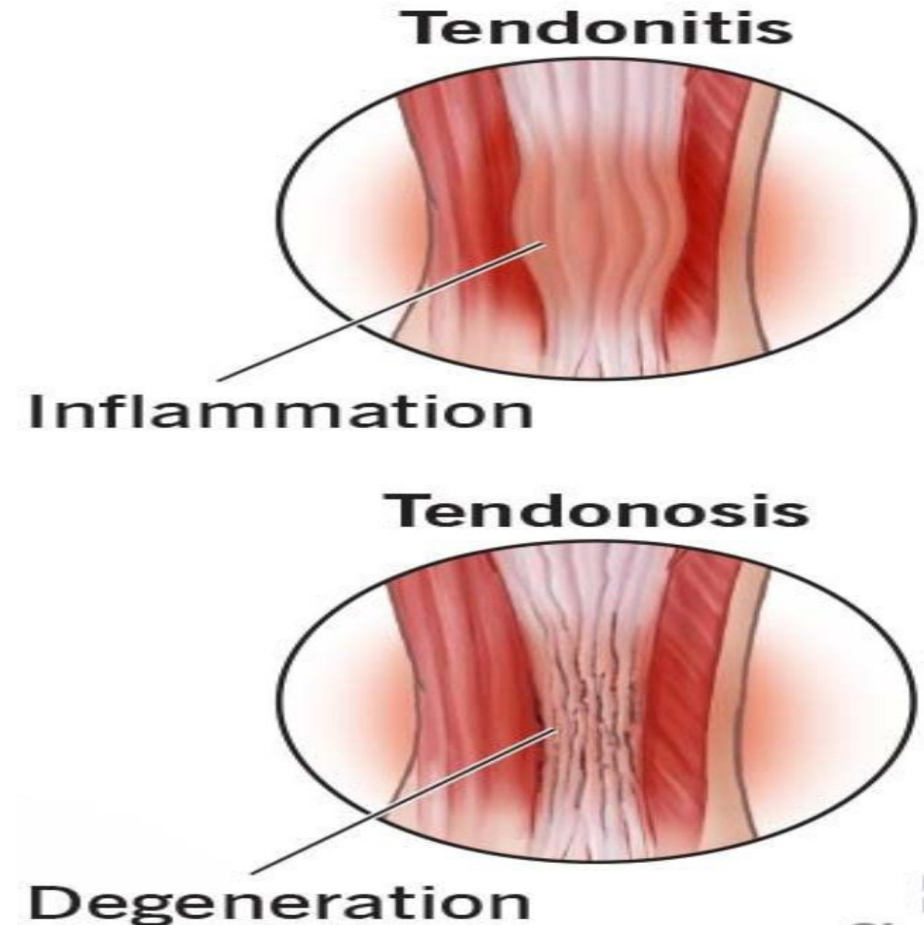


- Pain, stiffness, and/or swelling
- Treatment:
 - Activity modification
 - Mobility and strength
 - Bracing and footwear
 - Weight management



Tendinopathy

- Includes:
 - Achilles
 - Posterior tibialis
 - Peroneal
- Acute
 - Rest
 - Isometrics
- Chronic
 - Reloading and remodeling



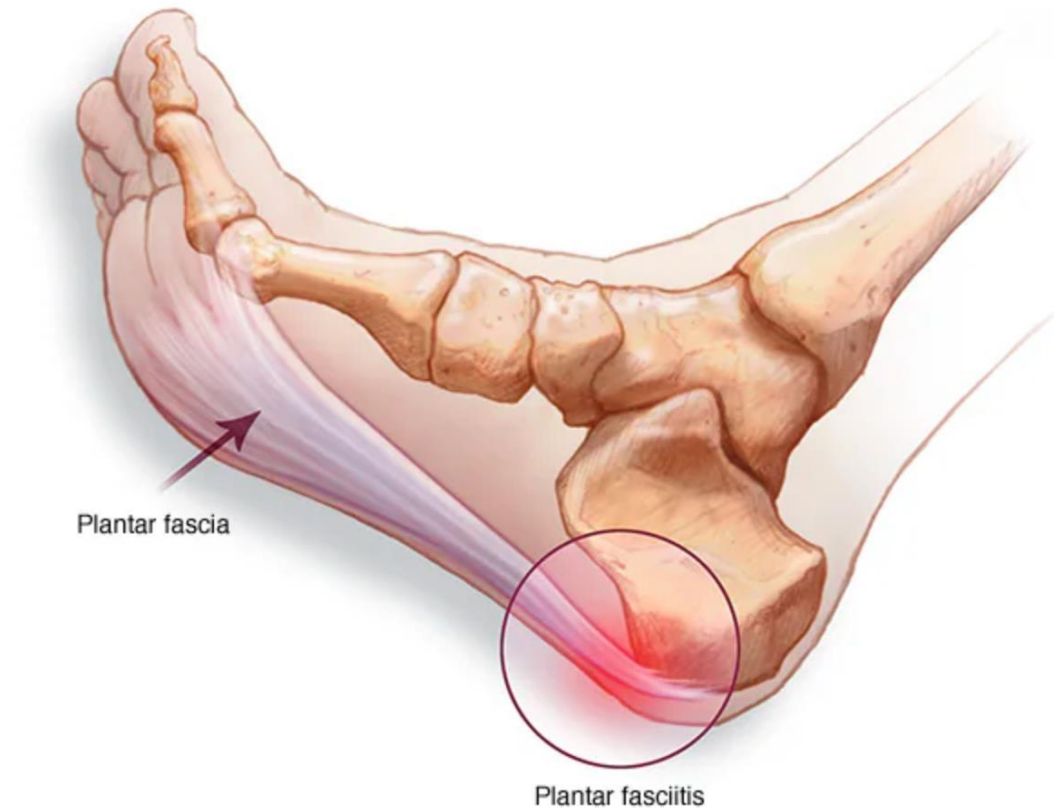
Bunions

- Protrusion or bump on the outside of the big toe
- Contributing causes
 - Narrow shoes
 - Time on feet
 - Foot mechanics
- Treatment
 - Spacers or taping
 - Strengthen intrinsics
 - Mobility/Flexibility



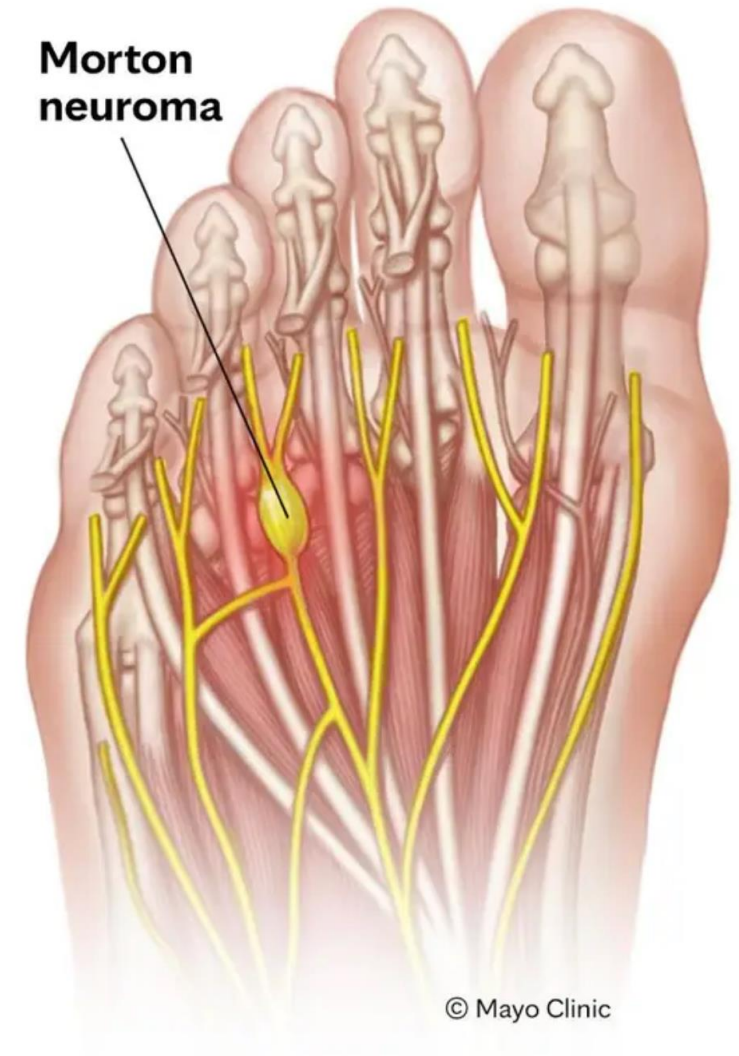
Plantar Fasciitis

- Pain at the heel in the morning or after sitting
- Risk Factors:
 - High arch
 - Change of activity levels
- Treatment
 - Stretching
 - Remodeling of tissues
 - Shoewear



Morton's Neuroma

- Tingling, burning, or pain in the forefoot
- Feeling of a stone under the ball of the foot
- Contributing Factors
 - Narrow shoes
 - Activities
 - Foot mechanics
- Treatment
 - Improve foot mechanics
 - Shoewear



Conservative Treatment

- Treat contributing factors
 - Mobility
 - Strength
 - Balance
- Shoewear
- Braces, Orthotics, Spacers
- Modify activities

Thank you!

Questions?



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