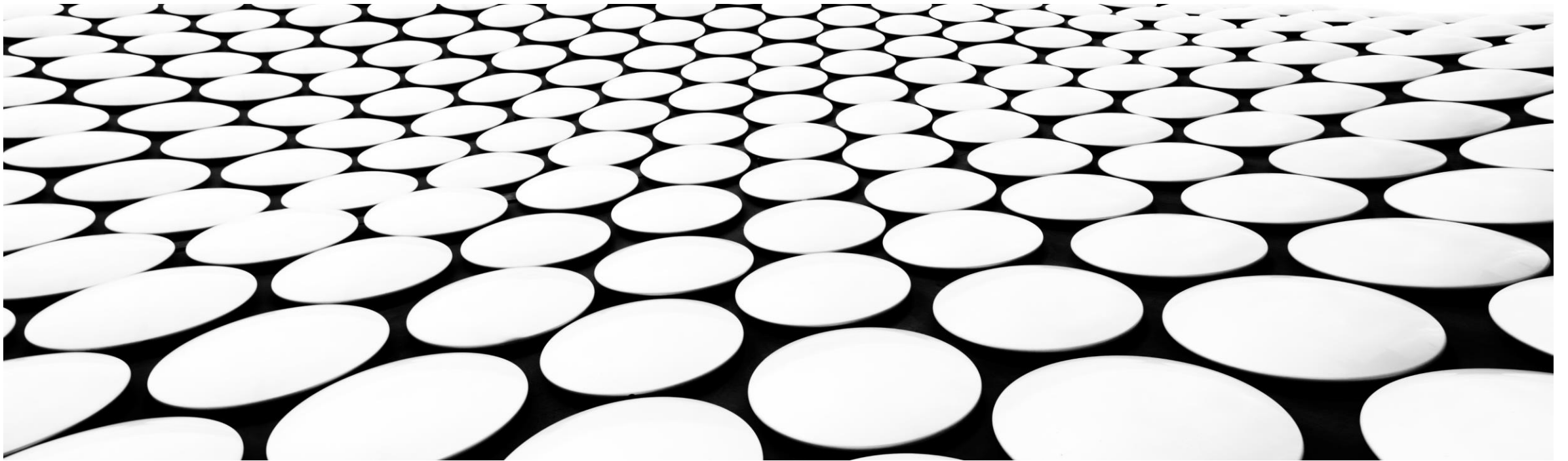

THE FLAT FOOT

PEDIATRIC, JUVENILE, AND ADULT



PEDIATRIC FLAT FOOT

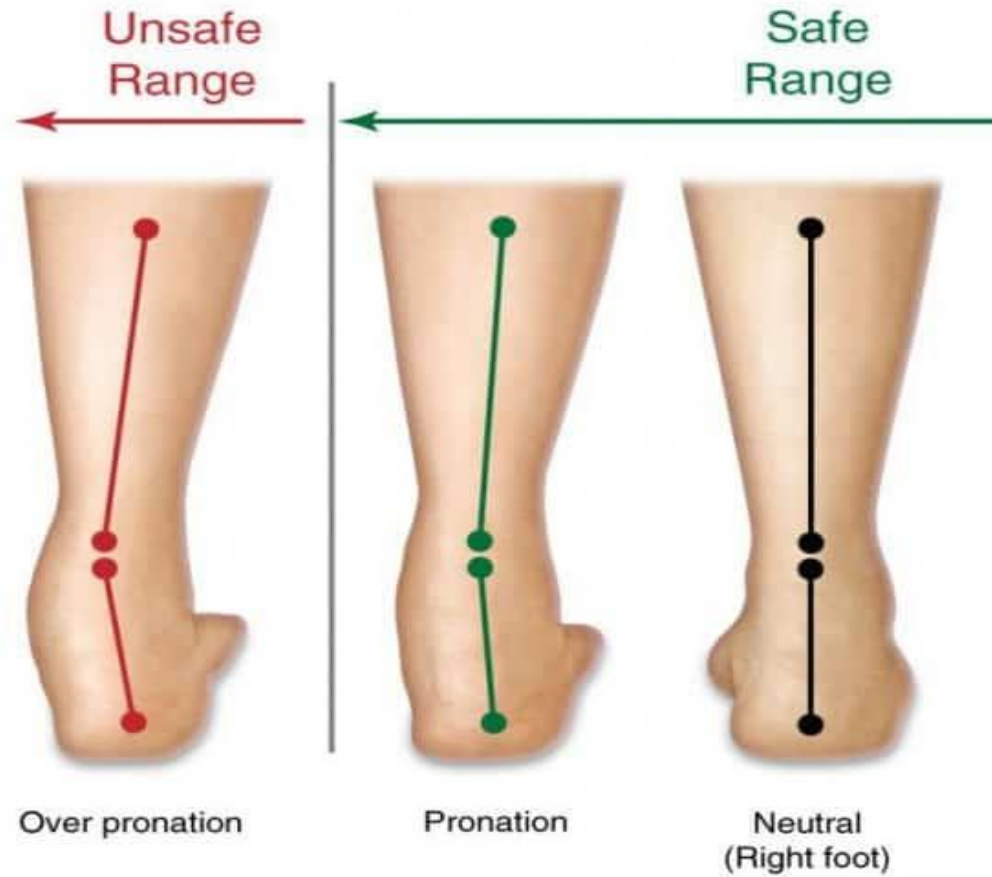
- To Treat or not to treat, THAT IS THE QUESTION



WHAT TO ASK AND WHAT TO LOOK FOR

- What is normal?
 - Parent brings a child in concerned about flat feet
 - No pain in the feet or ankles
 - Flat, Fat, Floppy up to age 4 normal
 - Knee or hip pain, aversion to walking distances, avoidance of sporting activities, clumsiness, child cannot stand up straight.....
 - Family history
- What else should I look for?
 - Gait analysis: internal or external rotation of the hips or knees, easy tripping, excessive calcaneal eversion, early toe raise.

IS PRONATION A BAD THING?

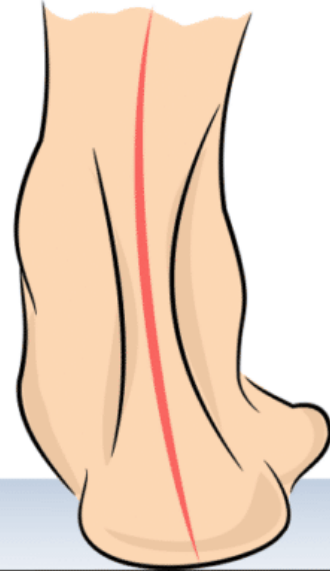




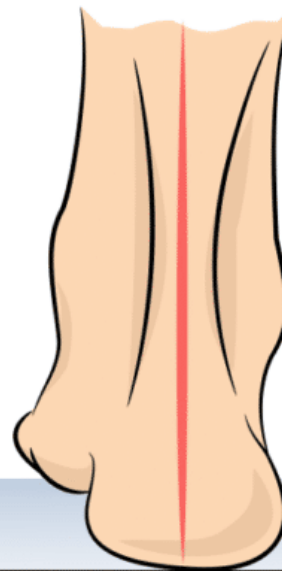
THE PLAIN TRUTH ABOUT PLANES

- Frontal
- Sagittal
- Transverse

FRONTAL PLANE

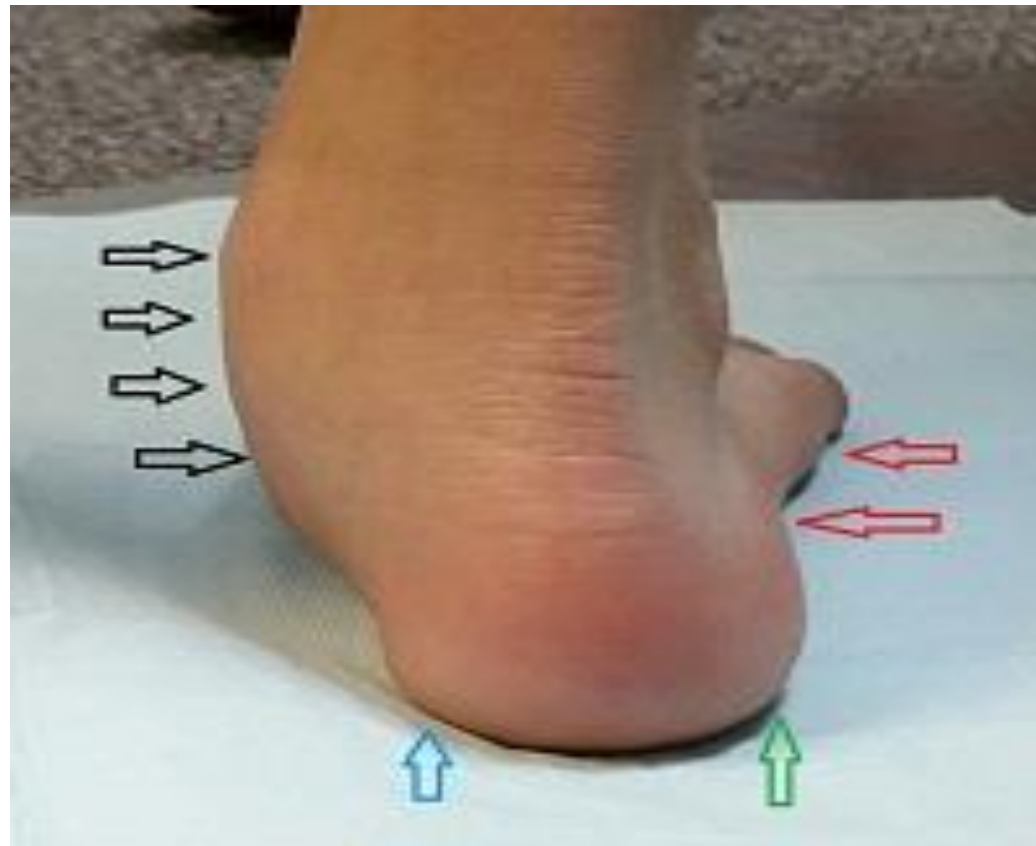


Everted

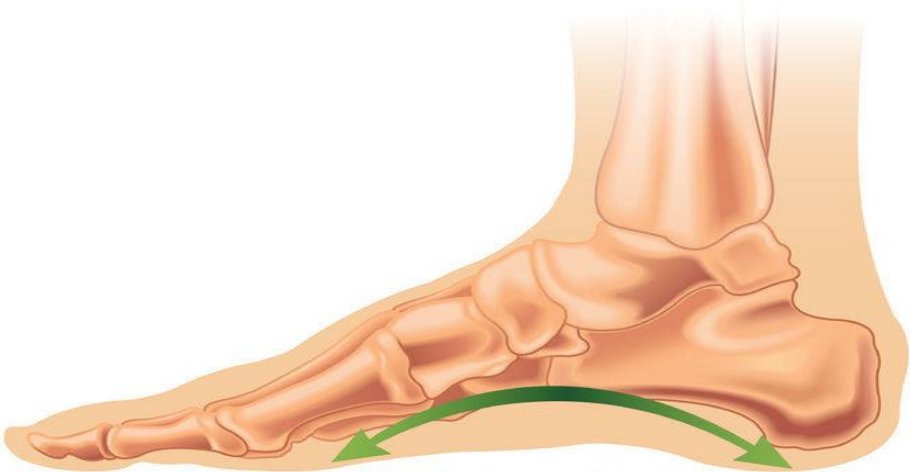


Neutral

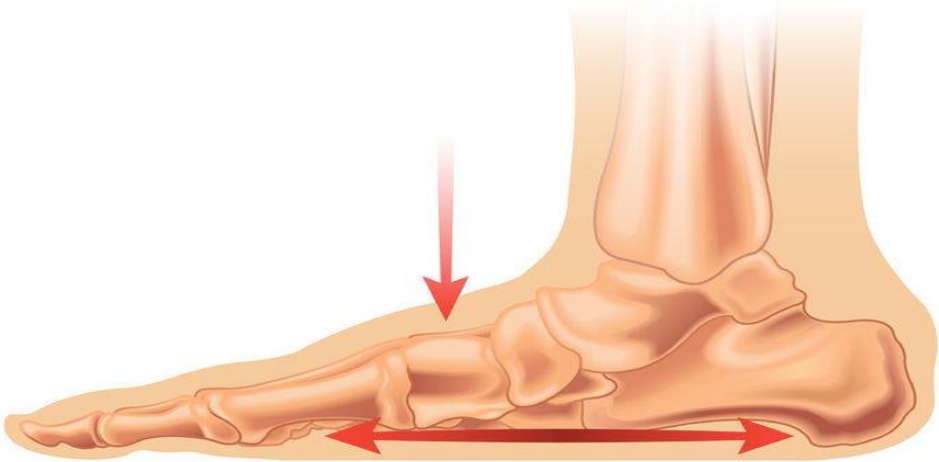
PRIMARILY CALCANEAL EVERSION



SAGITAL PLANE



Healthy medial arch
(Normal Foot)

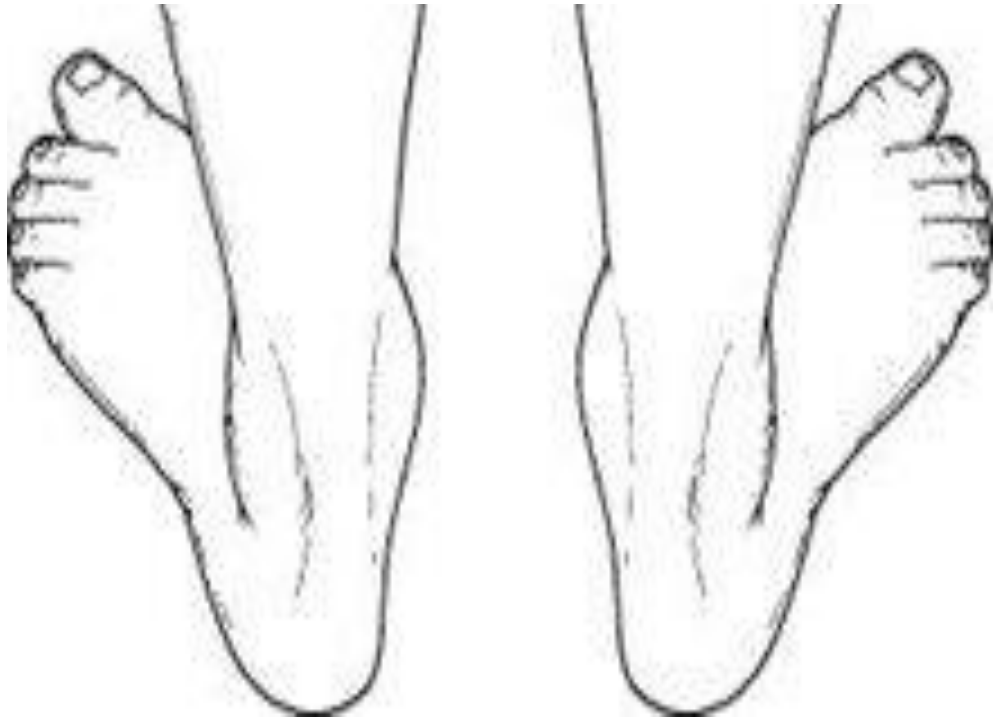


Collapse of the medial arch
(Flat Foot)

PRIMARY MEDIAL ARCH COLLAPSE



TRANSVERSE PLANE



LATERAL DEVIATION OF THE FEET



X-RAYS

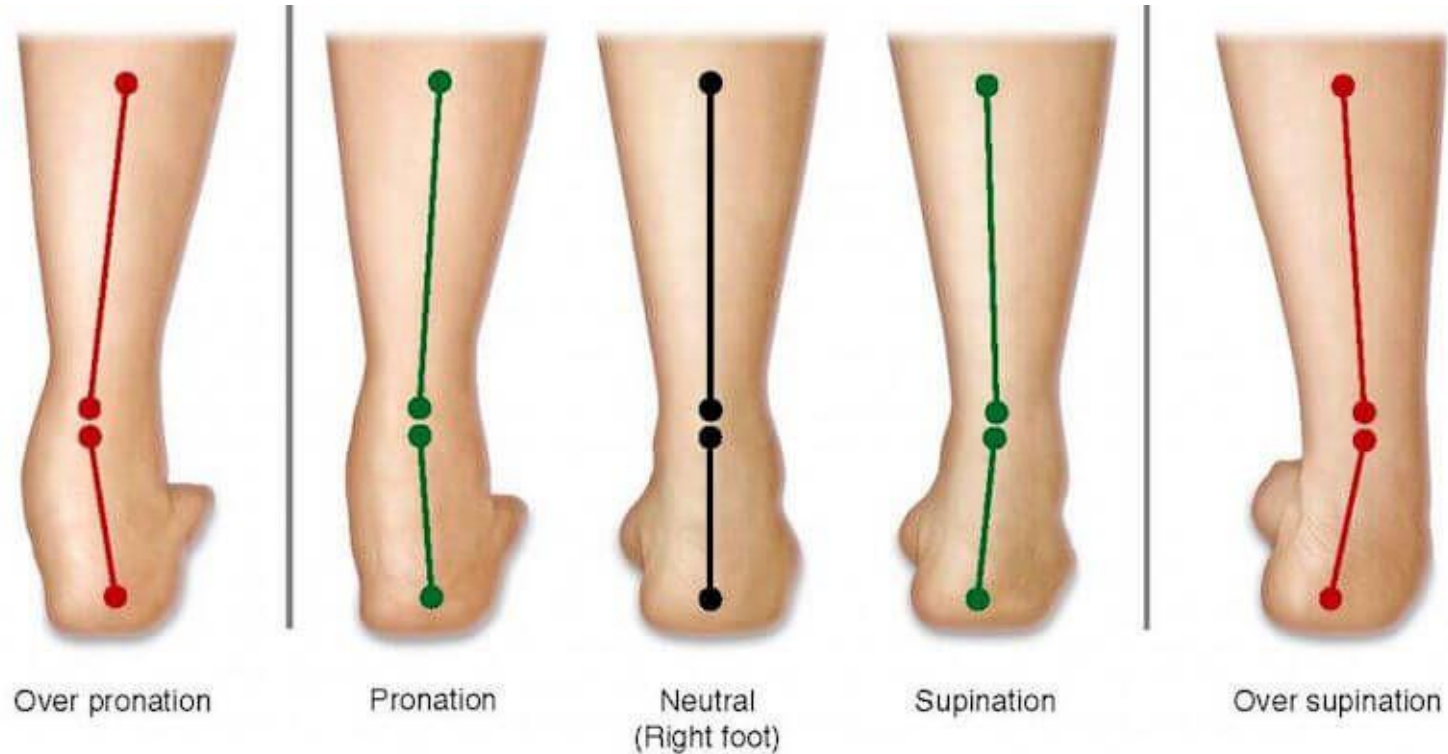
- Please, please, please get weight bearing films.....



GAIT ANALYSIS



AT HEEL STRIKE THE FOOT IS PRONATING AND SHOULD UNTIL FOREFOOT LOADING. THE FOOT SHOULD THEN CHANGE FROM A MOBILE ADAPTOR TO A RIGID LEVER AND BEGIN SUPINATING. EXCESS IN EITHER MOTION IS “ABNORMAL”.





TREATMENT OPTIONS FOR A FLEXIBLE FLAT FOOT

- Isolated muscle strengthening with theraband or isometric exercises
- Shoes
- PT
- Inserts
 - OTC
 - Custom
- Surgery

TOE SCRUNCH/PT STRENGTHENING



MOTION CONTROL SHOES

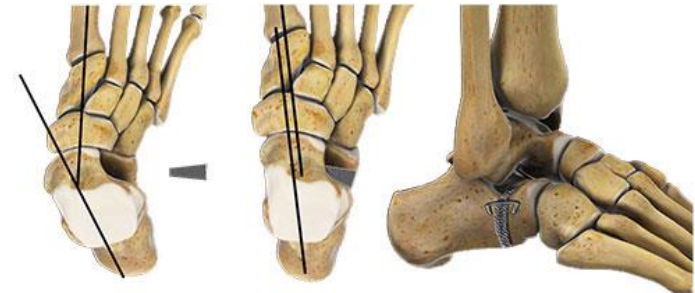


OTC AND CUSTOM ORTHOTICS



SURGICAL OPTIONS

- Subtalar stent
- Calcaneal slides
- Tendon transfers
- Spring ligament stabilization



Titanium Evans wedge is inserter to "shim" open the calcaneus to help reposition the foot.



RIGID FLAT FOOT

- Little or no movement in the subtalar or midtarsal joint
- Usually painful
- Either they have a calcaneonavicular bar or talocalcaneal coalition.
- Brace with an AFO
- Surgery
 - Remove the bar or coalition

CN BAR



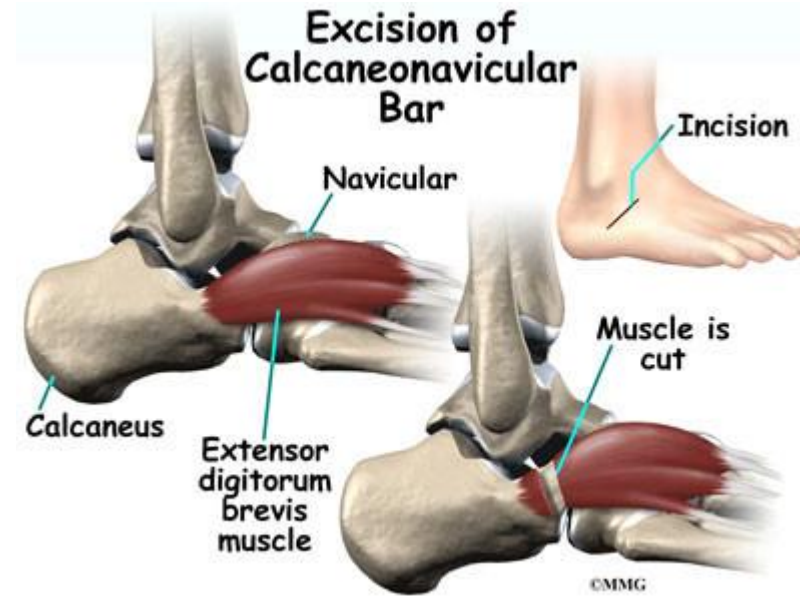
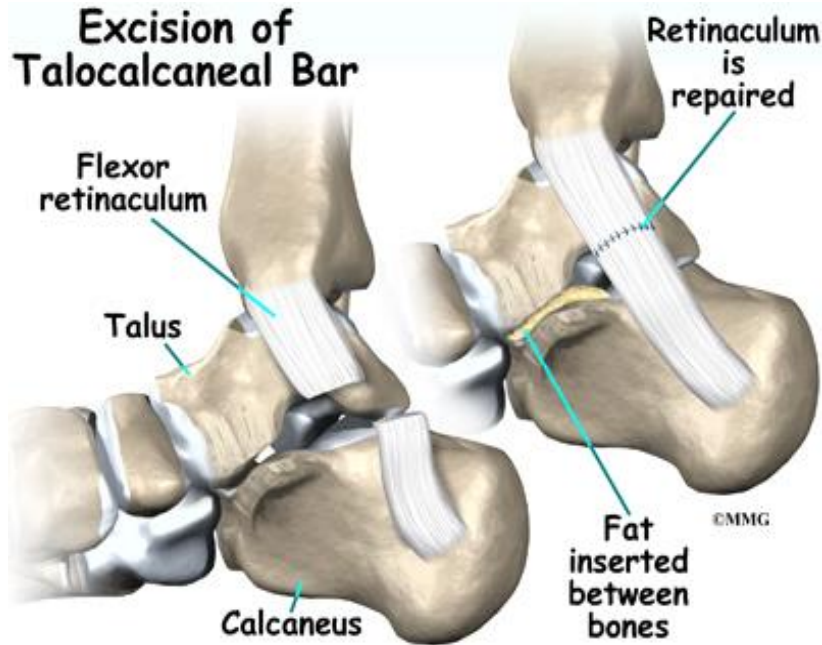
MIDDLE FACET COALITION



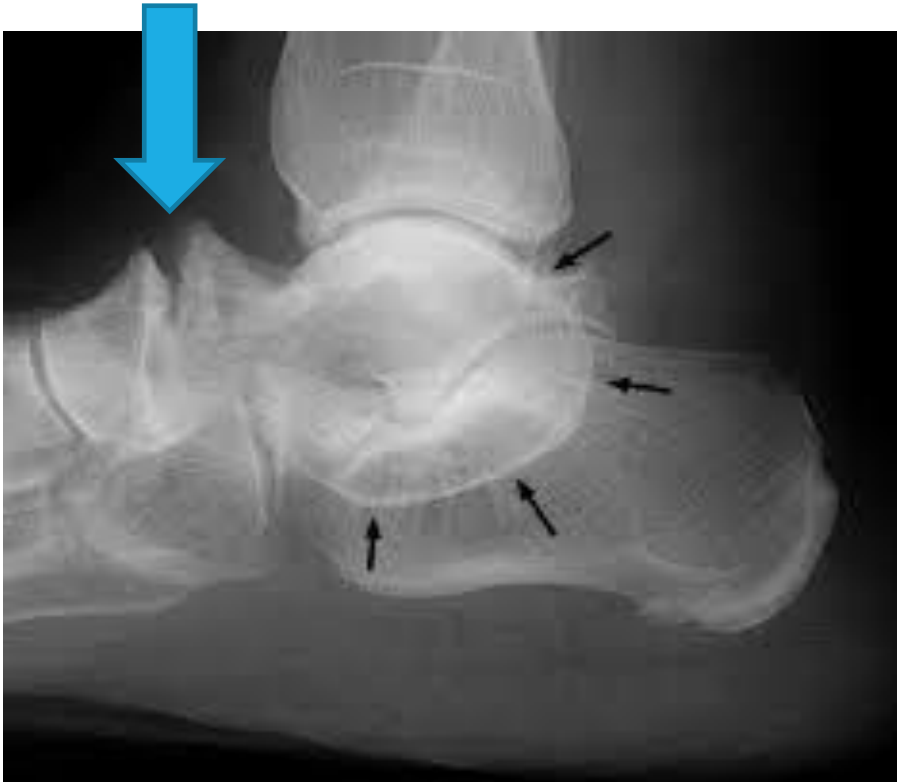
HINGED BRACE TO STABILIZE THE SURROUNDING JOINTS



SURGICAL REMOVAL OF THE COALITION



UNTREATED COALITIONS

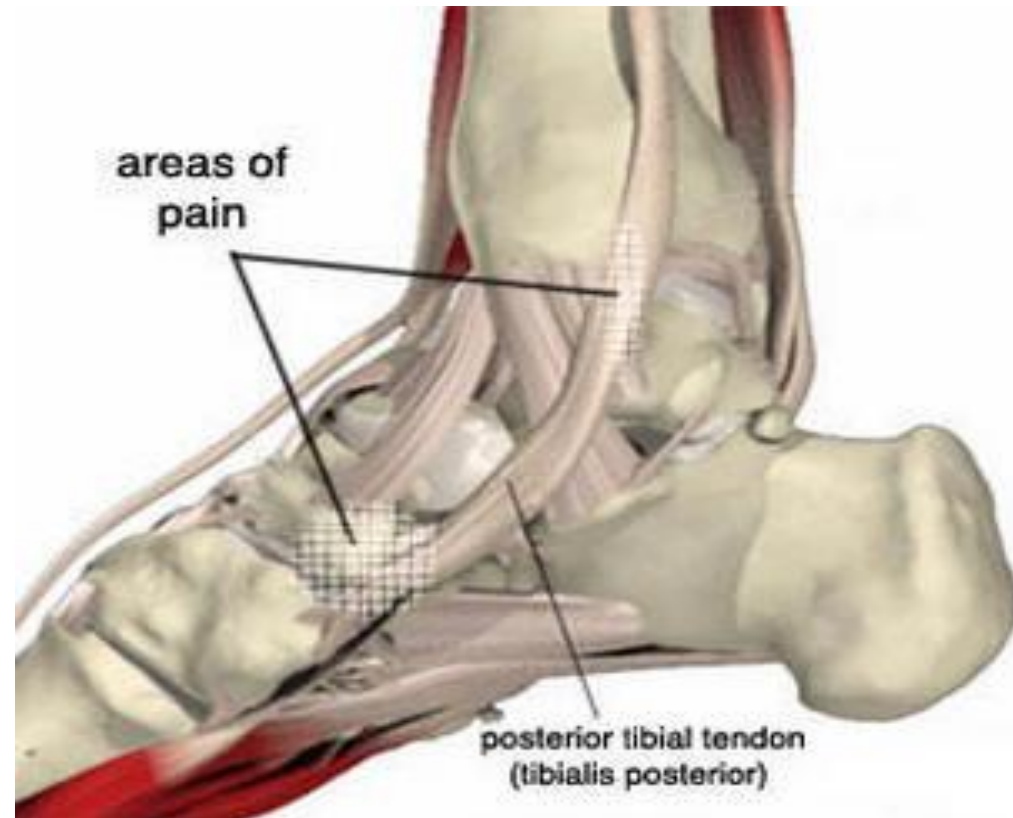




ADULT FLAT FOOT

- Acquired deformities
 - Posterior tibial tendon dysfunction
 - Trauma
 - Charcot joint
 - Autoimmune disease
 - DJD
 - Bad luck

POSTERIOR TIBIAL TENDON DYSFUNCTION





EARLY SYMPTOMS

- Pain at the navicular tuberosity
- Pain posterior to the medial malleolus
- Pain on resistance to plantarflexion and inversion
- Cannot toe raise on the affected foot



ADVANCED SIGNS AND SYMPTOMS

- Arch is collapsing
- Limited strength on plantarflexion and inversion

EARLY TREATMENT FOR POSTERIOR TIBIAL TENDONITIS





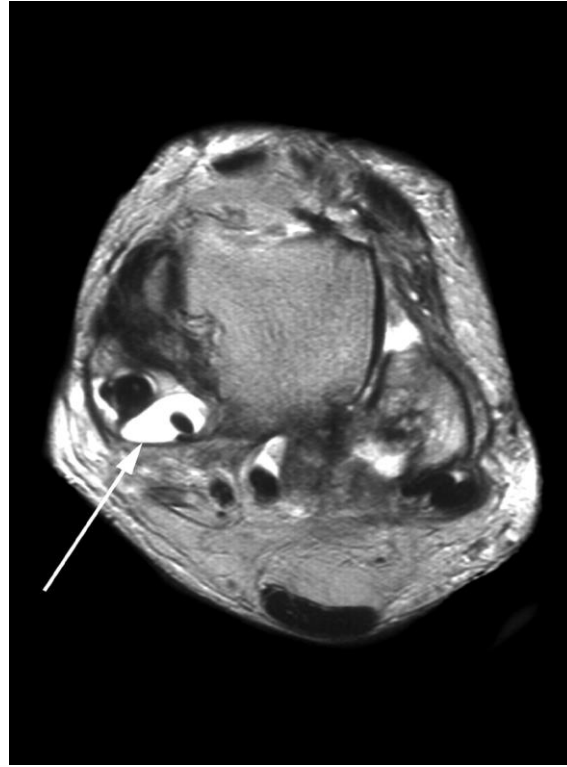
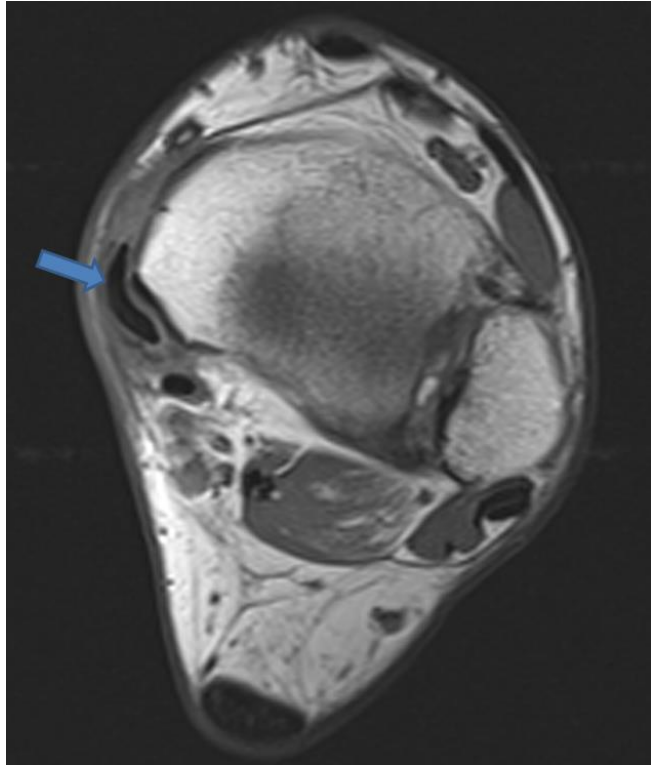
PHYSICAL THERAPY

- Ultrasound
- Iontophoresis
- Theraband (plantarflexion and inversion)
- Wobble board

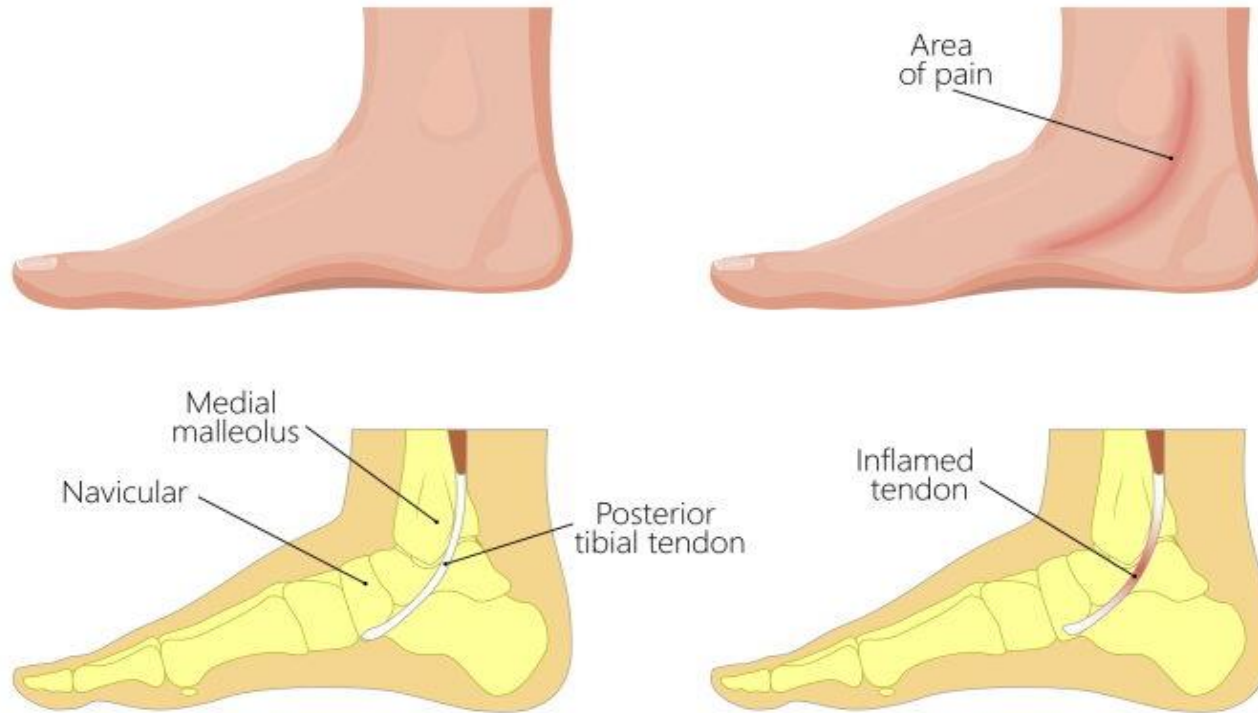


IF NO IMPROVEMENT

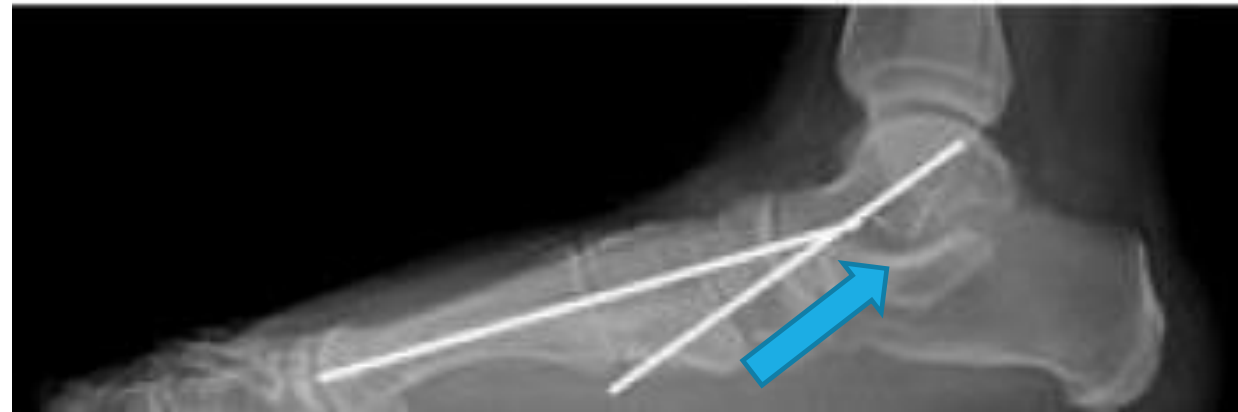
- MRI to evaluate for tendonopathy or rupture



IF THE TENDON BECOMES ATTENUATED OR TORN THE ARCH BEGINS TO COLLAPSE



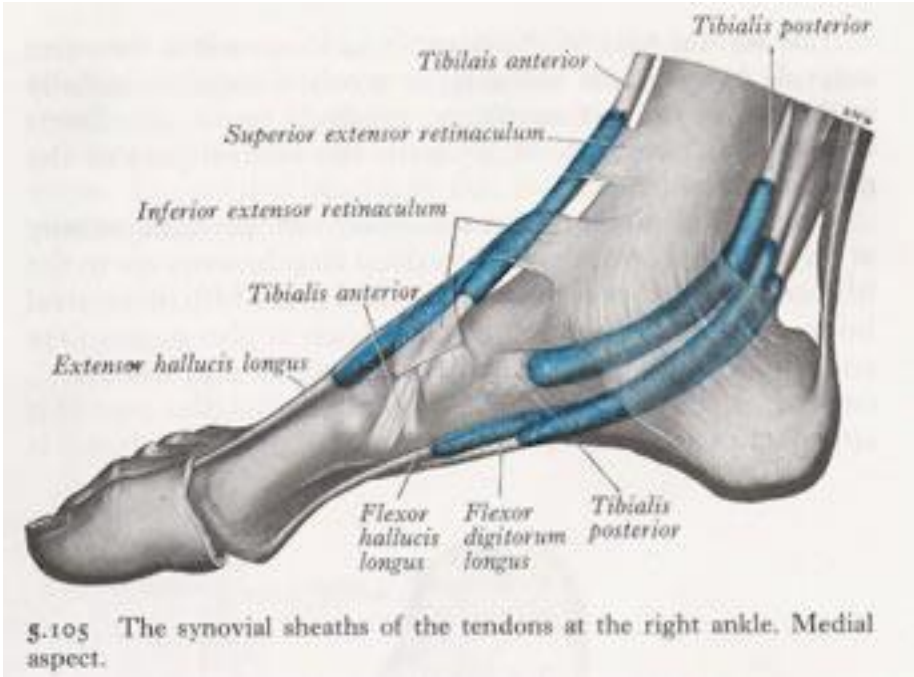
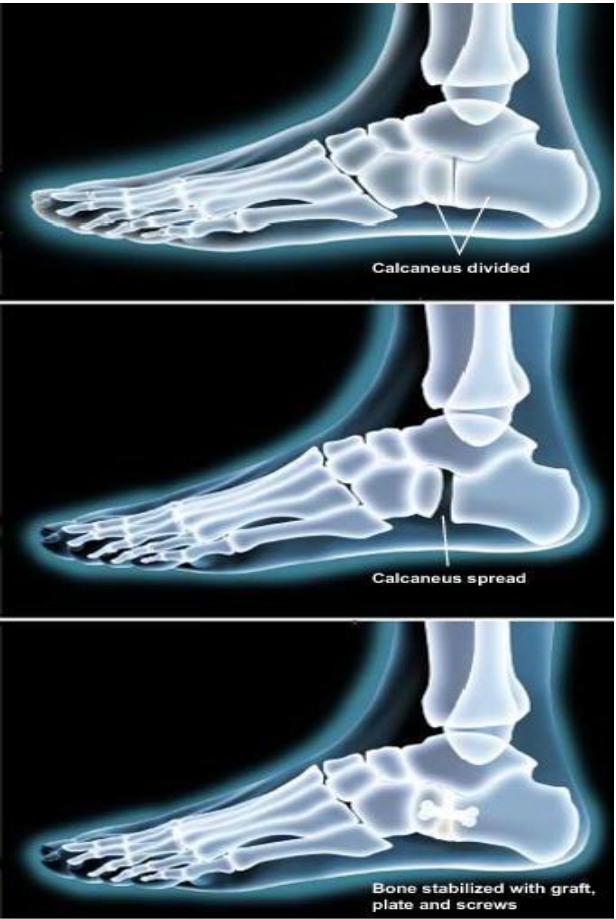
LOSS OF SUPPORT TO THE NAVICULAR CAUSES SUBTALAR JOINT COLLAPSE



BRACING



SURGERY TO REPAIR OR TRANSFER THE PT TENDON AND CORRECT THE FLAT FOOT



CHARCOT JOINT

NEUROPATHY

-Diabetes

-Inherited Neuropathy

-Alcohol induced Neuropathy

-12 Vit B Deficiency

And so on and so forth.....

PRESENTATION

- Warm, swollen foot with or without injury



WHAT'S HAPPENING?





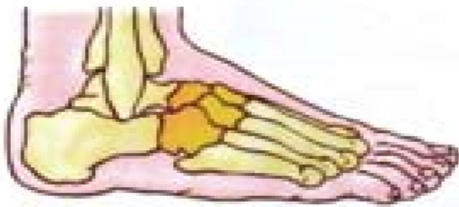
EARLY TREATMENT

- Cast immobilization
- Non weight bearing
- Education
- Serial x-rays
- Repeat MRI

STAGES OF CHARCOT

Stage 0 Prodromal period

Swelling
Local warmth
Mild erythema
Clinical instability
Radiographic changes
are absent or minimal



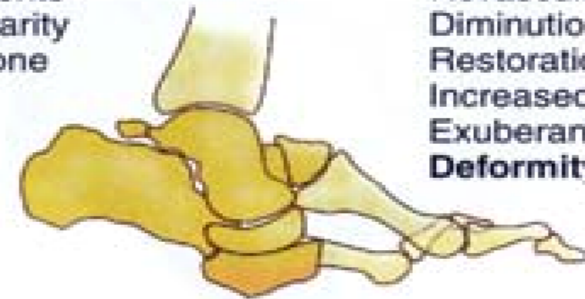
Stage 1 Development

Debris formation at articular margins
Fragmentation of subchondral bone
Subluxation
Dislocation
Erosion of articular cartilage
Bone resorption
Osteolysis and osteopenia
Disorganization and fragmentation of bone
Soft tissue edema
Increased joint mobility

Resorption of bone

Stage 2 Coalescence

Lessening of edema
Absorption of fine debris
Healing of fractures
Fusion and coalescence of larger fragments
Loss of vascularity
Sclerosis of bone



Repair

Stage 3 Reconstruction

Further repair and remodeling of bone
Fusion and rounding of large fragments
Revascularization
Diminution of sclerosis
Restoration of stability
Increased bone density
Exuberant ossification
Deformity



END STAGE CHARCOT (ROCKER BOTTOM)





TREATMENT

- Accommodative shoes
- CROW boot
- Reconstructive surgery

SHOE WITH CUSTOM INSERT



CROW BOOT (CHARCOT RESTRAINT ORTHOTIC WALKER)



RECONSTRUCTIVE SURGERY....





