

3rd Foot and Ankle Symposium Uniklinik Balgrist 9.9.11

The clinical approach to the cavovarus foot

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The clinical approach to the cavovarus foot

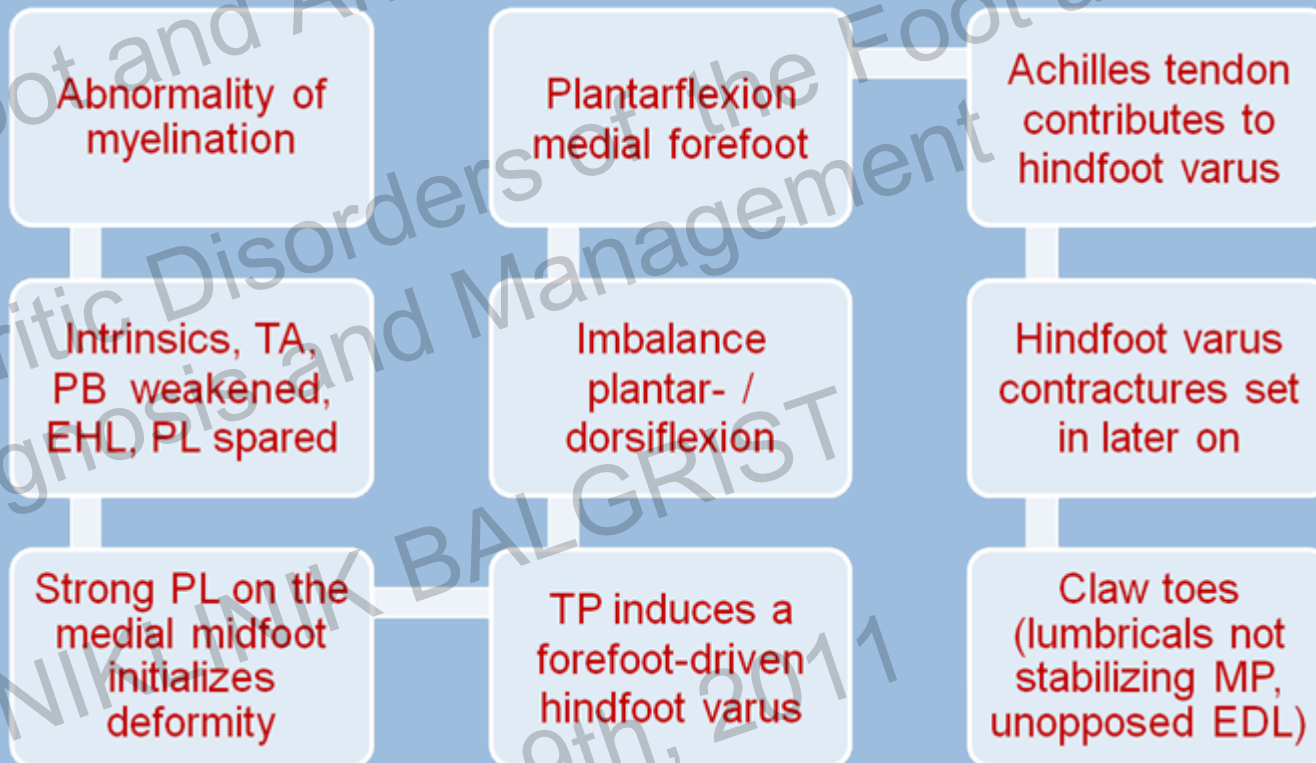
Etiology

- > neurological 2/3 (Charcot-Marie-Tooth)
- > traumatic
- > congenital
- > idiopathic



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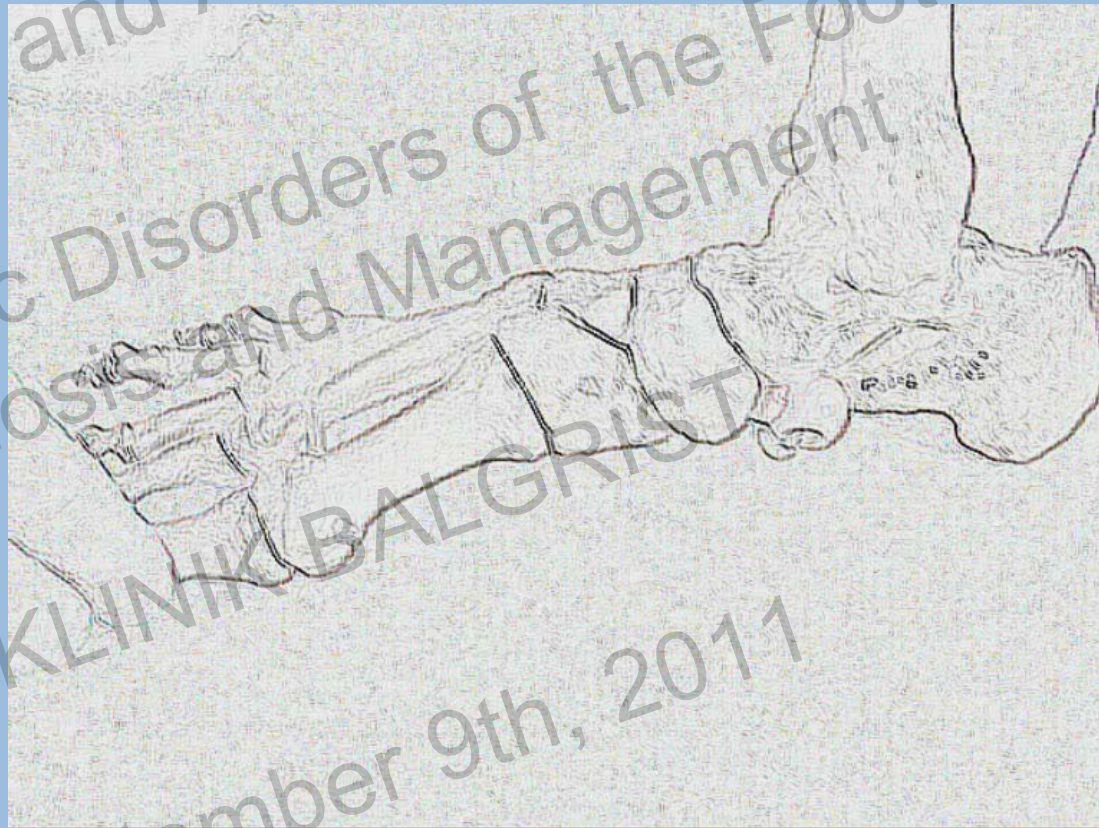
> forefoot-driven cavovarus deformity (CMT)



Mann RA, Missirian J. Clin Orthop Rel Res 1988;234:221-228.
Beals TC, Nickisch F. Foot Ankle Clin N Am 2008;13:259-274.

The clinical approach to the cavovarus foot

- > **Biomechanics** (forefoot-driven cavovarus deformity)



The clinical approach to the cavovarus foot

- > **Biomechanics** (hindfoot-driven cavovarus deformity)
- > **3D-CT models:**
 - varus and curved posterior calcaneal facet and internal rotation of subtalar joint
 - > motor imbalance before skeletal maturation may lead to substantial change in healthy bone morphology
 - calcaneal inversion leads to inversion of lateral column and 1st ray elevation
 - adaptive morphology: plantarflexion of the 1st ray, adduction of TN-joint (forefoot)

Arminian A, Sangeorzan BJ. Foot Ankle Clin N Am 2008;13:191-198

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Anatomy

Inversion of calcaneus, talocalcaneal angle narrowed

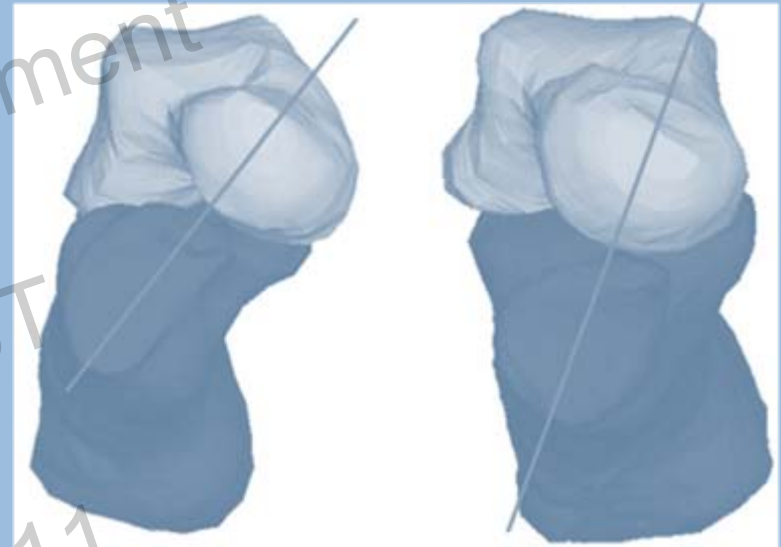
Navicular superior to the cuboid

Chopart joint remains locked during gait

Hindfoot inversion and forefoot varus

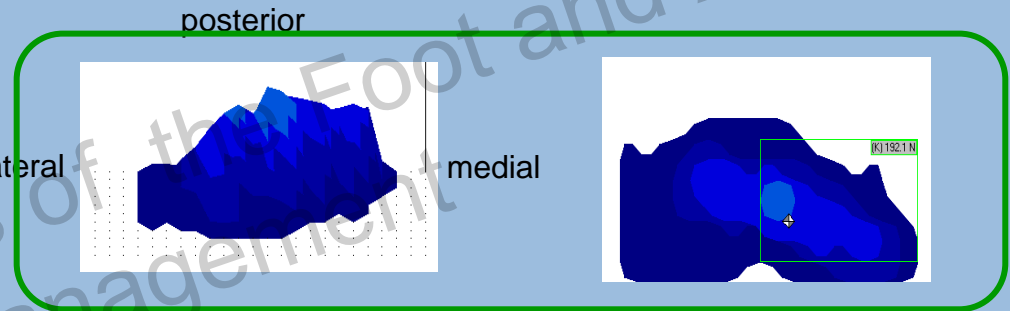
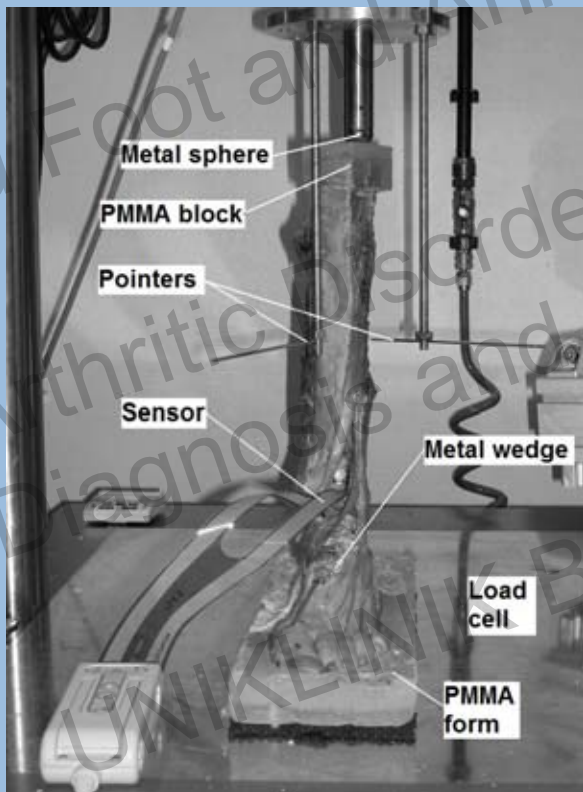
Less stress dissipation

Metatarsalgia, stress fracture V, hindfoot instability

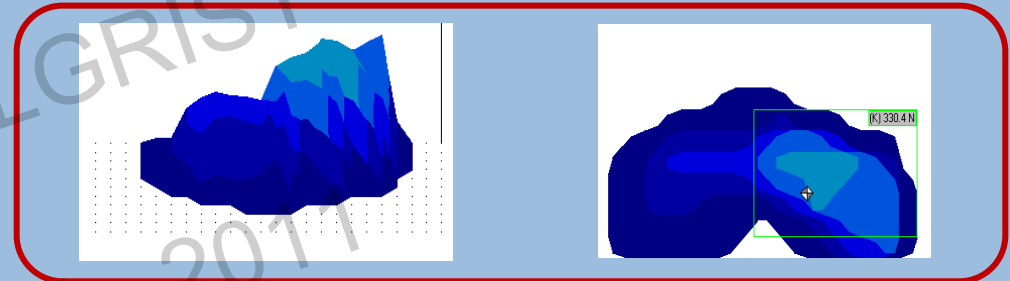


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> Biomechanics (ankle joint pressure in pes cavovarus)



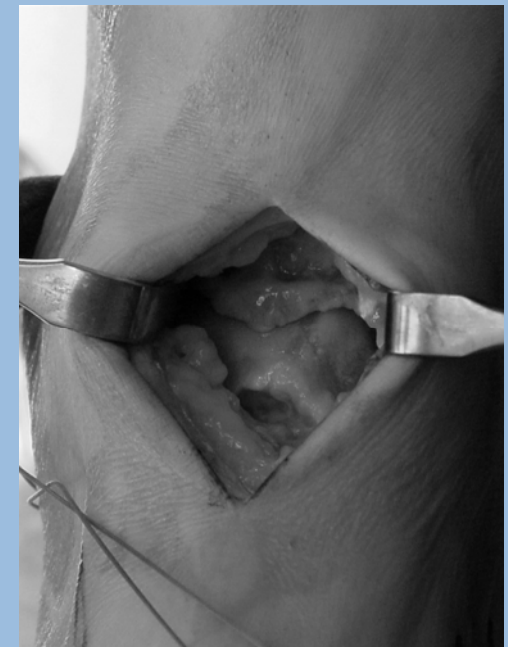
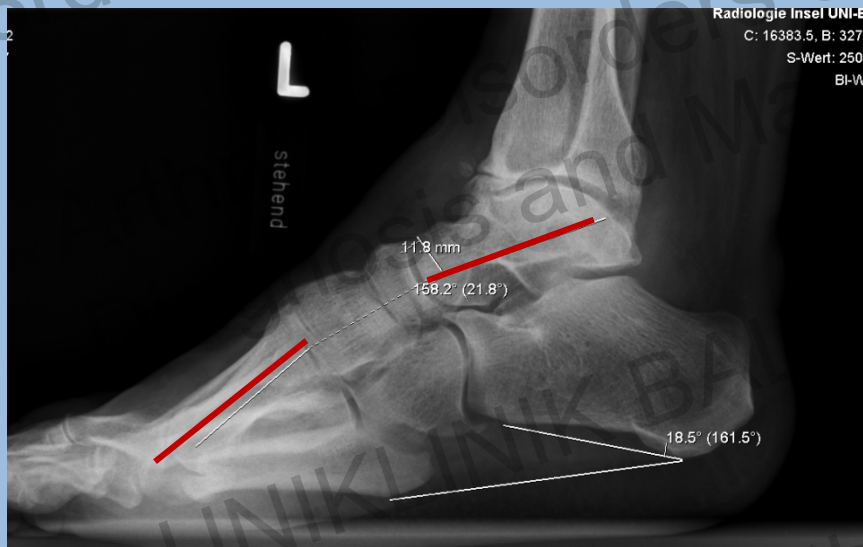
neutral



cavovarus

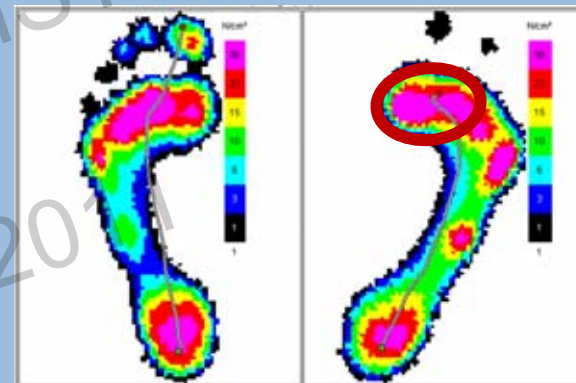
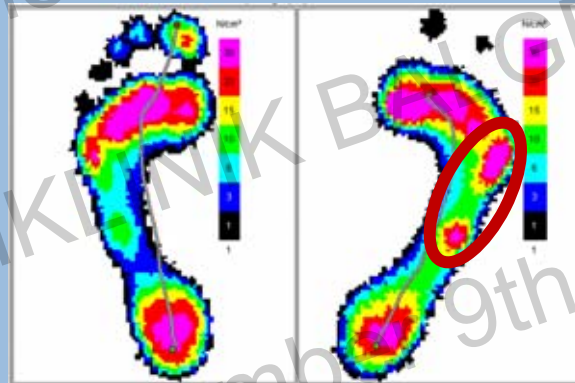
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> Presentation (anteromedial ankle arthritis)



The clinical approach to the cavovarus foot

> Presentation



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> Radiographs

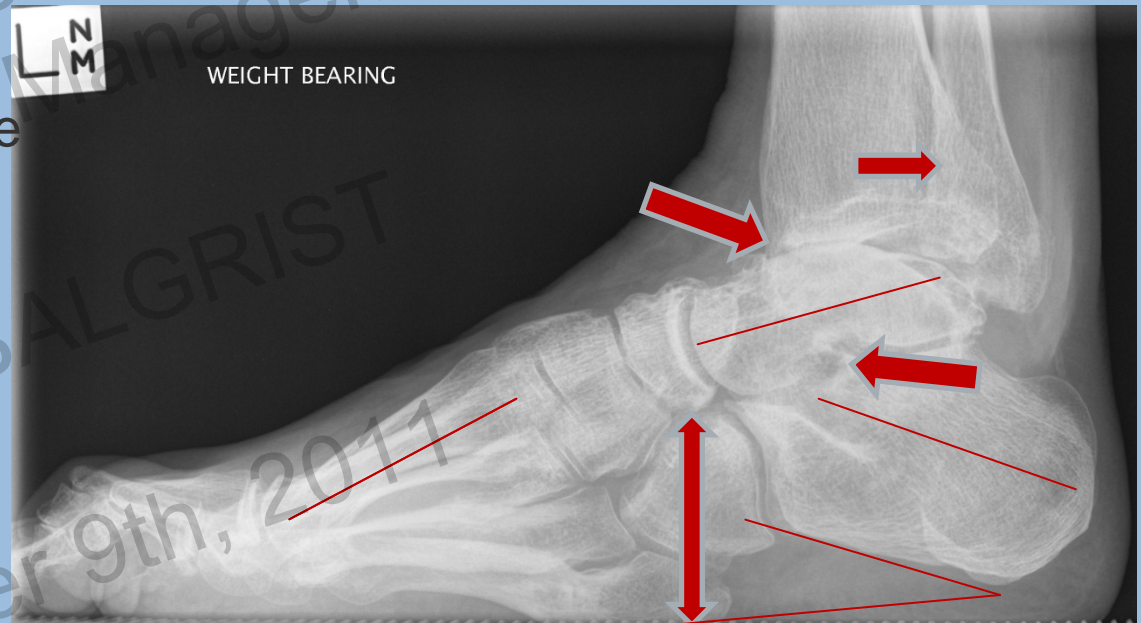
- narrow, almost parallel talo-calcaneal angle
- medially concave talo-1st metatarsal angle
- fractures of the fifth metatarsal



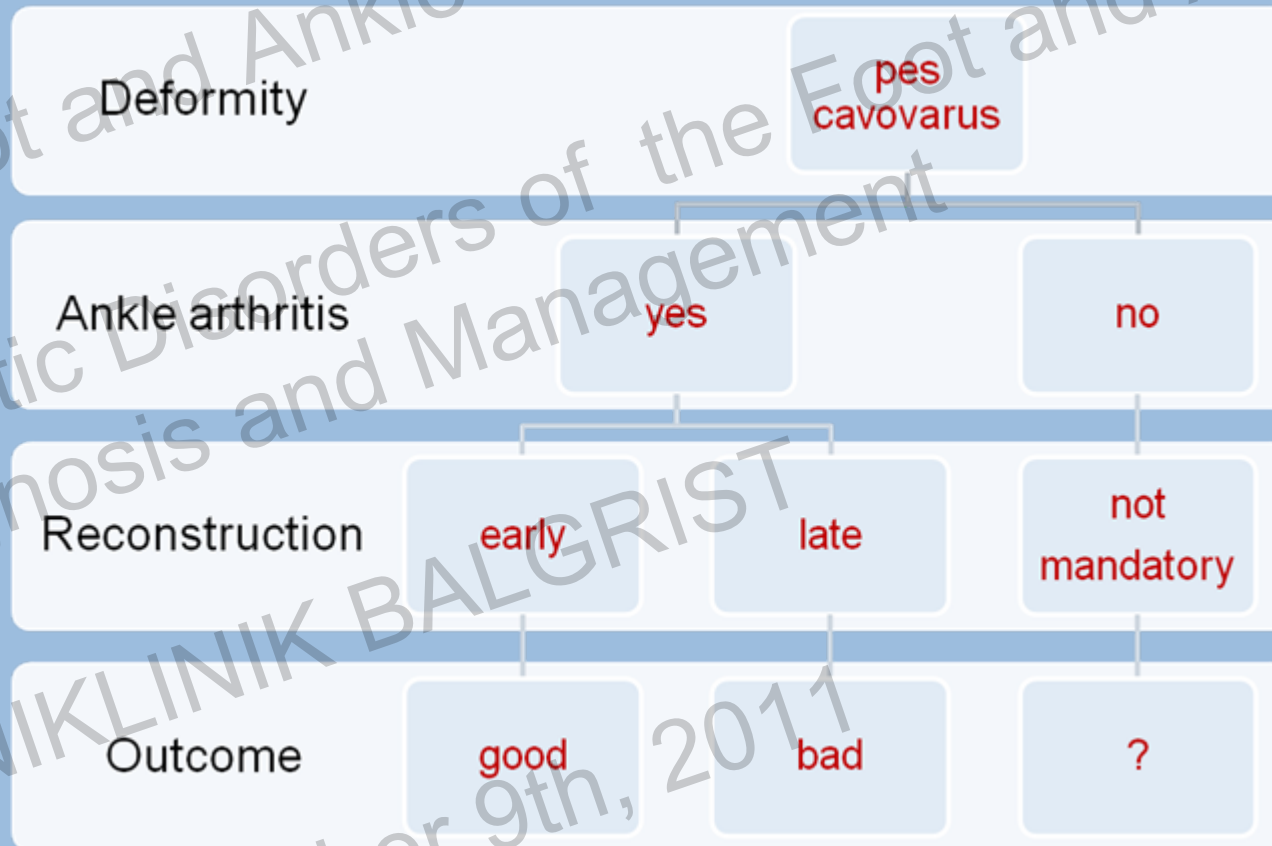
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> Radiographs

- posterior position of fibula
- increased navicular height
- calcaneal pitch $> 30^\circ$
- Hibbs angle $> 45^\circ$
- increased Meary angle
- “flat-topped” talus
- open sinus tarsi

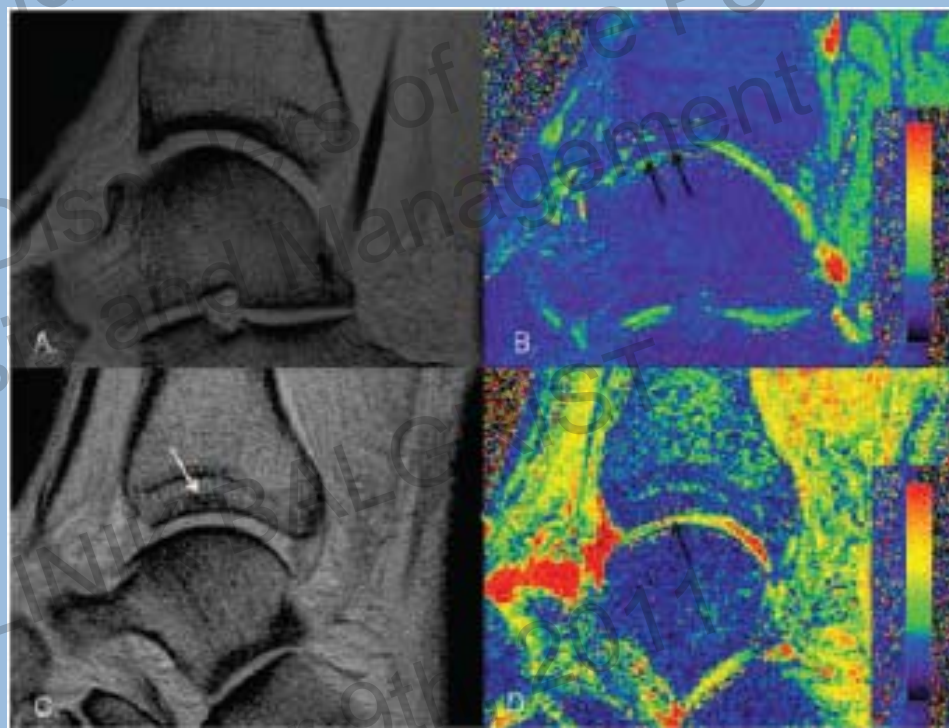


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- > Biochemical T2* MR quantification of ankle arthritis in pes cavovarus.

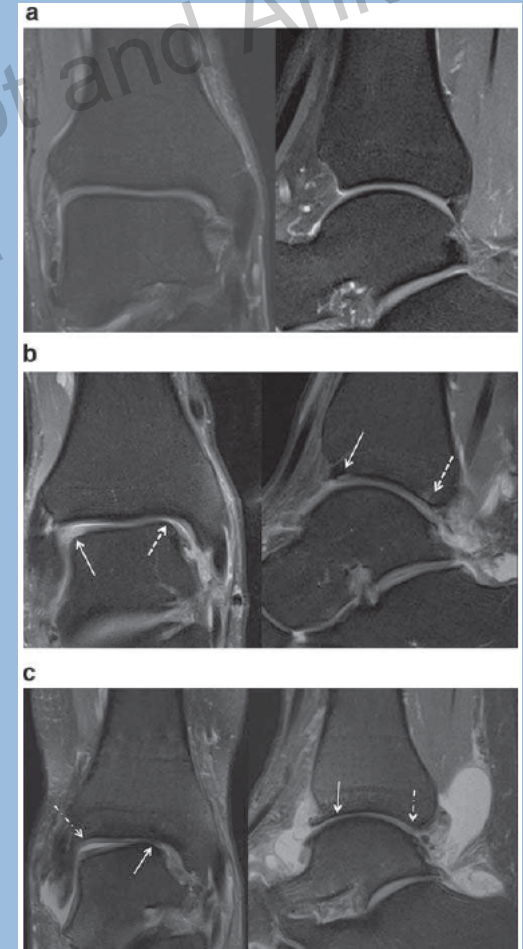


Krause F, Klammer G, Benneker L, Werlen S, Mamisch T, Weber M. J Orthop Res. 2010; 28:1562-8

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Conclusion

- > association of pes cavovarus and ankle arthritis with or without hindfoot instability
- > for good postoperative outcome early detection of cartilage wear crucial
- > understanding anatomy and biomechanics is the key to successful treatment



Thank you!

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Chronic Disorders of the Foot and Ankle
Diagnosis and Management
RIST