



# 2018 Florida Podiatric Medical Association Summer Meeting



Joseph R. Agostinelli, DPM (Retired), FAAPSM (Emeritus)  
Colonel, USAF, (Retired)

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## Structural Hallux Limitus

- "The restriction of motion is present on weightbearing AND non-weightbearing."



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Root, et al -

- 65-75 degrees dorsiflexion is necessary for 1st MPJ joint motion for normal ambulation
- Without adequate plantar flexion of the 1st MPJ, only 25-35 of dorsiflexion of the 1st MPJ occurs
- Joint compression from repetitive stress creates
  - microtrauma
  - circumferential osteophyte proliferation
  - progressively worsens

Postural adaption by MTJ/STJ/Ankle joint/knee and hip joints leads to additional DEGENERATIVE changes.

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- Acquired
- Iatrogenic
- Arthritic
- Congenital

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- Acquired - biomechanical forces, peroneal longus stabilization of the first metatarsal, creates a "functional" hallux limitus which results in jamming of the first MPJ, causing, osteophyte proliferation, and soft tissue adaption with flexor plate shortening, and capsular adhesions, resulting in functional hallux limitus becoming "structural" hallux limitus

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Iatrogenic - post bunion surgery.



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Arthritic - gout  
Osteoarthritis  
Rheumatoid Arthritis  
Osteoarthritis dessicans  
Traumatic Arthritis \*\*



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Congenital - elongated first metatarsal  
short first metatarsal  
metatarsus primus elevates  
medial cuneiform/first metatarsal coalition

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### Signs and Symptoms

- Dull ache dorsal metatarsal
- Inflamed bursa
- Boney exostosis
- Hallux IPJ keratosis
- Altered gait ("apropulsive" gait)

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## Conservative Treatments

- Rocker Soles
- Metatarsal Bar
- Orthotics
- Injection



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## Surgical Options

- Osteotomy
- Implant
- Arthrodesis



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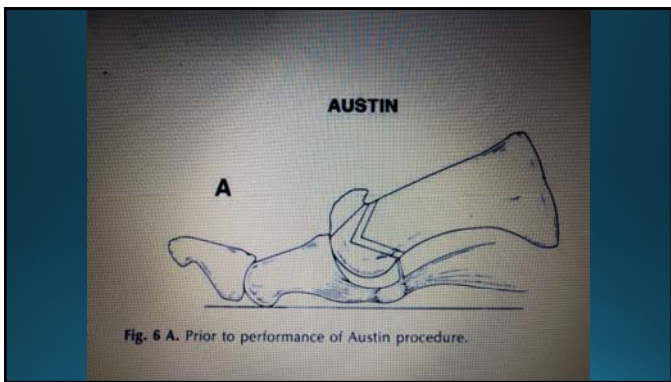
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## Sesamoiditis

Very common among Dancers and all types of sports players



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## Symptoms

- Pain
- Swelling, bruising
- Bending stretching of toe causing pain



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Soft tissue inflammation of the tendons about the  
seamoid bones

Stress Fracture -repetitive

Acute Fracture -traumatic

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## Imaging

Regular Radiographs



Bone Scan



MRI



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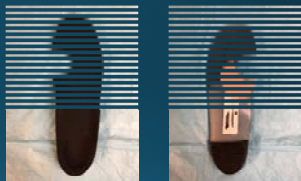
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## Conservative

- Same as for Hallux limitus
- RICE
- NSAID meds
- Medrol Dose Pack
- Injection Therapy



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# Surgical

Fixation  
Resection



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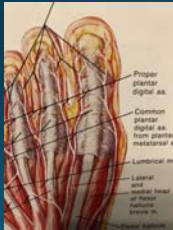


Turf Toe -

Injuries about the first MPJ capsule

Plantar muscles/tendons

Sesamoidal complex



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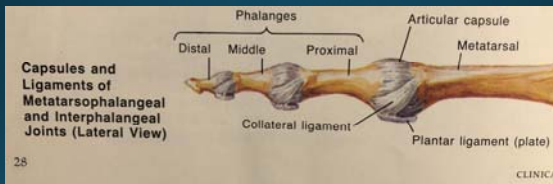
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1975 -Bower's and Martin described the term "Turf toe" as a capsuloligamentous sprain of the first MPJ related to "HARD ATHLETIC SURFACES and SOFT SOLED SHOES"



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Studies on artificial surfaces and incidence of turf toe  
-University of West Virginia (1970-74)  
-University of Arkansas (1972-74)

### Turf Toe

3<sup>rd</sup> most common injury after knee and ankle causing  
loss of playing time among university athletes

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### "Sand Toe" - beach volleyballers



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Brophy -30 percent prevalence of turf toe in professional  
football players

- Increased body mass
- Decreased first MPJ ROM
- Increased plantar hallucal pressure



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## Mechanism of Injury

- Axial load to the foot
- Equinus
- External force on leg
- First MPJ driven into "exaggerated" Dorsiflexion



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## Long Term Sequelae of Turf Toe

- Hallux limitus/rigidus
- HAV
- Hallux Malleus
- Osteochondral lesions
- Failure to regain normal push off strength



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50 Percent sustaining serious turf toe injury

- Persistent symptoms after 5 years !

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Evaluation - always compare to contralateral foot

- ROM
- Lachman Test
- Transverse plane
- Regular/Stress Radiographs
- CT
- MRI



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•Imaging

- Looking for "separation" of sesamoids from the first MPJ

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Clanton and Ford

Classification Turf Toe Injuries

- Grade 1- Stretch /slight tear capsule/ligaments first MPJ  
(Athlete bears weight mild symptoms of pain)
- Grade 2 - Partial tear of capsule/ligaments first MPJ  
(Athlete -mild swelling, limping, within 24 hrs more painful)
- Grade 3 - Complete tear of capsule /ligaments  
(Athlete - markes swelling, bruising, cannot bear weight)

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## Treatments

- RICE
- NSAI meds
- Shoe modifications
- PT
- Orthosis picture
- Walking boot



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## Taping



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## Surgical Options- for an "unstable joint"

Incisions -

Lateral to fibular sesamoid

J incision



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## Sooner than later surgery for acute injuries

- neglected turf toe injury more difficult to repair with soft tissue reconstruction/boney procedures needed
- Unstable joint
- Diastasis of sesamoids
- Retraction of sesamoids

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Case Report - The patient is 32 female competitive triathlete complaining of plantar great toe joint pain ,4 months duration. Failed conservative treatment of injection therapy, physical therapy, NSAID meds, orthotics, shoe modifications.

Which of the following options would most reliably return her to sporting activities in a timely fashion?



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- A. Repeat conservative therapy, include removable Cast boot.
- B. Fibular Sesamoidectomy
- C. First MPJ plantar plate reconstruction
- D. First MPJ arthroscopy and debridement
- E. Open Reduction /internal fixation of sesamoid with autologous calcaneus bone graft
- F. Distal first metatarsal Chevron /Austin modification osteotomy with proximal hallux Akin procedure

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## References

- " Surgical Anatomy of the Foot and Ankle " Clinical Symposia -CIBA,1985
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- "Foot Care MD-" AOFAS Pamphlet
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- " Sesamoid Injuries of the Hallux"- McKean,MD,- Orthobullets, Foot and Ankle(7010)

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??? Questions ???  
 Email: [jmpa21@cox.net](mailto:jmpa21@cox.net)

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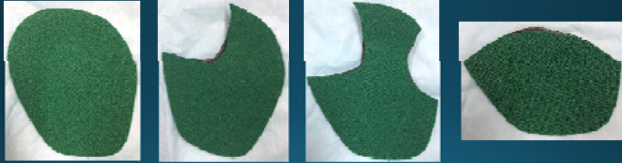
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### Sports Medicine "Pearl"



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