

Foot & Ankle Orthoses for the Athlete

Seth O'Brien, CP, LP

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Financial Disclosure

Mr. Seth O'Brien has no relevant financial relationships with commercial interests to disclose.

Turf Toe

- Common in athletes playing on firm, artificial turf
- Forceful extension of 1st MTP joint
- Injury to the joint capsule



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Turf Toe

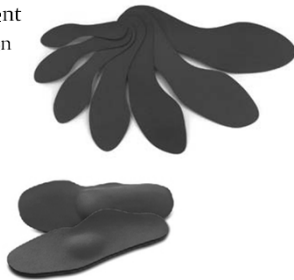
- Untreated, can lead to Arthritic Joint Changes
 - Hallux limitus
 - Hallux rigidus



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Turf Toe

- Goal of Orthotic Treatment
 - Limit Great Toe extension
 - Helping joint capsule to heal
 - Carbon Footplates
 - Total Contact FO
 - Metatarsal support



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Heel Pain

- Sever's Disease
 - Active adolescents
 - Girls 8 – 10 yrs old
 - Boys 10 – 12 yrs old
 - Occurs at Growth plate
 - Strong pull of Achilles' tendon



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Heel Pain

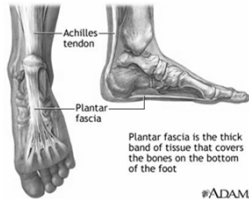
- Treatment for Sever's Disease
 - Rest
 - Stretches
 - Soft heel cups
 - FO with heel cushion
 - Walking boot in slight equinus/heel wedge



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Heel Pain

- Plantar Fasciitis
 - Repetitive strain of the plantar fascia
 - Pes planovalgus?
 - Pes cavus?
 - Forefoot supinatus?
 - Windlass mechanism insufficiency or Functional hallux limitus?
 - Tight plantar flexors?



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Plantar Fasciitis

- Treatment (preventative maintenance)
 - Stretches
 - Taping of arches
 - Heel cushions / Gel cups
- Results
 - Custom FO
 - Night splints



COMPLIANT??



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Plantar Fasciitis

- Treatment with Foot Orthotics
 - Pes Planovalgus
 - Custom FO w/ medial heel wedge
 - Arch support



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Plantar Fasciitis

- Treatment with Foot Orthotics
 - Pes Cavus
 - Cushioning material
 - Support arch
 - Offload 1st met head & base of 5th
 - Lateral wedge to control varus malalignment?



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Ankle Sprains

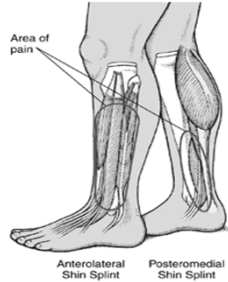
- Treatment corresponds to degree of instability
 - Walking boot
 - Ankle lacer, stirrup, sleeve
- Chronic sprains, instability
 - Foot orthotics
 - Medial or lateral support
 - Ankle lacer during sport



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Medial Tibial Stress Syndrome

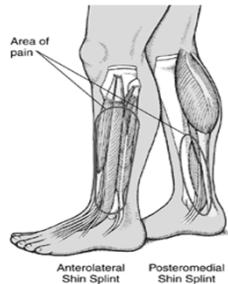
- “Shin Splints”
- Inflammatory Reaction of muscle tissue & periosteum
- Exercise-induced
- Flatfeet or abnormally rigid arches
- Running / Jogging
- Sudden increase in training



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Medial Tibial Stress Syndrome

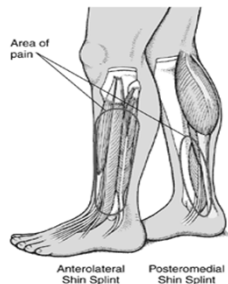
- Anterior Pain
 - Tibialis Anterior works hardest @ loading response
- Foot Orthotic Treatment
 - Cushioning
 - Shock Absorption
 - Functional biomechanical foot alignment



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Medial Tibial Stress Syndrome

- Posterior Pain
 - Posterior Tibialis over-exertion
- Foot Orthotic Treatment
 - Arch Support
 - Address biomechanical problems of foot translating to tibial stress



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Achilles Tendon Injury

- Tears
 - Immobilization
 - Custom AFO
 - Consider floor reaction design
 - Walking Boot
 - Reduce Stress on Injured Site
 - Allow Healing



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Achilles Tendon Injury

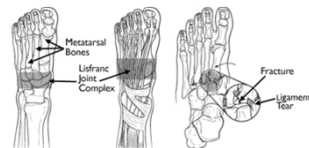
- Tendonitis, bursitis, tears that have healed / been repaired
 - Support
 - AFO w/ relief over achilles irritation site
 - FO w/ heel elevation
 - Heel Wedge
 - "Achillotrain" Sleeve
 - Pressure relief
 - Temporary relief



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Lisfranc Injury

- Midfoot fracture or ligament tears
 - Non-surgical:
 - Incomplete tear
 - Non-weight bearing cast/boot
 - Progress to walking boot
 - Custom FO
 - Surgical:
 - Fracture or joint subluxation
 - Post-op cast
 - Walking boot dependant upon hardware status



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Metatarsal Fractures

- Dancer's Fracture
 - "Jones fracture"
 - 5th Metatarsal fracture
- Result of inversion injury
- Common among dancers, injured when landing on a supinated foot



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Metatarsal Fractures

- "March Fracture"
 - High rate of 2nd & 3rd MT stress fractures among soldiers wearing boots



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Metatarsal Fractures

- Orthotic Treatment
 - Healing
 - Post-Op shoe
 - Walking boot
 - AFO (custom)
 - Recovery / Prevention
 - FO's – shock absorbing/alignment
 - Metatarsal support



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“Low Risk” Stress Fractures

- Not as Likely to progress to complete fracture
- Usually heals without complication
 - 2nd Metatarsal Diaphysis
 - Base of 5th Metatarsal
 - Posterior tibial shaft

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“Low Risk” Stress Fractures

- Treatment includes:
 - Pneumatic sleeves – aircast type / gel
 - Post-op shoe
 - Walking boot
 - Total contact FO
 - Carbon foot plates

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“High Risk” Stress Fractures

- More likely to progress to complete fracture
 - Risks:
 - Deformity due to malunion
 - Avascular necrosis
 - High incidences:
 - Delayed union
 - Non-union

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“High Risk” Stress Fractures

- Tibial anterior cortex
- Medial malleolus
- Talus
- Navicular
- Proximal diaphysis of 5th metatarsal

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“High Risk” Stress Fractures

- May require surgical intervention
- Immobilization, non-weight bearing
 - Consider custom PTB AFO
 - Patten bottom
 - Off-loading AFO
 - Solid ankle AFO
 - Total contact FO



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Preventative Treatment

- Custom Foot Orthotics
 - Semi-rigid design / Total contact
 - Puff / EVA materials
 - Cork posting
 - Extra firm material posting
 - Sport design / Low profile
 - Thin, lightweight, flexible
 - Posted w/ EVA or similar material = shock absorption
 - Consider off the shelf type FO
 - Accommodate boney prominences
 - Can be padded for extra cushioning

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Conclusions

- Orthotic treatments for sports-related injuries are diverse
- Biomechanical problems contributing to injury or developing as a result of injury are often treatable w/ functional orthoses
- “*Whole Person*” perspective is important in treating sports injuries

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