The Forefoot Valgus Foot-Type
Joe Fox, MS, LAT
June 10, 2014
Introduction

• BS Kinesiology – Exercise Science and Athletic Training, University of Wisconsin-Madison
• MS in Exercise Science – Athletic Training, University of Iowa
• Creator of Affinity Health Systems’ Gait Analysis Program
• Director of Affinity Health Systems’ Running Analysis and Clinical Evaluation (RACE Program)
Objectives

• Understand Basic Foot-strike running mechanics
• Understand the etiology of Forefoot Valgus
• Understand the Clinical Presentation of Forefoot Valgus
• Understand biomechanically how Forefoot Valgus stresses the body
• Understand how to successfully treat someone with the Forefoot Valgus foot-type
• Understand how RACE can benefit your practice
Ankle Neutral

• Ankle neutral is the position of the ankle when the subtalar joint (talus and calcaneus) is even. Medial and lateral talus facets are felt evenly.
• To find ankle neutral, place athlete in prone position. Take one hand and palpate for the medial and lateral talar facets.
• Move the ankle slowly into dorsiflexion until the facets are equal, or until you feel the facets disappear.
Determining Forefoot

• Draw a line at the base of the calcaneus to serve as our horizontal orientation line.
• Compare that to the line of the metatarsal heads.
• If the two lines are nearing laterally, the person has a forefoot valgus.
• If the two lines are nearing medially, the person has a forefoot varus.
What is Forefoot Valgus

• Forefoot Valgus is a fore-foot type in which when the ankle is placed in a neutral position, the metatarsal heads are not parallel with the horizontal plane of the calcaneus. i.e. The 5th metatarsal head is higher than the 1st metatarsal head.
Forefoot Valgus
Why does FF Valgus Develop

• As infants, we have a severe rear-foot or subtalar varus. As we age, this reduces from 12 degrees up to 0 degrees.

• 2 goals of gait – have calcaneus touch the ground and have all metatarsal heads contact the ground.

• Some people with a higher arch are so far supinated laterally that their first and second toe may not touch the ground. In order for the foot to touch the ground, the forefoot twists in such a way that the first metatarsal is touching. This twists the foot into a valgus position.
“Normal” Foot Mechanics

Normal foot motion and position

Position
- Pronated
- Supinated

Motion
- Pronation
- Supination

Heel Strike
Foot Flat
Heel Rise
Toe Off
“Normal” Foot Mechanics

STJ Normal Motion

Supination

Pronation

Heel Strike  Foot Flat  Heel Rise  Toe Off
Forefoot Valgus Mechanics

Forefoot Valgus

Supination

Pronation

Heel Strike  Foot Flat  Heel Rise  Toe Off
• Foot starts in slightly pronated position and rapidly goes into supination. Foot is supinated earlier than normal, putting pressure on lateral structures.
• Lateral structures have to be more active to prevent ankle inversion.
• Foot will slap down hard due to lack of control of anterior ankle muscles.
• Premature supination happens when body is still decelerating from one step to another – causing eccentric loading
Clinical Presentation

- Will complain of many aches, pains, problems.
- History of ankle sprains, often severe
- Feet will slap hard when walking or running (people hear you coming)
- Tendency for Genu Varum (bow-legged)
- Pigeon-toed or toe in walking gait (may change when running)
- When balancing, toes 3-5 have death grip on the floor, anterior tibialis is very active, will lose balance laterally.
- When performing a squat, toes 3-5 will lift off the ground.
FF Valgus Balance
FF Valgus Squat
FF Valgus Video
FF Valgus Injuries

- ***Ankle sprains, ankle pain***
- Lateral or medial shin splints (often dependent upon sport)
- Exertional Compartments Syndrome
- Lateral Knee pain (distraction of joint)
- Medial Knee pain (compression of joint)
- IT Band Pain
- SI Joint Dysfunction
- Higher incidence of ACL tears***
FF Valgus causes an inherent lack of control of the lower body.

A person landing off a jump will have a harder impact.

The eccentric control of the ankle everters, IT Band, and Hips may not be able to control deceleration.

Knees move medially, into a crash position.
FF Valgus Treatment

- Strengthen lateral ankle, knee, and hip
- Core strengthening
- Jumping and landing mechanics
- ***Place them in a cushioned shoe
- May add lateral wedge or orthotic to support toes 3-5.
- Add cushioning to shoe
- Video tape mechanics
Run at a whole new level
RACE Program

• Formerly Gait Analysis Program
• Patients get 1 hour long session looking at training history, injury history, strength, flexibility, balance, biomechanics.
• Slow motion video analysis
• Patients get DVD copy of the video, HEP, full written summary and a six week follow-up.
• Providers that refer patients in get a copy of all the information to provide better treatment outcomes
Thank you!!!

• Any questions?