



Foot and Ankle Mobility and Stability

Andy Baksa, PT, DPT
Results Physiotherapy



Background

- ❖ Exercise Science degree from UTK in 2007.
- ❖ Doctorate of physical therapy from UTC in 2013
- ❖ Ran track and cross country for Farragut High School and The University of Tennessee
- ❖ Practicing at our Maryville office with a focus in continuing education in running injuries



Results the Company

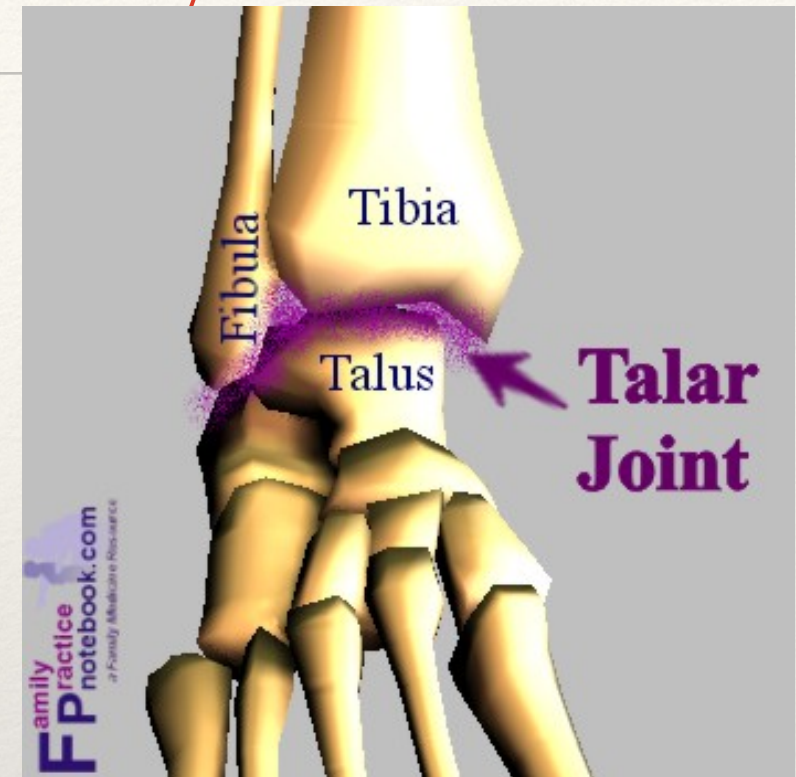
- ❖ Founded in 1995
- ❖ Based out of Nashville
- ❖ 60+ clinics in 6 states
- ❖ Manual therapy based
- ❖ One on one clinician time for all patients
- ❖ Heavy focus on continuing education
- ❖ Partnered with Fleet Feet in 4 TN cities

Objectives

- ❖ Foot / Ankle anatomy
- ❖ Foot strength: what matters
- ❖ Soft tissue mobility
- ❖ Self assessment
- ❖ Corrective exercises

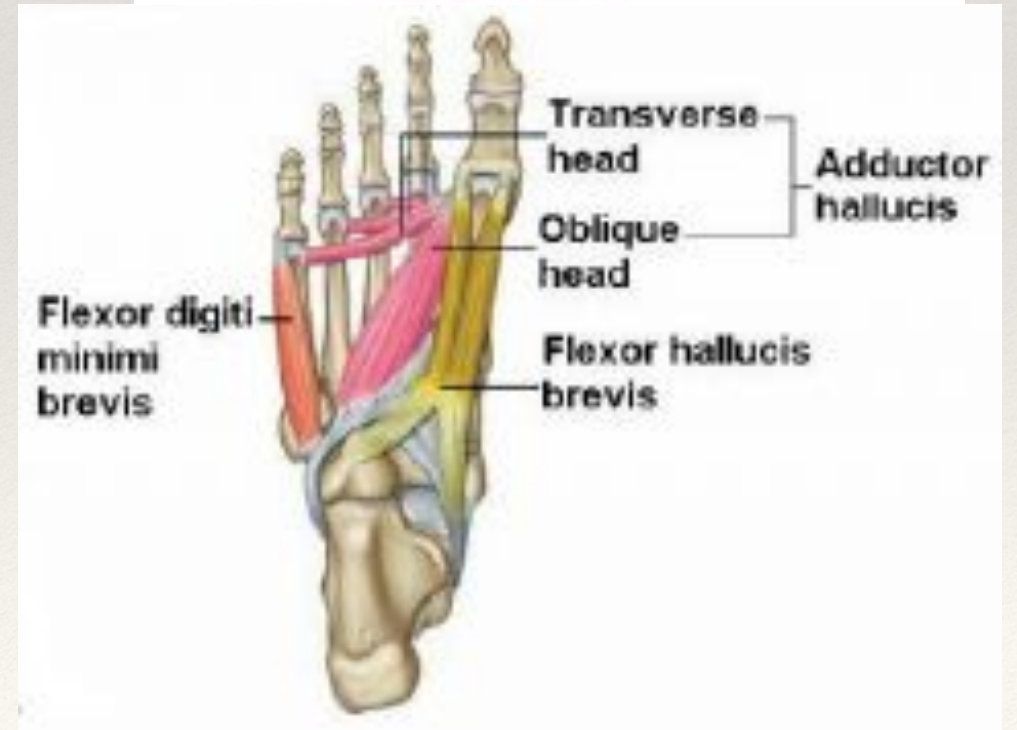
Foot/Ankle Anatomy

- ❖ Talocrural Joint:
 - ❖ Need adequate dorsiflexion
 - ❖ Stiffness common with chronic ankle sprains
 - ❖ Mid foot accommodates stiffness with excess motion
 - ❖ Can move up kinetic chain
 - ❖ Implications: foot, knee, hip



Foot/Ankle Anatomy

- ❖ Achilles' tendon
 - ❖ Connects calves to foot bone (calcaneus)
 - ❖ Tendinitis or tendinosis?
- ❖ Plantar fascia
 - ❖ Mobility necessary for proper toe off
- ❖ Flexor Hallucis Brevis
 - ❖ Unsung hero
 - ❖ Dynamic arch support



Foot Strength: What Matters

- ❖ Flexor Hallucis Brevis
 - ❖ Makes our big toe "push down"
 - ❖ Dynamic arch support (85%!)
 - ❖ Takes stress off plantar fascia
 - ❖ Gives us stable platform to push off
- ❖ Achilles' tendon:
 - ❖ Parallel orientation of collagen essential



Soft Tissue Mobility

- ❖ Plantar Fascia
 - ❖ 30 degrees of big toe extension
- ❖ Achilles Tendon
 - ❖ Important for adequate dorsiflexion
 - ❖ Restrictions:
 - ❖ Tendon sheath
 - ❖ Gastrocs
 - ❖ Soleus

Self assessment

- ❖ Adequate dorsiflexion

- ❖ Kneeling, see if you can bring knee past toes while keeping heel down and avoiding excessive pronation

- ❖ Tightness in calf / Achilles = self mobilization / stretching

- ❖ Tightness in front of ankle = see PT



Corrective Exercises: Improving Dorsiflexion

- ❖ Calf stretch (with a twist!)
 - ❖ Wall stretch with towel under big toe
 - ❖ Hold: 3 minutes(!)
 - ❖ Repeat daily
- ❖ Calf smash
 - ❖ Soft tissue mobilizations = more aggressive but free up restrictions faster
 - ❖ Use foam roller, PVC pipe or dumbbell handle
 - ❖ Use active motion (pump it) of ankle to self mobilize tissue



Self Assessment



- ❖ Dorsiflexion of big toe
- ❖ Same ending position of Dorsiflexion assessment
- ❖ Bring big toe up using hands and keeping foot flat
- ❖ Need 30 degrees = if not, plantar fascia likely tight
 - ❖ Implications:
 - ❖ Push off cut short
 - ❖ Foot has to rotate to accommodate stiffness

Corrective Exercise: Improving Big Toe Mobility

- ❖ PF = very dense, stiff tissue that is resistant to stretch
 - ❖ Triangle shaped from heel to ball of the foot
- ❖ Soft tissue mobilization technique:
 - ❖ Cross affected foot over knee
 - ❖ Press thumbs along bottom of foot feeling for soreness
 - ❖ Soreness = restricted areas of tissue
 - ❖ Hold firm pressure and flex toes back and forth
 - ❖ 4-5 minutes per day for 3 weeks

Self Assessment

- ❖ Isolating big toe
 - ❖ Standing, drive big toe into ground and lift lesser toes up in air
 - ❖ Switch positions
 - ❖ Compensations:
 - ❖ Toe curls
 - ❖ Unable to isolate big toe
 - ❖ Rolling ankle in
 - ❖ Implications
 - ❖ Limited intrinsic control of big toe (hammering with no thumb)



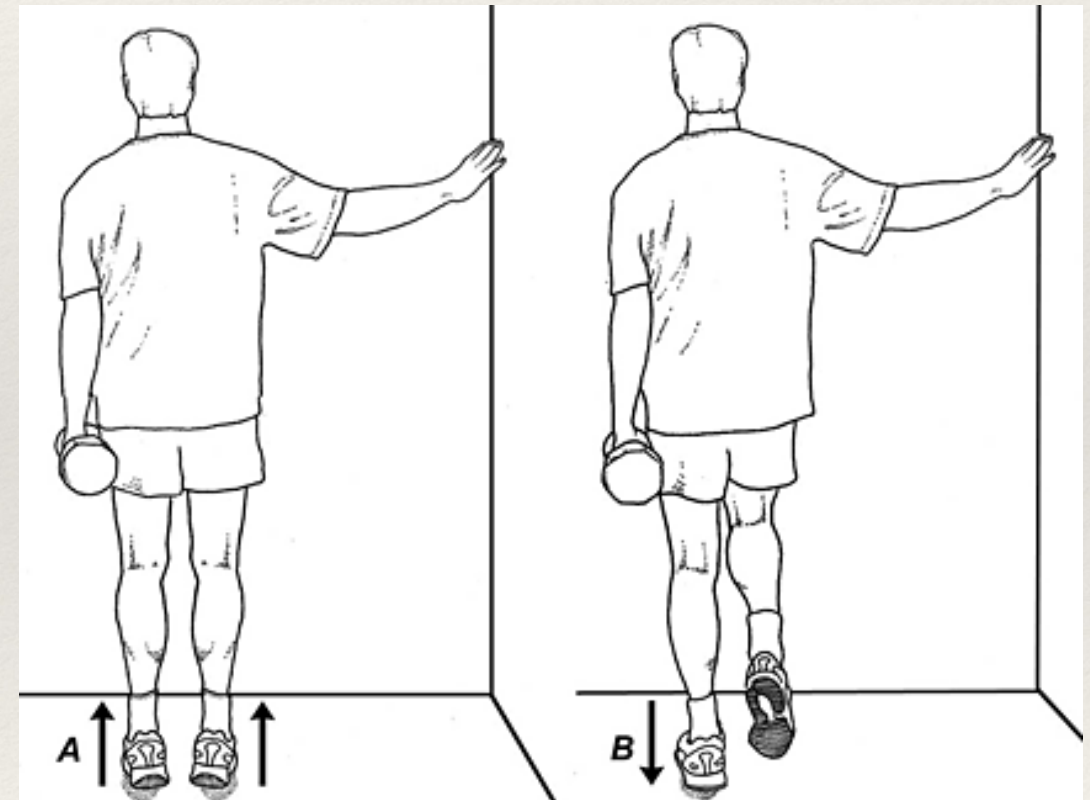
Corrective Exercise: Isolating the Big Toe

- ❖ Sit with foot flat on ground
 - ❖ Lift big toe up with hand (without curling toe)
 - ❖ Push down with big toe keeping middle joint straight
 - ❖ 3-5 minutes daily for 1-2 weeks
- ❖ Toe Yoga
 - ❖ Alternate lifting big toe and lesser toes
 - ❖ Perform a few minutes per day until easy
 - ❖ Progress to: standing -> single leg stance until easy



Eccentric Exercise

- ❖ Maintaining good health to tendons
- ❖ Eccentric exercise =lengthening under contraction
 - ❖ Organizes our collagen fibers in a parallel fashion (straw example)
- ❖ Exercise:
 - ❖ Raise up on toes using both feet
 - ❖ Lower slowly using one leg
 - ❖ 40-60 reps 3-4 x week
- ❖ Progression:
 - ❖ Flat surface - week 1
 - ❖ Off stair or slant board - weeks 2-3
 - ❖ Slowly add weight for weeks 3-8



To Review...

- ❖ The ankle is a very complex structure with many joints and muscles
- ❖ Mobility is key for us to have flexible landing and solid push off
- ❖ Intrinsic muscles = our primary stabilizers
- ❖ Eccentric exercise prepares body for demands of running

Questions?

- ❖ Andy Baksa, PT, DPT
- ❖ andy.baksa@resultsphysiotherapy.com
- ❖ 865-984-1996

