

5 Joints Webinar Series

The Foot & Ankle

Dr. Grove Higgins

With Master Trainer Pat Marques



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MedFit Education Foundation
Committed to the Health of Our Nation

Outline

- Introductions – Dr. Kevin Steele
 - Dr. Higgins & Pat Marques
- Overview of the 5 Joints Webinars
- Anatomy
 - Intro to Anatomy
 - Foot & Ankle Basic Anatomy
- Biomechanics
 - Foot Joints
- Intro to NeuroBiomechanics
- Assessment
 - In person
 - Online
- Drills and Tips
- Q&A

Introduction

- Dr. Grove Higgins
 - Chiropractor & Soft Tissue Practitioner
 - Speaker and Educator
 - Functional Anatomy Instructor
 - Strength & Conditioning
 - Research
 - Biomechanics Gait and Foot Development
 - Anatomy of Lower Leg Modeling
 - Exercise & Hormonal Response
 - Been in Medicine Since 1993

Introduction

- Patrick Marques
 - Lt. Col. USA Ret.
 - MS Exercise Science, CPT, ZHealth Master Trainer & Instructor
 - Speaker and Educator
 - Corrective Exercise Therapist
 - Research
 - Exercise & Hormonal Response

Introduction

- Neuroathlete
 - Use a “Neural Lens” to address performance, pain, and recovery
 - Online – assessment and training all over the world
 - USA, Sweden, & 18,000ft on Mt Everest
 - Clinic – manual therapy, chiropractic, exercise therapy, neuropsychology
 - Work with trainers online and provide mentoring and tools

5 Joints



Foot/Ankle – April 30th



Knee – May 7th



Hip – May 14th



Shoulder – May 21st



Elbow – May 28th

Thursdays

11:00-12:30PM MST

* Pay What You Can

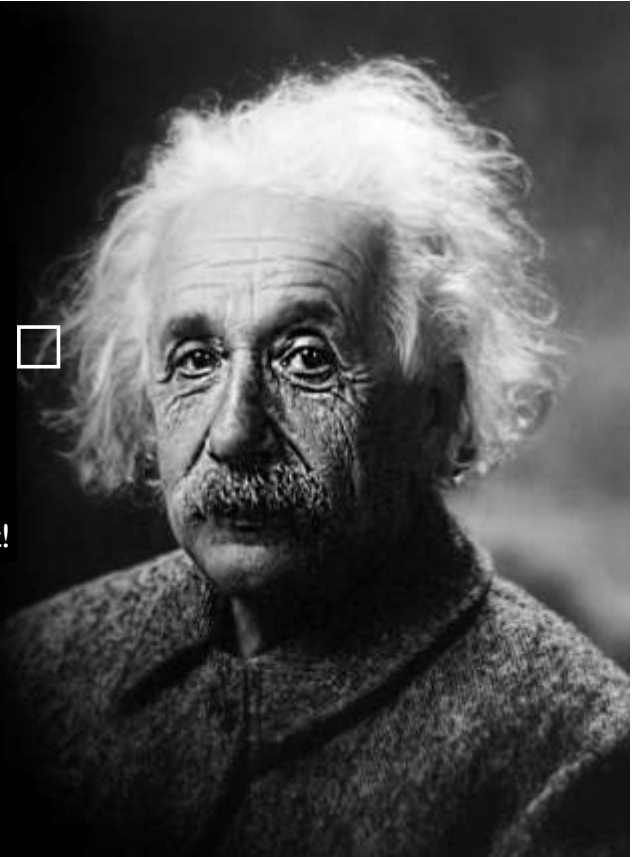
<https://www.medfitclassroom.org/five-joints/>

GoToWebinar

Questions?

Dr. Higgins motto: ☐
“Everything should be made as ☐
simple as possible, ☐
but not simpler” ☐

Thanks Albert!



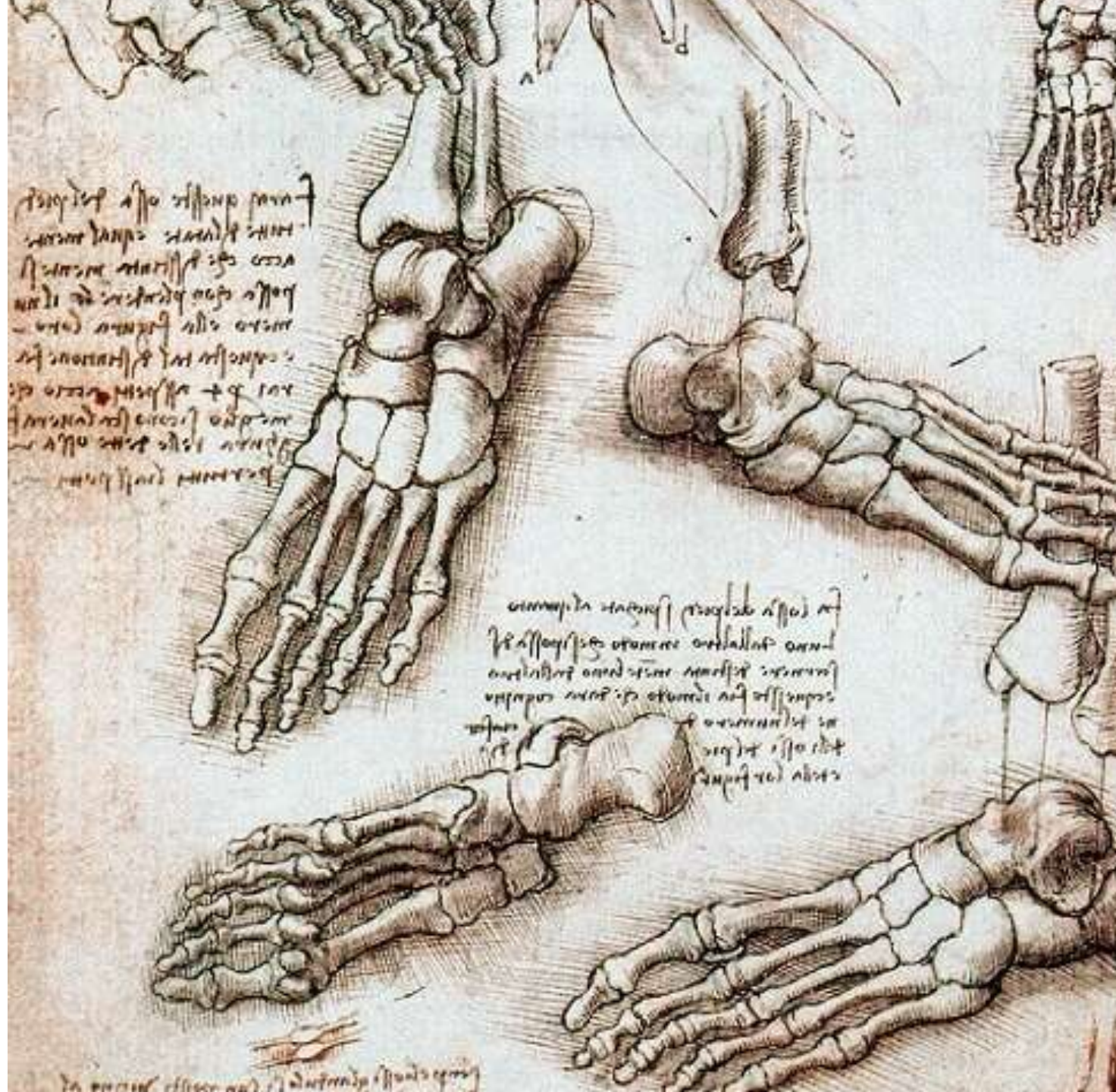
The Foot is a Masterpiece of Engineering and Work of Art!

– Leonardo Da Vinci



Serra, E. (2018, April 3). Leonardo Da Vinci foot study. Retrieved April 28, 2020, from <https://www.3dart.it/en/riferimenti-anatomici-di-leonardo-da-vinci/leonardo-da-vinci-foot-study/>

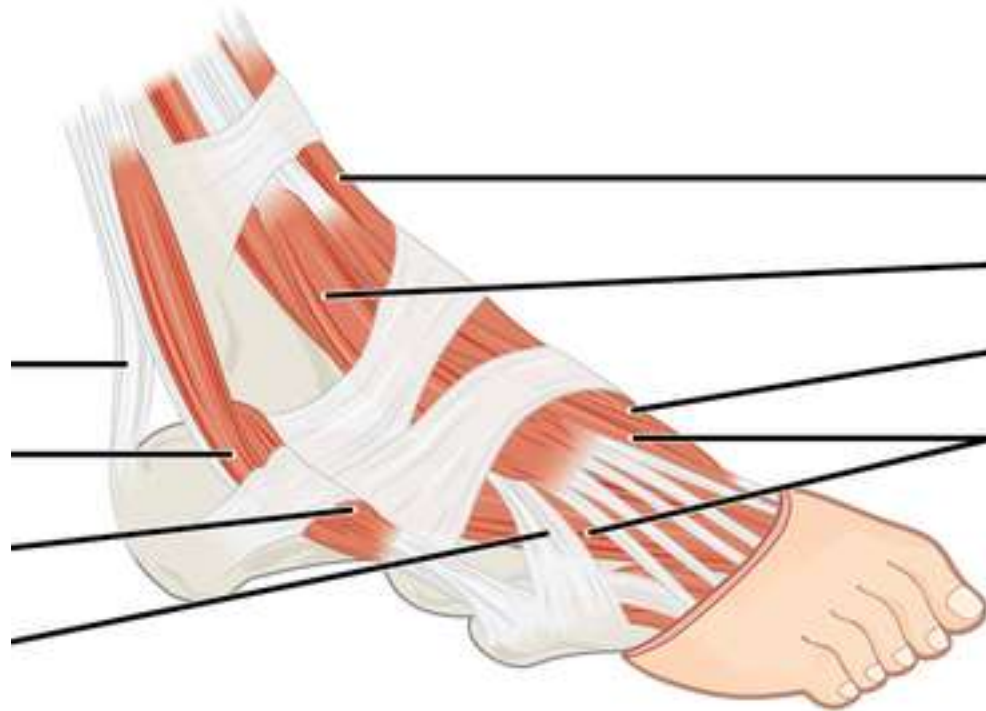
Figura quilibet pedis et calcanei inquit et musculorum et tendinum



Foot & Ankle Joints – Anatomy Overview



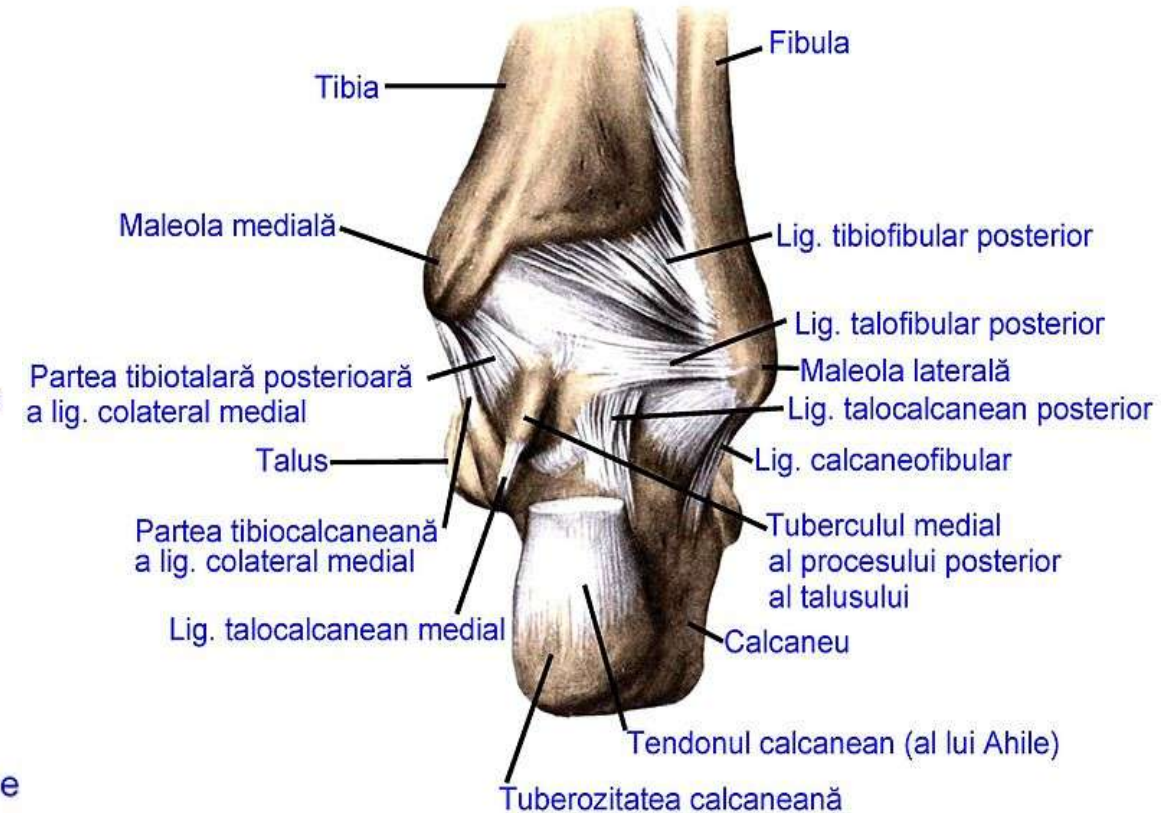
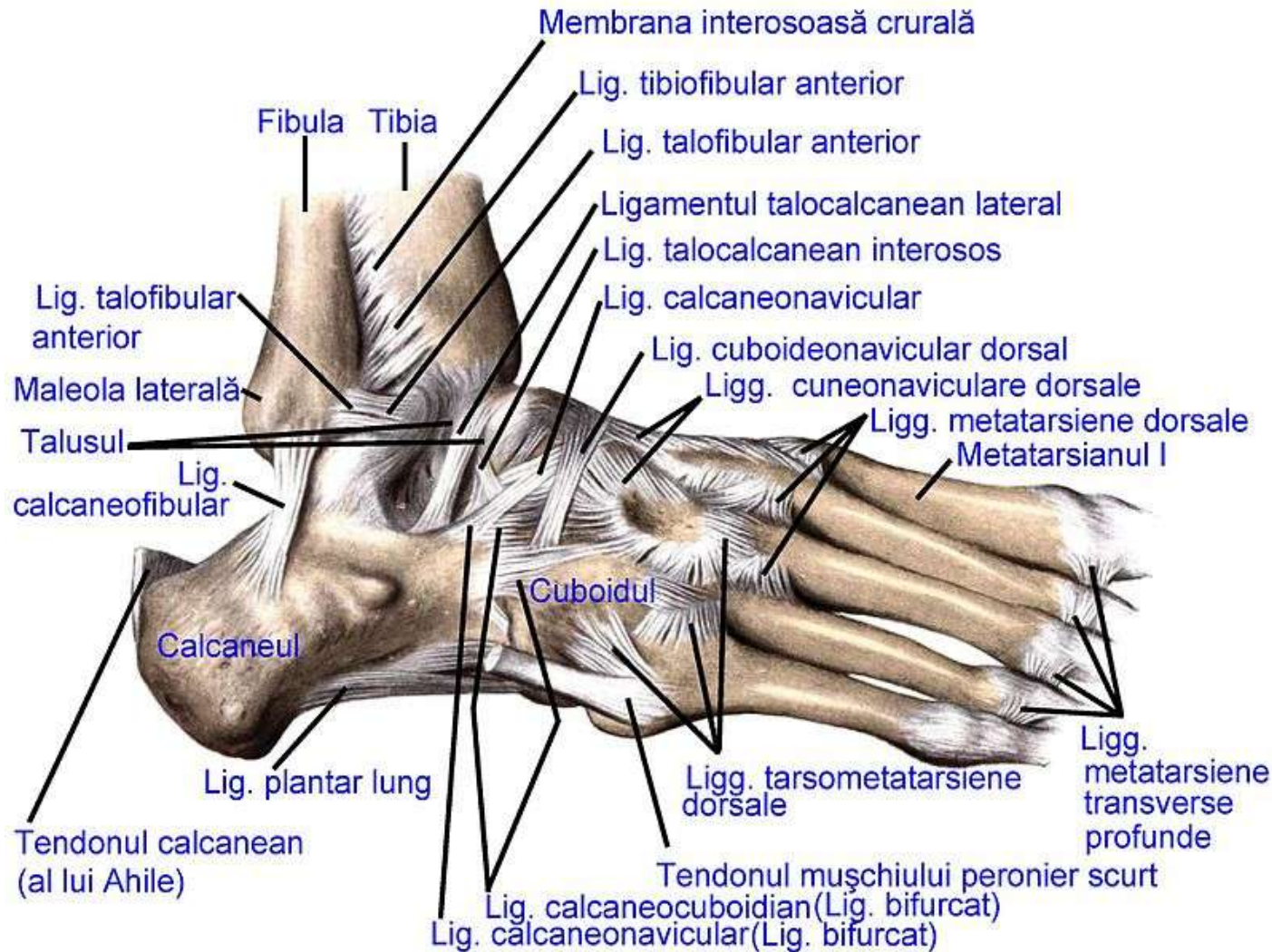
- 28 Bones (not counting sesamoids)
- 35 Joints
- 107 Ligaments
- 19 Muscles



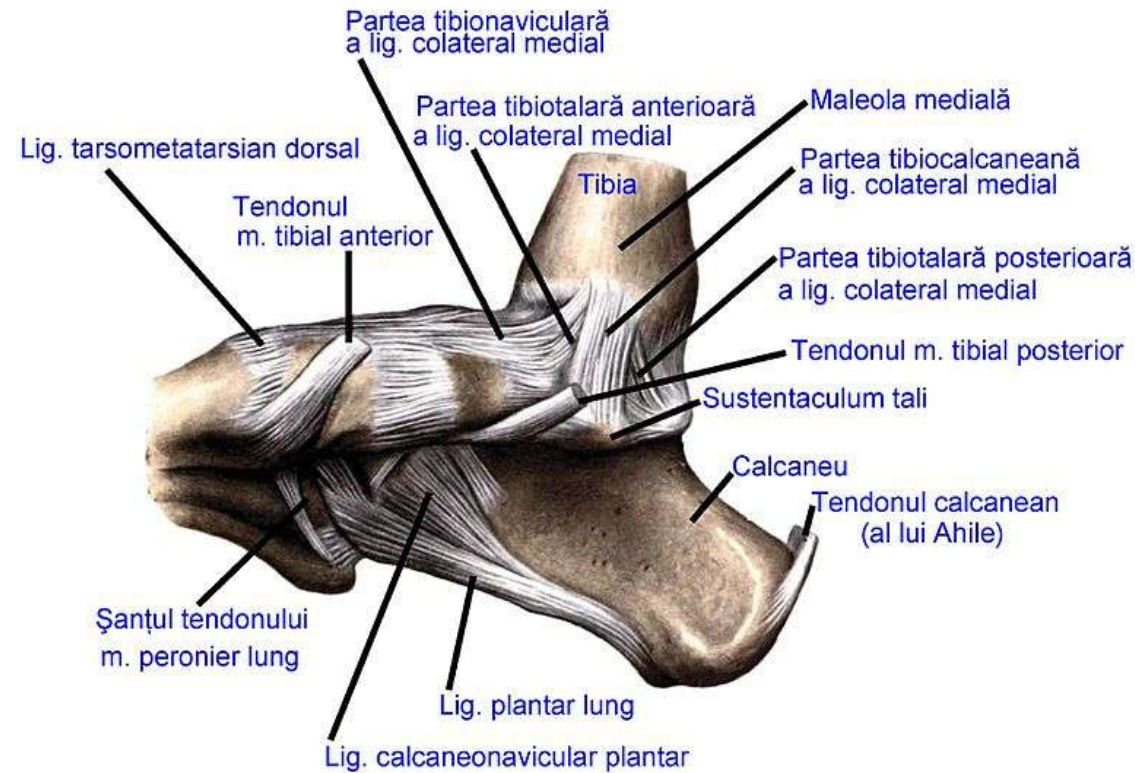
Foot & Ankle Joints Bones & Joints



Foot & Ankle Joints – Ligaments

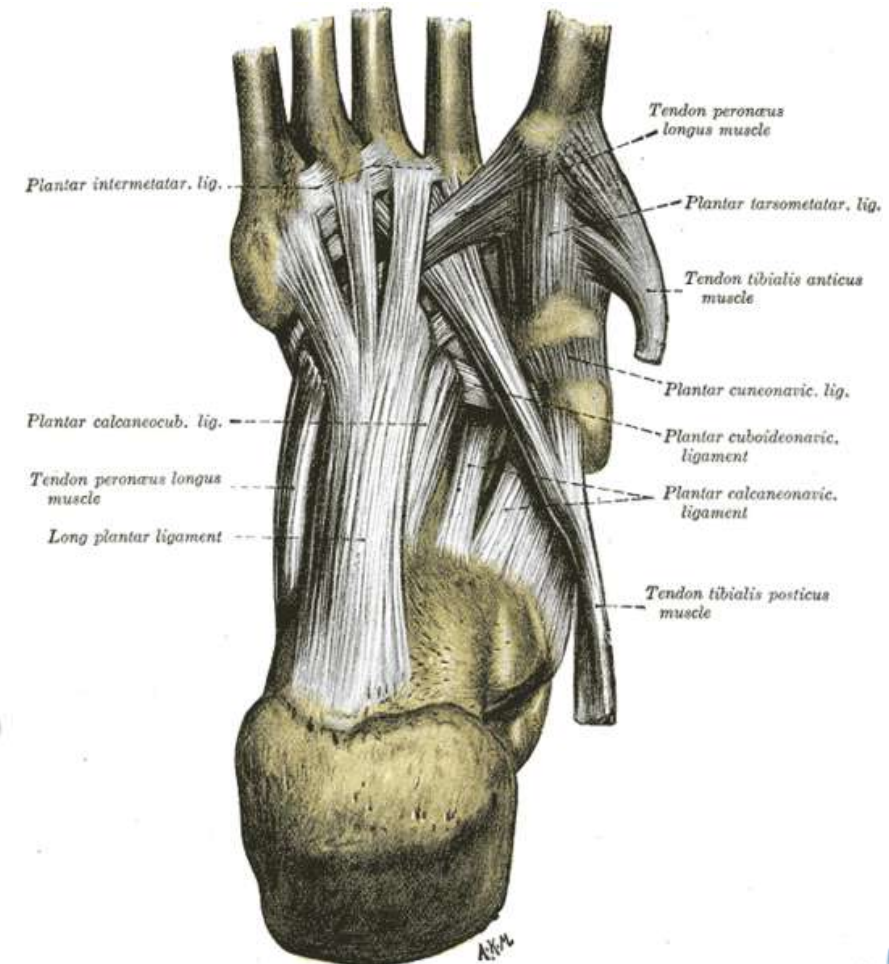
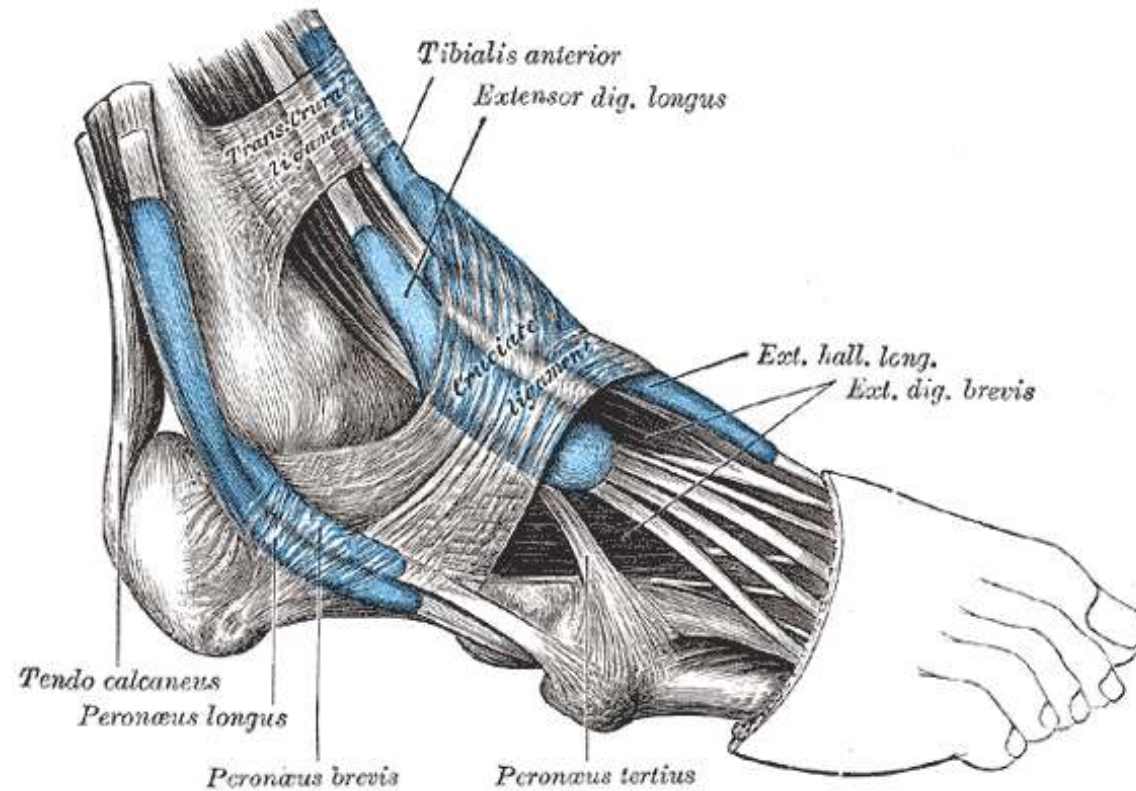


Foot & Ankle Joints – Ligaments



Sobotta's Atlas and Text-book of Human Anatomy 1909

Foot & Ankle Joints – Tendons



Questions?



The function of a genius is not to give new answers,
but to pose new questions which time and
mediocrity can resolve.

(Hugh Trevor-Roper)
Oxford Historian

IZQuotes

Functions of the Foot



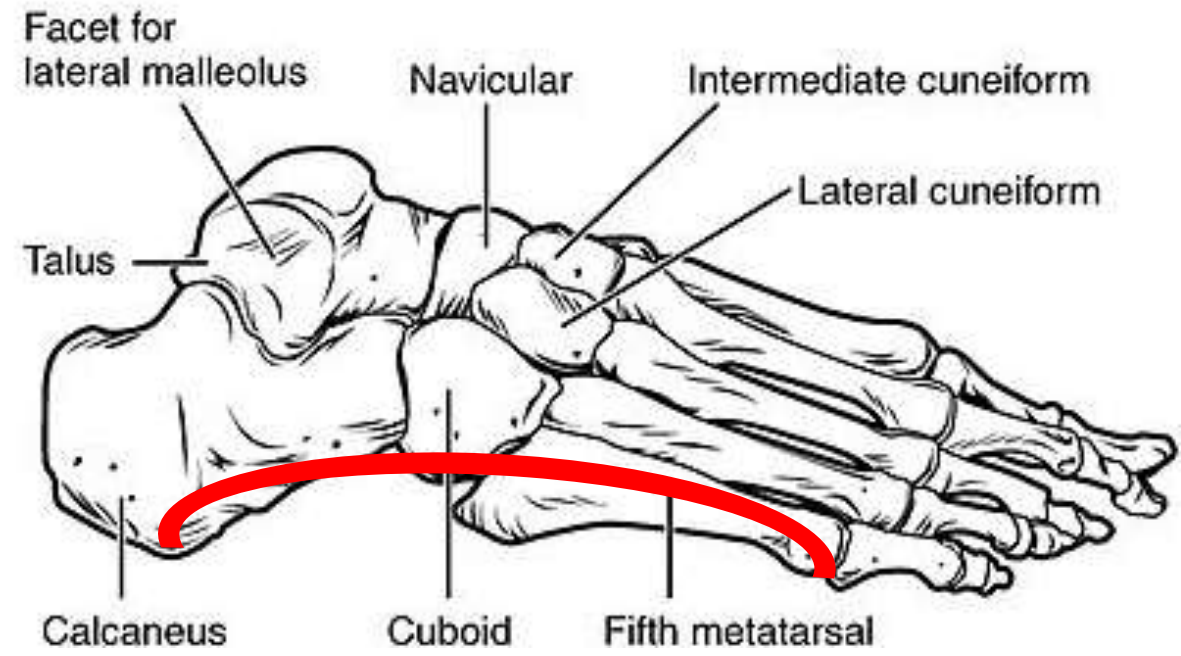
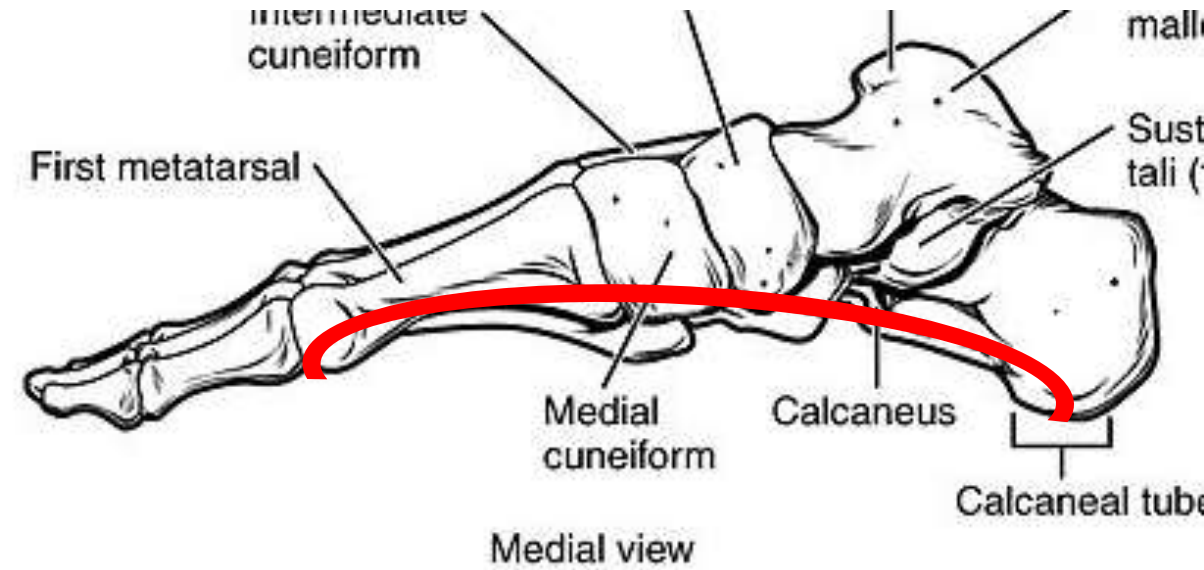
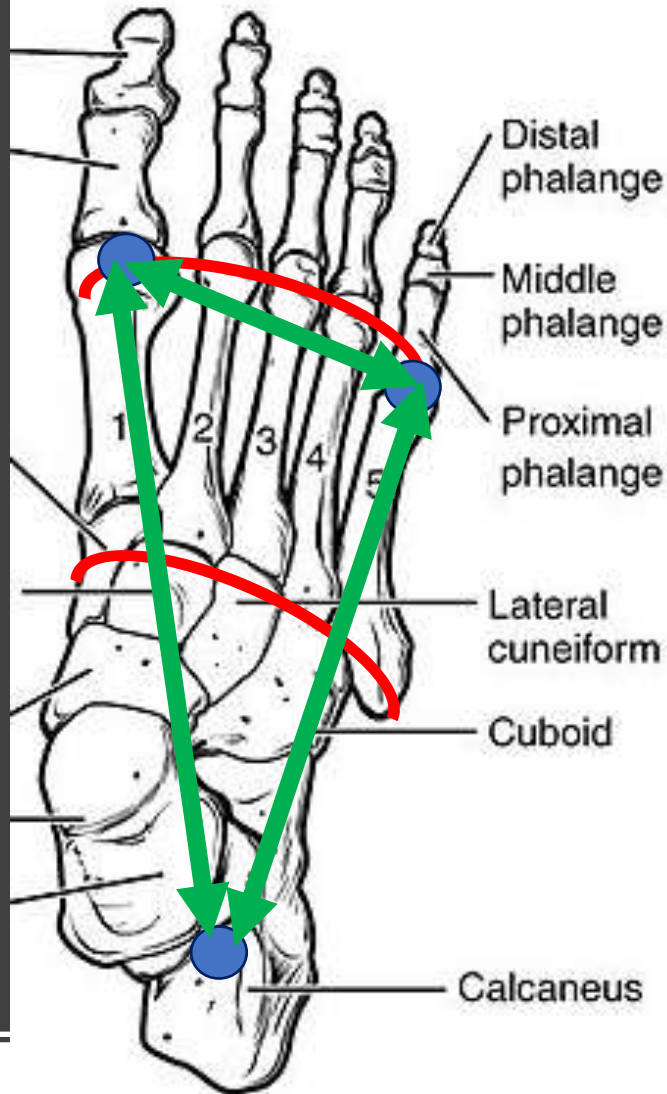
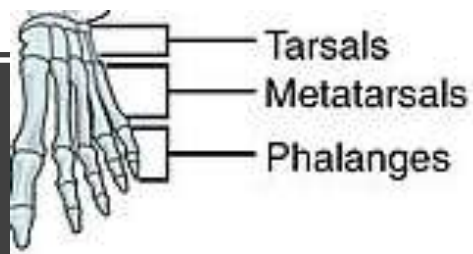
- Function of the foot
 - Force Transduction – Posture, Gait and Movement - Biomechanics
 - Vestibular Function
 - Proprioception
- NeuroBiomechanical

Foot & Ankle – Biomechanics

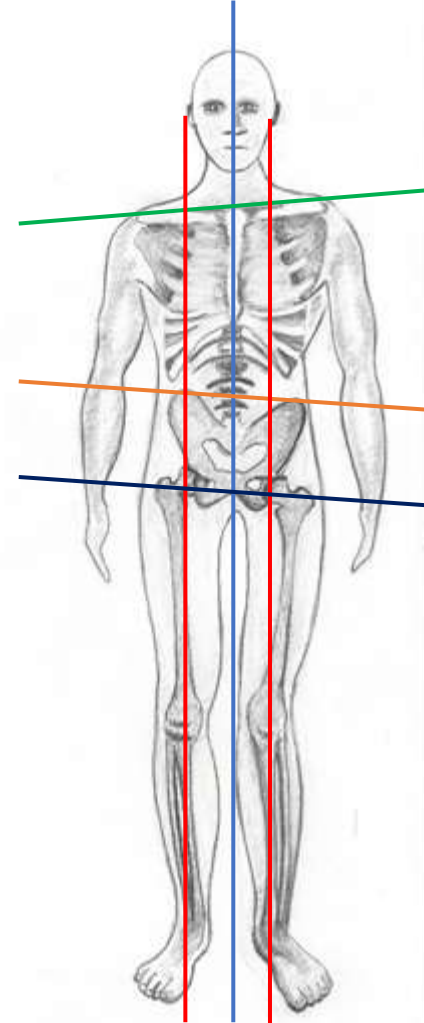
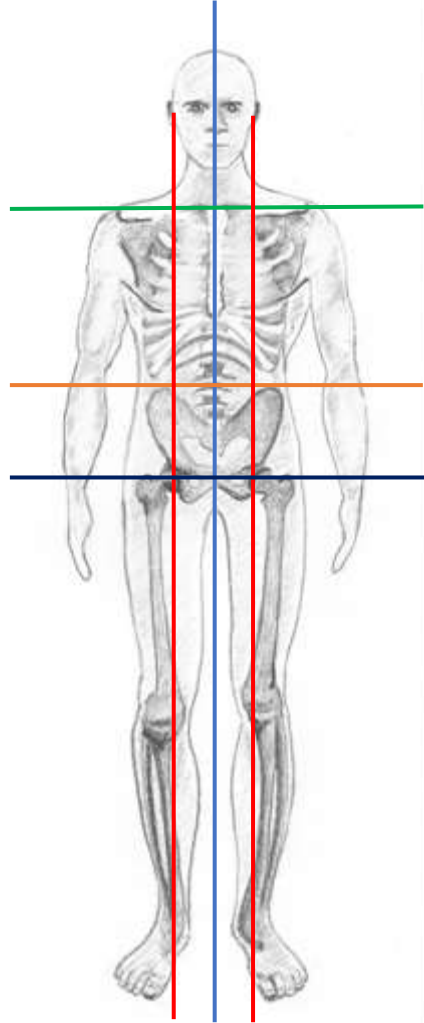


- Function of the foot
 - Force Transduction
 - Posture
 - Gait
 - Movement

Structure “The Foot Bridge”



Foot & Ankle – Posture



Foot & Ankle – Gait



- DEMO via Video Webcams

Foot & Ankle Joints – Talonavicular Joint



Talonavicular, not the Subtalar, is the dominant intrinsic foot joint.

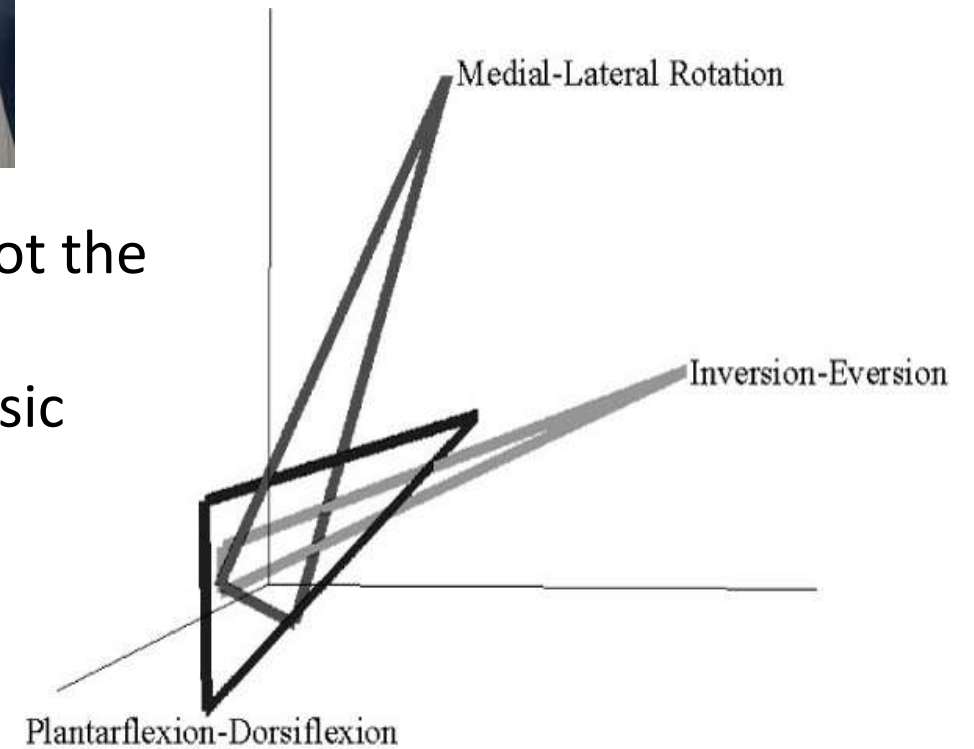
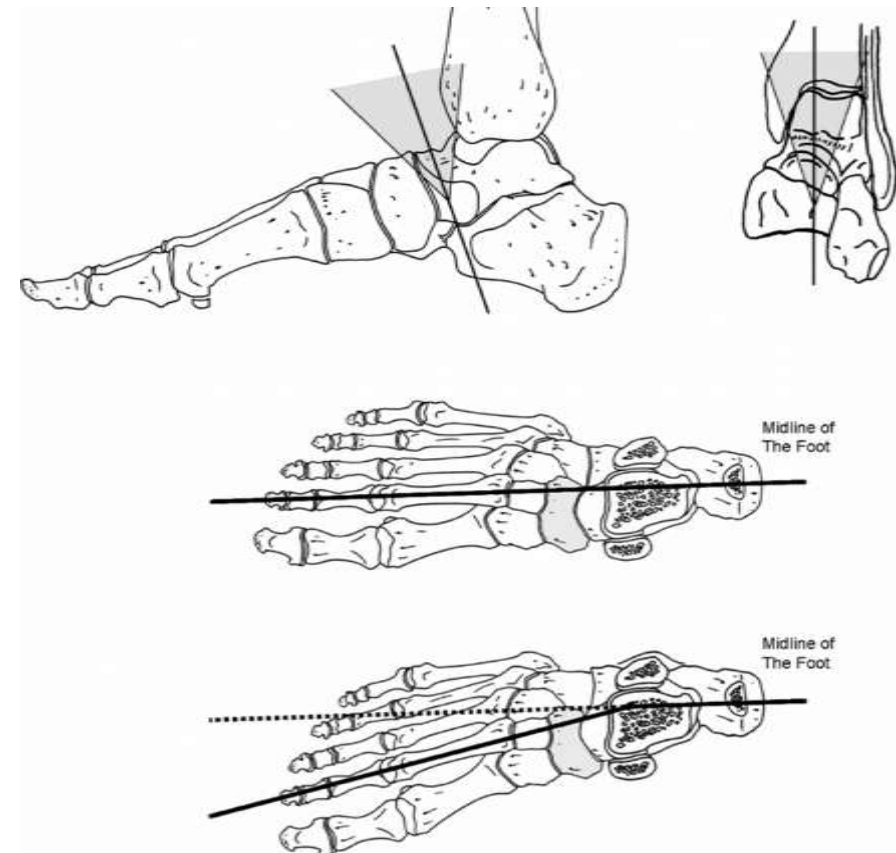
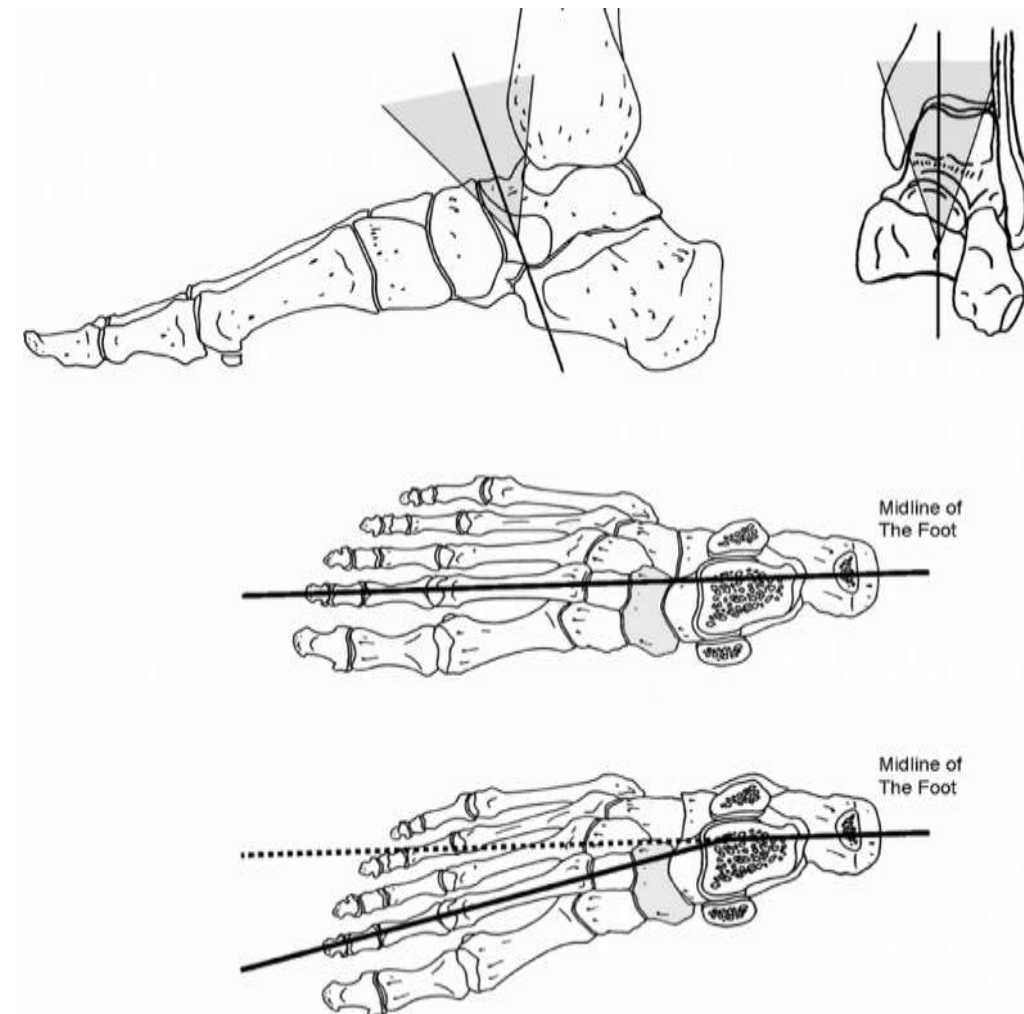


Figure 1 The consensus axis triangles associated with the three evaluated Greiner, Thomas, & Ball, K. A. (2008). Assessing talonavicular joint rotations in three dimension. *Journal of Foot and Ankle Research*, 1(S1). doi: 10.1186/1757-1146-1-s1-o50

Foot & Ankle Joints – Talonavicular Joint



Greiner, Thomas. (2007). The Jargon of Pedal Movements. Foot & ankle international / American Orthopaedic Foot and Ankle Society [and] Swiss Foot and Ankle Society. 28. 109-25.
10.3113/FAI.2007.0020.

Questions?



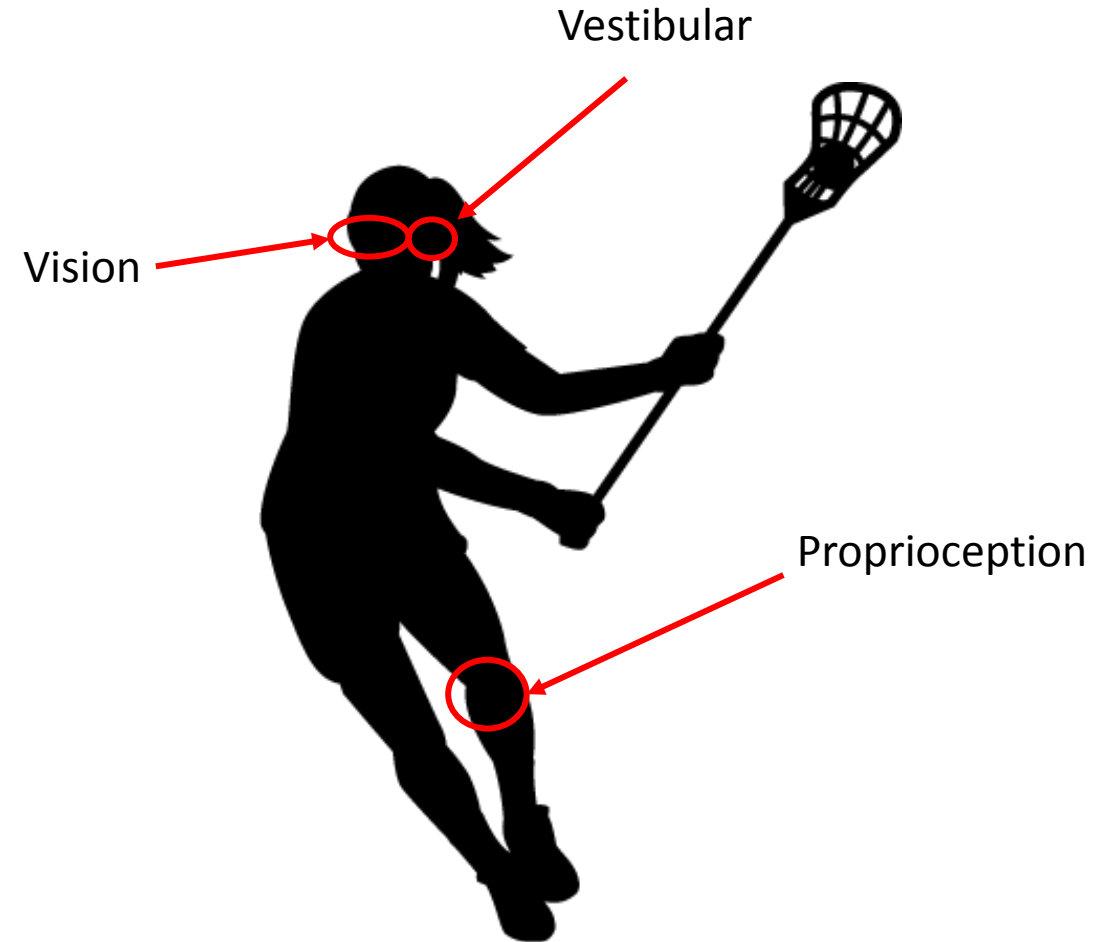
It is not the answer that enlightens,
but the question.

— *Eugene Ionesco* —
Romanian Playwright

AZ QUOTES

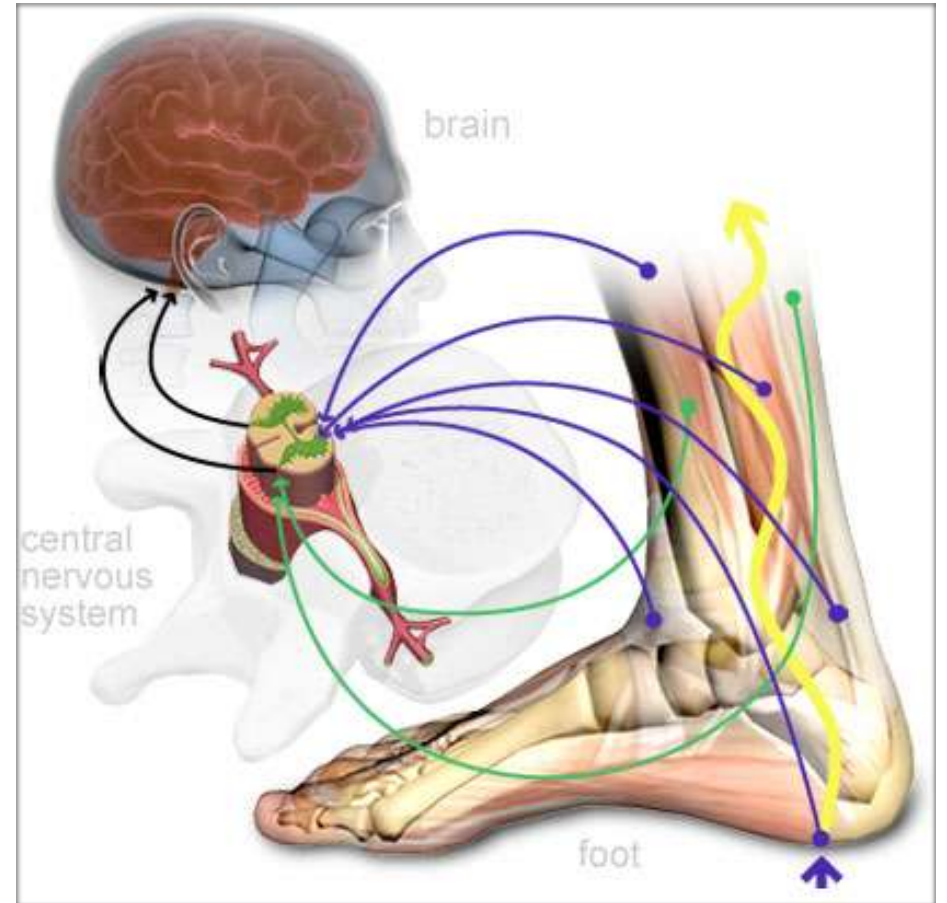
NeuroBiomechanics of the Foot

- Good balance & movement requires input from 3 systems:
 - Vision
 - Vestibular
 - Proprioception
- Your Brain is the GPS, these systems are the satellites

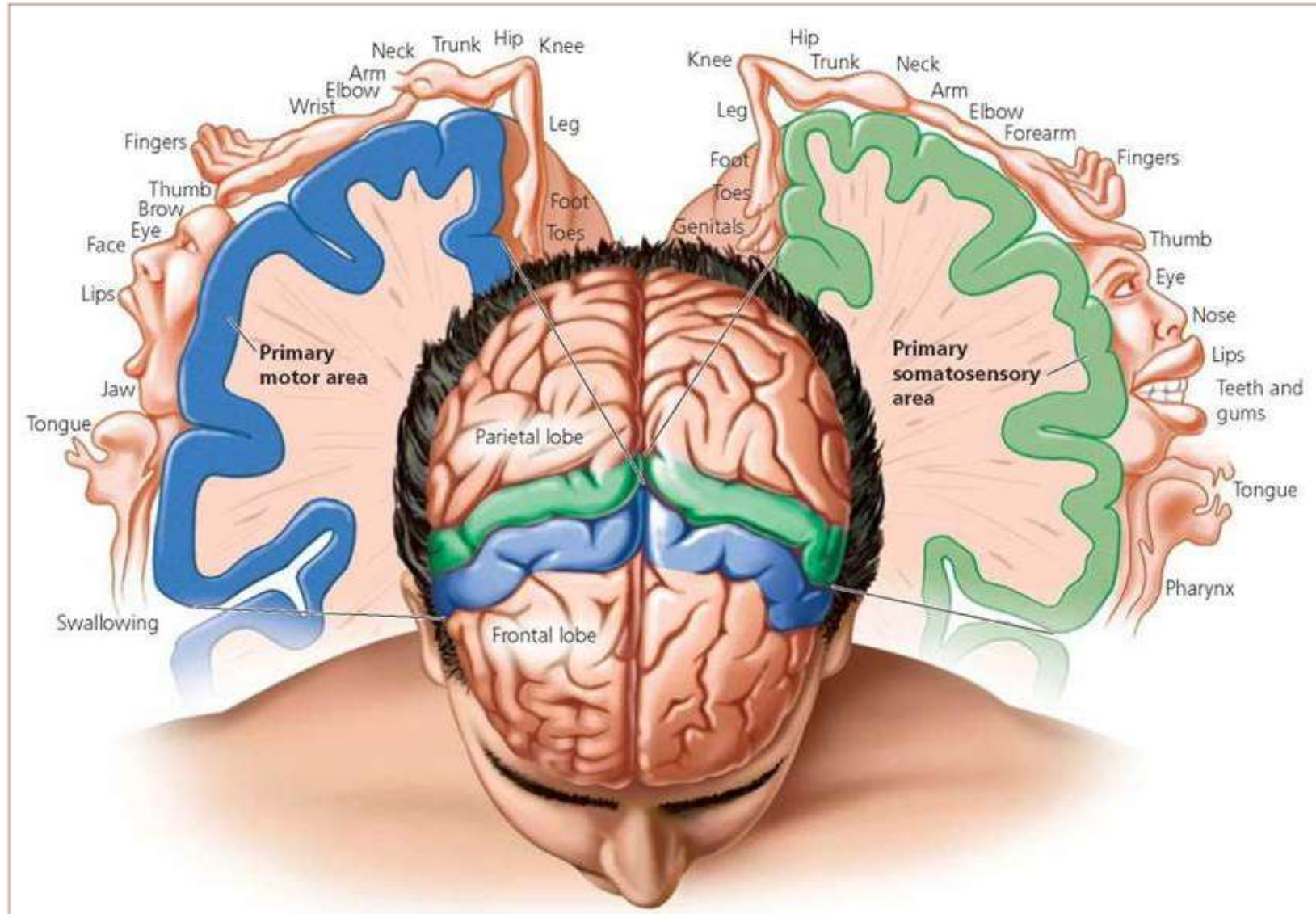


NeuroBiomechanics of the Foot

- Proprioception
 - Lives in the brain
 - Your brain's 3D map of you in time and space
- Nerve endings that provide many different types of information to the nervous system such as:
 - Mechanoreceptors (**end ROM = more input!*)
 - Chemoreceptors
 - Thermoreceptors
 - Baroreceptors
 - Electromagnetic Receptors
 - Nociceptors

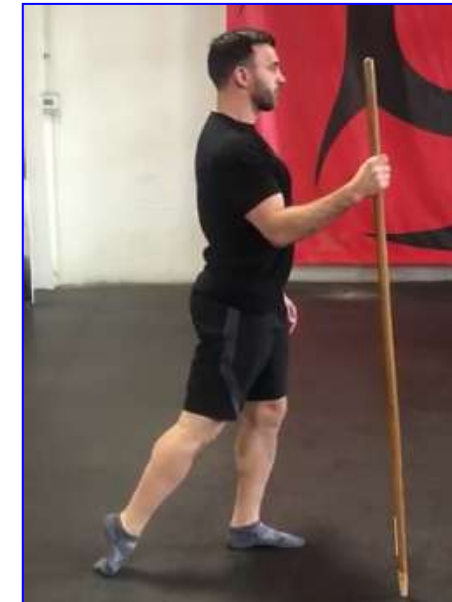
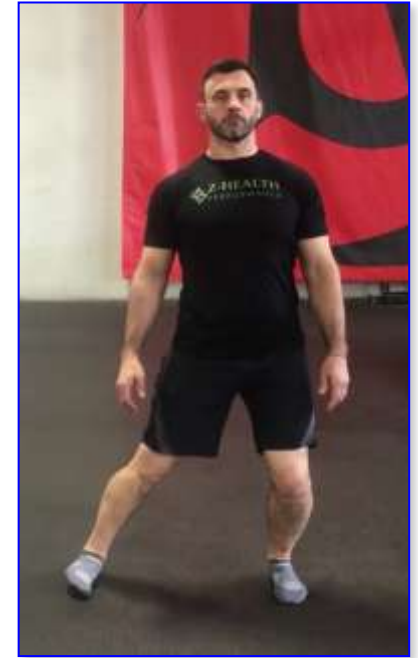


NeuroBiomechanics of the Foot

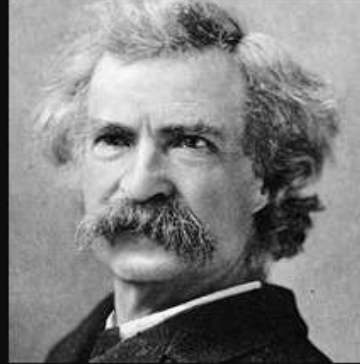


NeuroBiomechanics of the Foot

- Assessments:
 - Gait
 - Active Pain-Free ROM
- Individual Joint Mobility Drills:
 - Outside Ankle Tilts
 - Inside Ankle Tilts
 - Middle Toe Pulls
 - Outside Toe Pulls
 - Inside Toe Pulls



Questions?



He who asks is a fool for five minutes, but he who does not ask remains a fool forever.

~ Mark Twain

AZ QUOTES