



Day Six: Leg & Ankle / Lower Quarter Gait Biomechanics

Content Summary

- Clinical reasoning principles promoting reflective clinical practice accelerated skill acquisition
- Analysis of leg, ankle and foot functioning with pre-gait and gait activities
- Calf, ankle, and foot anatomy and evidence as it relates to examination and treatment
- Interpret leg, ankle, and foot clinical findings consistent with the ICF-based clinical guidelines
- Manual therapy and movement training for calf, ankle, heel, and foot mobility and coordination impairments
- Therapeutic exercises and reeducation for normalizing lower extremity shock absorption and gait mechanics

Knowledge to Review/Acquire Prior to Class

1. CPG Interactive Learning Modules:
 - Achilles Tendinitis / Achilles Pain, Stiffness, and Power Deficits
 - Ankle Ligament Sprain / Ankle Stability/Coordination Deficits
 - Heel Pain / Plantar Fasciitis
2. CPG-related Procedure Options – Ankle and Foot Labs – Handout & Videos 8.2, 8.3, 8.4, and 8.5
3. PhysioU app – Orthopaedics:
 - Achilles tendinitis/Muscle power deficits
 - Ankle sprain and High Ankle Sprain/Ankle stability and movement coordination impairments
 - Anterior knee pain/Patellofemoral pain
 - Plantar fasciitis/Heel Pain
4. PhysioU app – Exercise Patterns:
 - Achilles pain, stiffness, and power deficits/Achilles Tendinitis – Calf strengthening exercises
 - Ankle coordination deficits/Sprain and Heel Pain/Plantar fasciitis – Calf stretching exercises
 - Performance progression – Lower extremity

Selected References

Martin RL, Davenport TE, Paulseth S, Wukich DK, Godges JJ. Ankle stability and movement coordination impairments: ankle ligament sprains - clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. *J Orthop Sports Phys Ther.* 2013;43(9):A1-A40

Carcia CR, Martin RL, Houck J, Wukich DK. Achilles pain, stiffness, and muscle power deficits: Achilles tendinitis - clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. *J Orthop Sports Phys Ther.* 2013;40(9):A1-A26
and 2018 Revision – Achilles Pain, Stiffness, and Muscle Power Deficits: Midportion Achilles Tendinopathy - *J Orthop Sports Phys Ther* 2018;48(5):A1-A38

Martin RL, Davenport TE, Reischl, SF, McPoil TG, Matheson JW, Wukich DK, McDonough CM. Heel Pain / Plantar Fasciitis: Revision 2014 - a clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. *J Orthop Sports Phys Ther.* 2014;44(11):A1-A23.

Procedure Focus

Movement Analysis and Reeducation

Talocrural, Talocalcaneal, Talonavicular, Calcaneocuboid, and 1st MTP functioning during Initial Contact, Loading Response, Mid-Stance, Terminal Stance, and Pre-Swing

Foot Function with:

Tibial Internal and External Rotation; 1/4 Squat; Heel Raise

Examination Procedures

Anterior Talofibular Ligament Palpation/Provocation

Inversion Stress Test (Talar Tilt)

Anterior Drawer Test

Ankle Sprain MWM

Lower Limb Nerve Tension Tests (biasing tibial, sural, fibular nerves at the ankle)

Nerve Entrapment Site Provocation

Calcaneal Position and Eversion ROM

Mid-Tarsal Accessory Movement Tests

1st MTP Extension ROM and Tarsophalangeal Accessory Movements

Manual Therapy

Soft Tissue Mobilization to Leg and Ankle Nerve Entrapment Sites

Distal Fibular Posterior Glide

Distal Tibiofibular Mobilization with Movement

Ankle Dorsiflexion Mobilization with Movement

Talar Posterior Glide

Talar Posterior Glide Mobilization with Movement

Ankle Plantar Flexion Mobilization with Movement

Talar Anterior Glide

Calcaneal Lateral Glides

Navicular Dorsal and Plantar Glides

Cuboid Dorsal and Plantar Glides

1st MTP Dorsal Glides

1st MTP Mobilization with Movement