

# **Hip and Ankle Pathologies and Treatment Strategies**

PTA 104 Orthopedic Dysfunctions

# Objectives

- 1. Describe non-surgical management principles for hyper mobility disorders in the hip.
- 2. Describe the varied surgical approaches for THA and hemiarthroplasties and report their precautions.
- 3. Describe post-operative management of THA and hemiarthroplasties and relate how the surgical approach will affect exercise selection for the client.
- 4. Integrate principles of exercise to create a post-operative program for management of a patient with hip fracture.
- 5. Describe non-surgical management of overuse injuries of the hip.

# Objectives

- 6. Describe the post-operative management of total ankle arthroplasties and non-operative management of ankle hypomobility issues.
- 7. Describe the non-surgical management of ankle ligament injuries.
- 8. Describe the post-surgical management of ankle traumatic soft tissue injuries.
- 9. Describe the non-operative management of repetitive trauma syndromes of the foot and ankle.

# Reading Assignment

Kisner and Colby,  
Therapeutic Exercise,  
5<sup>th</sup> Edition

Chapter 20  
Pay special attention to  
Table 20.2, Box 20.6,  
Box 20.7, Box 20.9, Box  
20.10 and exercise  
section pgs 672-682

Kisner and Colby,  
Therapeutic Exercise,  
5<sup>th</sup> Edition

Chapter 22  
Pay special attention to  
Box 22.1 and exercise  
section pgs 786-792.

# Introduction

- Post-operative management of THA and hip fractures will be among the most commonplace services rendered by PTAs to members of the older adult and geriatric populations.
- Overuse and traumatic injuries to the foot and ankle are among the most common pathologies that will be encountered when providing services to active adolescents and young adults.

# Introduction Continued

- While reading this material keep in mind that much of the pathology sections are information you already know. You now are familiar with arthritis, you know about hypomobilities and hypermobilities, and you know about soft tissue healing. Also, the stages of recovery/treatment are a familiar concept to you.
- Focus your learning first on SAFETY issues. I have especially highlighted the safety summary boxes for you.
- After safety, next focus your attention to the exercises that are presented, as these are now items to be placed in your PTA toolbox. Assimilating this material will empower you to perform successful treatment sessions.
- Lastly, the general details about surgical approaches will help you to understand the SAFETY concerns of the recovery process and the timeline for advancing exercises.

# Hip lecture

- The following information is provided to assist you assimilate the information provided in the chapter and to facilitate comprehension of the clinical application of the information.
- First of all, make note that functional ROM in the hip joint for ADLs is 120 degrees flexion, 20 degrees ER and 20 degrees abduction. Gait requires at least 30 degrees of flexion and 10 degrees of extension.
- Remember the L3 dermatome, this is the innervation for the hip joint.
- The goals of any surgical intervention to the hip joint are to reduce/eliminate pain, create a joint stable enough for functional activities, and restore enough ROM and strength for functional activities.
- Wbing restrictions vary greatly and the surgeon is always the defining agent.

# Hip page 2

- Understand precautions due to both surgical approach and in cases of THA use of cement or uncemented. You will likely encounter patients questioning their personal limitations when someone else in the gym with the same original pathology has different restrictions. It is necessary to be able to explain the reason for the difference logically, to assist them in being compliant with their post-surgical instructions.



# Hip page 3, THA

- Know the movement precautions/limitations as they apply in the open kinetic and closed kinetic chain.
- Note that the posterior approach is at highest risk for a dislocation, due to the posterior dislocation technique used to expose the joint for surgery.
- A dislocation presents as a shortening of the involved leg that was not previously present, paired usually with positioning of ER and severe complaint of pain. This must be immediately reported to the surgeon.
- Anterior and Lateral approaches are much more stable in reference to dislocation risk. However, the abductors have likely been partially or completely disrupted. This will yield Trendelenburg weakness that will impact post surgical gait training. It will also result in **very serious restrictions** about the advancement of active exercises for the involved abductors. Prematurely exercises disrupted abductors can result in a permanent avulsion injury that can not be repaired.

# Hip page 4, ORIF

- The most important point to note is that different surgeons will implement different post-surgical weight restrictions and progressions for the same injury and repair. Weight status will always be client specific.
- Keep in mind that unlike THA, the pathology or deficit that created the need for surgery is still present. This will impact the gait training process during the recovery. Especially since most surgeries require that resistance training for the hip muscles be postponed for 4-6 weeks to allow for adequate healing.

# Ankle and Foot, page 1

- Remember, the foot is built for walking and it is the base of support for the ambulatory human body. Think about the muscles and the joint kinematics in terms of their function in closed chain positions.
- The open packed position of the ankle joint is plantar flexion, the closed packed position is dorsiflexion. Open packed positions are positions of danger and risk of ligamentous injury. In a closed chain position of plantar flexion at the ankle, the subtalar and transverse tarsal joints are closed packed. This puts a rigid lever designed to transmit forces at the distal end of an at risk joint complex. This is why inversion ankle sprains are so common place. Can you think of any footwear choices that maximize this risk scenario?
- Functional ROM for gait purposes is 7 degrees of dorsiflexion, 25 degrees of plantar flexion and 40-50 degrees of toe extension. If this ROM is present and strength is functional, what contra lateral hip muscle may be deficient?

# Ankle and foot, page 2

- Functional muscle roles:

Posterior tibialis controls and reverses pronation at midstance as well as supports the arch of the foot (think of what its insertion is).

Flexor hallucis longus and digitorum longus support the medial longitudinal arch.

Peroneous longus and brevis pronate at the subtalar joint and longus supports the transverse and lateral longitudinal arch.

Soleus prevents dorsiflexion of the tibia due to the effect of gravity during static stance.

Lastly, don't forget about the ankle strategy for balance.

# Ankle and foot, page 3

- Ankle and foot overuse injuries are really problems of abnormal/excessive pronation with or without gastroc/soleus tightness. The resulting injury must be treated, as must these causative factors.
- A clinical treatment recommendation: For applying cross friction massage for plantar fasciitis, a golf ball is an excellent tool that can be used by both the therapist and the patient.

# Ankle and foot, page 4

- Selected safety highlights. In addition to the highlighted safety issues in the chapter, not the following:

Lateral ligament surgical repairs: always start with open kinetic chain strengthening, everter strength is the most important to recover, and no proprioception and balance training until wbing is fully pain free

Achilles repair: Wbing will be restricted significantly for 6 weeks, low intensity resistance exercises don't begin until 6-8 weeks, and no closed chain exercises until full wbing is pain free.