

HSACCC 2017 CONFERENCE

Vance J. Manakos MS ATC
College Trainer/Adjunct Health and Kinesiology Instructor/Athletic Director
Moorpark College


Leading cause of Nonfatal Injuries

2013 - office of statistics and programming, Natl Center for Inj. Prev. and Control, CDC

- 15-24 Years of age
 - Unintentional Struck by or against
- 25 - 65+
 - Unintentional Falls





EVALUATION AND TREATMENT OF LOWER EXTREMITY INJURIES



Primary Goal of Initial Orthopedic Assessment

- Determine if true orthopedic emergency exists
- Begin appropriate care
- Determine mode of transport
 - Never allow an obvious orthopedic injury to distract from and underlying injury which may be life-threatening





Objectives

- Participants will explore common lower extremity injuries in the college setting
- Participants will learn how to perform tests for lower extremity injuries assisting in the evaluation process
- Participants will be able to apply common principles of care for lower extremity injuries

Common Orthopedic Injuries seen in the SHC

- Lower Extremity
 - Ankles
 - Knee
 - Strains
 - Others



Health Center Assessment


<h3>Subjective</h3> <ul style="list-style-type: none"> ■ History <ul style="list-style-type: none"> - Injury location - Previous injury - MOI - Pain characteristics 	<h3>Objective</h3> <ul style="list-style-type: none"> ■ Observation <ul style="list-style-type: none"> - Deformity - How does patient move - limp/guard - Facial expression for pain - Swelling, ecchymosis, atrophy - Malalignment - Abnormal sounds, crepitus - Swelling, warmth, redness
--	--

Plan - First Aid


- Rest
- Ice
- Compression
- Elevation
- Special Care



Objective cont.



<ul style="list-style-type: none"> ■ Palpation <ul style="list-style-type: none"> - Injured vs non injured <ul style="list-style-type: none"> ■ Swelling, lumps, warmth, abnormal skin sensations, anesthesia, hyperesthesia - Light pressure to deeper pressure - Begin away from area of chief complaint to area of complaint 	<ul style="list-style-type: none"> ■ Special Tests <ul style="list-style-type: none"> - Movement Assessment <ul style="list-style-type: none"> ■ Active ■ Passive - MMT - Circulatory - Neurological - Sensory - Reflex - Joint stability tests - Percussion testing
--	---



<h3 style="margin: 0;">Emergencies</h3> <p style="margin: 0;">Open Fractures Knee Dislocations Hip Dislocations S/C Injury</p> <h3 style="margin: 10px 0 0 0;">Urgencies</h3> <ul style="list-style-type: none"> • Fractures • Dislocations • Sprains/strain • Compartment syndromes • Spinal injuries 	<h2 style="text-align: center;">Assessment</h2> <p style="text-align: center; font-size: small;">- 1/3 of all ED are Orthopedic in nature</p> 
---	---

Plan

- MD Referral
 - PMD
 - Orthopedic
- Diagnostic testing
 - X-Rays, MRI's
- Return appointment
 - 1-2 weeks
 - No improvement
 - Getting worse

Ankle

- Inversion injury Ankle Sprain



Inversion Injuries

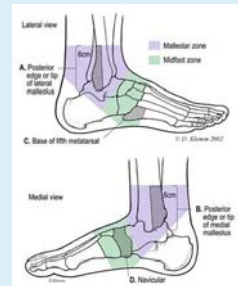
- Most common injury in physically active population – 25,000 per day
- Estimated 1/3 of first time ankle sprains develop into chronic ankle instabilities resulting in recurring injury
- Classified based on location or mechanism

- Inversion injury most common – 80-90% of ankle injuries
- ATF, CF, PTF



Ottawa rules for x-rays

- Ankle X-Ray required if pain in malleolar zone and any of the following:
 - Bone tenderness at D
 - Bone tenderness at B
 - Inability to weight bear (4 steps) immediately and in ED
- Foot x-ray is required if pain in midfoot zone and any of the following:
 - Bone tenderness at C
 - Bone tenderness at D
 - Inability to weight bear (4 steps) both immediately and in ED.



Signs and Symptoms

- Grade I
 - Stretch
- Grade II
 - Partial Tear
- Grade III
 - Complete Tear



- Pain
- Disability
 - Weight bearing difficult
 - Weight bearing impossible
- Swelling
- Ecchymosis
- Pop/snap

Differential Diagnosis

- Fracture
 - Calcaneus, talus, navicular
 - Fibula, tibia
- Fracture
 - Tibia, fibula
- Peroneal Tendon tear
- Fracture base of the 5th metatarsal

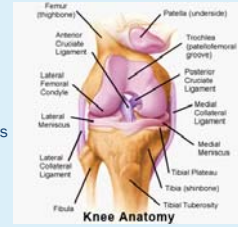
Jones Fracture

- Inversion and Plantar Flexion
- Base of 5th metatarsal
- Healing slow
- High non union rate



Knee

- Anterior Cruciate Ligament (ACL)
- Non contact accounts for about 80%
 - Flexion with Rotation
- More than 1 Million ED visits for Knee injuries



Simple Test Anterior Drawer's Test



ACL Mechanism - NUMEROUS



Red Flags

- Continual popping
- History of repeated giving way of the ankle
- Failure to improve in 6 weeks with appropriate treatment



Signs and symptoms of ACL Tear

- Knee "gave way" and feel like it is going to "give out"
- "Pop" followed by immediate disability
- Swelling
- Pain initially that can go away in a few minutes
- More likely in females than males



Ottawa rules for x-ray of the knee

- Over 55 years of age
- Isolated tenderness of the patella only
- Tenderness at the head of the fibula
- Inability to flex to 90 degrees
- Inability to bear weight for 4 steps

Red Flags

- Knee effusion
- Knee “give way”
- “Pop” inside knee



Knee Test

- Lachman's Test



Strains



Differential Diagnosis

- Fractures
- Meniscal tears
- Patellar dislocation/subluxation
- Patellar tendon rupture
- Posterior cruciate ligament tear
- Pre patellar bursitis



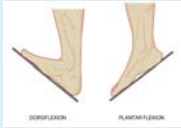
Fluoroquinolones

- Ciprofloxacin (Cipro)
- Gemifloxacin (Factive)
- Levofloxacin (Levaquin)
- Moxifloxacin (Avelox)
- Norfloxacin (Noroxin)
- Ofloxacin (Floxin)
- Mechanism unknown
- Initial course = 3X risk for having an Achilles tendon rupture during the first 90 days following this treatment
- Past fluoroquinolone use does not appear to confer future risk.
- Symptoms usually developed within 1 week of initiating treatment
- 90% within 1 month

Achilles Strains


Grade I & II

- Excessive dorsiflexion
- Resistive plantarflexion




Grade III

- Sudden acceleration – push off
- Weekend warrior – more common over 30 yrs of age
- Previous injury or chronic inflammation

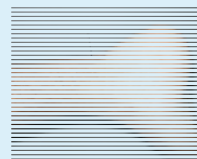


Achilles Rupture Testing

Thompson Test



Observation




Achilles Strains

Grade I, II

- Pain
- Weakness
- Ecchymosis

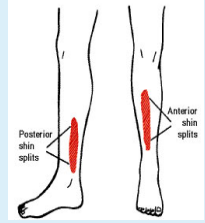
Grade III

- Sudden snap/pop – *Kicked or hit with a bat*
- Immediate pin that can subside
- Point tenderness
- Swelling discoloration inability to do a toe rise or walk normally




Shin Splints – Catch All Term

- MTSS – true shin splint????
- Stress Reaction (stress fx.)
- Muscle strains
- Tendinopathy
- Compartment problems - acute, exertional
- 10-15% of ALL running injuries
- 60% lower leg pain




Differential Diagnosis

- Strain
- Tendinopathy
 - Tendinitis
 - Tendinosis
 - Tenosynovitis



Stress Fractures – Tibial Stress Reaction

- Overuse condition
 - Runners distal 1/3,
 - Dancers middle 1/3
- Likely to have structural deformities
 - Pes Cavus – tibial
 - Hypermobile pronated feet - fibula



Treatment - Lower Leg Pain

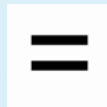
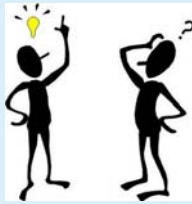
- Proper diagnosis
 - X-rays/MRI/bone scan
- Activity modification
 - Achilles/greater toe stretch
- RICES
- NSAID
- Arch support
- Strengthening exercises
- Casting
- Walking boot
- Surgery



References

- Hern, P and Maughan, K. UpToDate, 11/15/2016. Wolters Kluwer
- Knight K, Draper D. Therapeutic Modalities The Art and Science. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins, 2013.
- Kuo C, Lin C, Lee W, Huang W. (2013). Comparing the Antiswelling and Analgesic effects of Three Different Ice pack Therapy Durations. The Jour of Nursing Research. 21 (3),186-193.
- Nickel, F. Ray. Presentation - Achilles Tendon Ruptures, Ventura Ca. 12/16
- Northrup R, Ragan B, Belf G. The Ottawa Ankle Rules and the Buffalo Rule, Part 1. Athletic Therapy Today. 10(1): 56-59.
- Prentice W. Principles of Athletic Training, 15th ed. New York, NY: McGraw Hill, 2014.
- Stark J. Essentials of Musculoskeletal Care. 4th ed. Rosemont, IL: American Academy of Orthopedic Surgeons, 2010.
- Thygerson A. First Aid, CPR and AED Advanced. 7th ed. Sudbury, MA: Jones and Bartlett Learning, 2016.
- Waterman BR, et al., (2012). The Efficacy of Combined Cryotherapy and Compression Compared to Cryotherapy Alone Following ACL Reconstruction. J Bone Joint Surg 1538-8506, 2012

Team Approach



TO ME, GOOD HEALTH IS MORE THAN JUST
EXERCISE AND DIET. IT'S REALLY A POINT OF
VIEW AND A MENTAL ATTITUDE YOU HAVE
ABOUT YOURSELF.

-Albert Schweitzer