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Introduction

- Complete examination of the ankle should also include the foot and knee. Lateral ankle sprains are one of the most common sports injuries encountered and the anterior talofibular ligament (ATFL) is the most common ligament injured. Ankle inversion injuries are much more common than eversion injuries due to weakness of the lateral ligaments compared to the medial deltoid ligaments. Ankle sprains can be graded based on the presence or extent of a ligament tear. Grade 1 includes a stretch or partial ATFL tear, Grade 2 includes a complete ATFL tear with stretch or partial tear of the calcaneofibular ligament (CFL), and Grade 3 includes complete tears of the ATFL and CFL. Appropriate physical examination and knowledge of special tests can help diagnose and allow proper grading of ankle injuries. Although ankle sprains are mostly thought of as a benign injury, inadequate healing time and rehabilitation can lead to prolonged symptoms and can mask other injuries

around the ankle joint such as fractures and tendinopathies.

Physical Examination

- **Inspection** of the ankle begins by examining the patient's gait, standing posture, and shoe wear pattern. Any gross deformity, atrophy, or malalignment should be noted with side to side comparison. Hallux valgus (bunion), hammertoes, skin, and nail deformities should also be noted. Weight bearing posture of the foot and ankle should be observed with shoes and socks removed. This may reveal a high longitudinal arch (pes cavus) or flat foot (pes planus) as well as varus or valgus deformities of the hindfoot.
- **Palpation** of the foot can be divided into three sections: hindfoot (talus and calcaneus), mid-foot (navicular, cuboid, and cuneiforms), and forefoot (metatarsals and phalanges).
 - Proximally, the shaft of the tibia and fibula should be palpated as syndesmotom injuries can occur in association with ankle injuries and can even cause fractures of the proximal fibula. The ankle mortise should be palpated along the tibiofibular and tibiotalar articulation. The medial and lateral malleolus should be palpated noting that the lateral malleolus extends more distally, thus limiting eversion of the ankle.

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- Posteriorly, the Achilles tendon should be palpated into the insertion point near the calcaneal tuberosity. Pain may be present at this location due to tendonitis or bursitis at the retrocalcaneal bursa.
- Careful palpation of the navicular and the base of the 5th metatarsal should be performed as chronic injuries can be seen at these locations. Metatarsal shafts should be individually palpated as tenderness along the dorsum of the foot may indicate a fracture. Pain along the plantar aspect of the first metatarsophalangeal joint may indicate inflammation of the joint capsule, which is also known as “Turf toe.”
- The ATFL originates along the anterior border of the lateral malleolus and inserts along the body of the talus while the CFL also originates along the lateral malleolus and inserts on the calcaneus. This ligament is most taut with the ankle in a slightly dorsiflexed position. The posterior talofibular ligament originates from the posterior border of the lateral malleolus and inserts on the posterior talus and is the strongest of the lateral ligaments. Medially, the deltoid ligament originates from the medial malleolus and is composed of four different ligaments.
- **Range of motion** of the ankle should evaluate passive and active range of motion. Passive range of motion should be assessed with the foot off the ground and resting on the examining table. Motions can be complex based on the multiplanar joint movements and interactions. The tibiotalar joint is primarily responsible for foot dorsiflexion and plantarflexion while the talocalcaneal (subtalar) joint allows foot inversion and eversion. Internal and external rotation of the ankle refers to the combined tibiotalar and talocalcaneal motion while pronation and supination of the foot involve movements of the midfoot and forefoot.
- **Special tests** of the ankle may not only provoke the patient’s pain or demonstrate increased laxity of the ankle joint, but may also help narrow down the etiology of pain and also allow for grading of ankle sprains.
 - **Anterior draw test** is used to examine the ATFL and the integrity of the ligament. The patient is sitting and relaxed while the examiner stabilizes the distal part of the leg with one hand while the other hand is used to cup the calcaneus. Anterior force is applied to the heel in attempt to subluxe the talus anteriorly from beneath the tibia. Side to side comparison should be performed to assess degree of subluxation.
 - **Talar tilt test** is used to primarily examine the lateral ligaments and the CFL in particular. The patient is in a seated position with the ankle and foot unsupported to 10–20° of plantarflexion. The examiner stabilizes the medial aspect of the distal part of the leg just proximal to the medial malleolus while the other hand is used to supinate the hindfoot. The degree of tilt should be compared side to side and pain may be experienced over either the CFL or ATFL.
 - **Syndesmosis squeeze test** examines the distal tibiofibular joint. This test is performed by manually compressing the fibular to the tibia above the midpoint of the calf. A positive test would produce pain over the area of the syndesmotomic ligaments.
 - External rotation or **Kleiger’s test** is also used to identify syndesmotomic injuries. The patient is seated and the distal tibia is stabilized while externally rotating the foot. External rotation of the foot causes widening of the tibiofibular joint and the patient may have pain anterolaterally. A positive test would be indicated by increased external rotation of the foot when compared bilaterally or pain along the anterolateral ankle joint.
 - **Thompson’s test** is used to confirm an Achilles tendon rupture. The patient is placed in prone position with their foot hanging off the edge of the bed. The calf muscle is squeezed slightly distal to the widest girth of the muscle belly. A positive test would be when there is no plantar movement of the foot when the calf is squeezed indicating rupture of the Achilles tendon.

Questions

1. The most common ligament affected with lateral ankle injuries is? Anterior talofibular ligament
2. Which joint primarily allows dorsiflexion and plantarflexion of the foot? Tibiotalar joint

Suggested Reading

- Bruckner P, Khan K. Clinical sports medicine. New York: McGraw Hill; 2006. p. 612–45.
- Magee DJ. Orthopedic physical assessment. Musculoskeletal physical examination: an evidence-based approach. San Francisco, CA: Elsevier Health Sciences; 2013. p. 844–937.
- Malanga GA, Nadler S, editors. Musculoskeletal physical examination: an evidence-based approach. San Francisco, CA: Elsevier Health Sciences; 2006. p. 315–43.