Collegiate Women’s Basketball Player with Lisfranc Joint Sprain
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**Background:** 18 year-old female basketball player suffered a Grade 2 sprain of her left foot Lisfranc Joint (complex between the bases of the first and second metatarsals and the medial and intermediate cuneiforms). Mechanism of injury: jumping up and landing on a teammate’s foot. Initial assessment found no deformity, swelling or ecchymosis; significant pain and dysfunction with walking was experienced. Point tenderness elicited over the navicular tubercle, medial and intermediate cuneiforms, and bases of first and second metatarsals. Neurological assessment was normal. Ankle active and resistive ROM was full, pain noted with inversion. Hallucis and toe flexion/extension painful and limited. Special Tests: anterior draw and talar tilt both negative; Kleigars Test and forefoot inversion and eversion rotation were positive for increased pain. Initial treatment: application of an Unna’s Boot Gelocast® compression wrap with a scaphoid pad and crutch advisement; rehabilitation and x-rays recommended.

**Differential Diagnosis:** Turf toe sprain, metatarsal fracture, navicular fracture, tarsal-metatarsal joint dislocation, tarsal-metatarsal contusion, Lisfranc Joint sprain, tibialis posterior tendon rupture, and compartment syndrome. X-rays taken ruled out fracture; separation between the base of the first and second metatarsals and medial and intermediate cuneiforms was confirmed. Athlete was diagnosed with a divergent diastasis of the first and second metatarso-intertarsal-tarsal joints (Lisfranc Joint sprain). **Treatment:** Due to significant pain, swelling and ecchymosis located throughout the medial-dorsal aspect of the foot, the first week of treatment consisted of Cyrocuff™ cryotherapy and light pulsed electrical stimulation. Team orthopedic recommended the athlete be NWB; a Jones Compression wrap was applied to foot and ankle. Initial treatment goal: reduce pain, swelling, improve ROM and promote pain-free FWB. Six days post-injury: pain, swelling and discoloration decreased significantly; strength increased with toe flexion and extension; less pain produced with rotation of the forefoot. Pain was localized to medial tarsal-metatarsal joint. The athlete was FWB with normal gait. Ice massage and Low Light Laser Treatment was added to treatment; strengthening exercises included towel crunches, toe grab/pick-ups and Thera-Band® ankle exercises; stork stance balance exercises performed for proprioception. At this point, athlete attempted to participate in the NCAA basketball championship playoffs; prefabricated arch inserts made; athlete was taped with a teardrop arch tape support with preventative ankle taping for limited participation. One month post-injury, exercises progressed by adding weight to towel crunches, increasing Thera-Band® tension for ankle strengthening, and performing proprioceptive exercises on a Wobble Board. At three and a half months post-injury, athlete was still complaining of pain with sprinting and cutting. Team Podiatrist made orthotics and recommended limited activity. Athlete was advised to condition on elliptical and then progress to treadmill when pain-free; exercises were limited to single plane motions without weight. Seven months post-injury, athlete began sport-specific training, causing her foot to hurt again. A physical therapist applied leukotape to dorsal and plantar aspects of foot to
support translation of the tarsal-metatarsal joints; kinesiotape was applied to lateral foot and ankle. **Uniqueness:** Lisfranc injuries are uncommon and generally occur in circumstances of high-velocity, axial loading with direct trauma (car accident). **Conclusion:** Lisfranc injuries occurring from low-velocity mechanisms may be difficult to detect. Suspicion of this injury should be investigated when significant pain is produced with passive supination and pronation of the forefoot. The Lisfranc Joint supports the foot during force translation from midfoot to the forefoot. The resultant stress to the Lisfranc Joint from high-velocity, rotational movement is difficult to control, thus conservative management of this injury is recommended to prevent secondary injury (arthritis and compartment syndrome). **Word Count:** 600.