

# ANKLE INJURY CARE AND REHABILITATION PROTOCOLS

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Athletic Training Education Program**

position statement

# National Athletic Trainers' Association Position Statement: Conservative Management and Prevention of Ankle Sprains in Athletes

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**Objective:**

To present recommendations for athletic trainers and other allied health care professionals in the conservative management and prevention of ankle sprains in athletes.

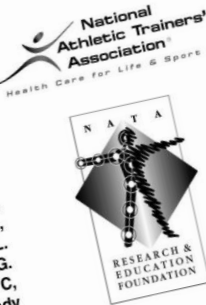
**Background:** Because ankle sprains are a common and often disabling injury in athletes, athletic trainers and other sports health care professionals must be able to implement the most current and evidence-supported treatment strategies to ensure safe and rapid return to play. Equally important is initiating preventive measures to mitigate both first-time sprains and the chance of reinjury. Therefore, considerations for appropriate preventive measures (including taping and bracing), initial assessment, both short- and long-term management strategies, return-to-play guidelines, and recommendations for

syndesmotic ankle sprains and chronic ankle instability are presented.

**Recommendations:** The recommendations included in this position statement are intended to provide athletic trainers and other sports health care professionals with guidelines and criteria to deliver the best health care possible for the prevention and management of ankle sprains. An endorsement as to best practice is made whenever evidence supporting the recommendation is available.

**Key Words:** ankle instability, syndesmotic ankle sprains, cryotherapy, immobilization, compression, sensorimotor system, taping, bracing

Most ankle sprains result from damage to the lateral ligament structures (anterior talofibular, calcaneofibular, and posterior talofibular ligaments) after a stress on an inverted and plantar-flexed (supinated) foot.<sup>1</sup> Sprains are usually graded on the basis of severity and range from mild (grade I) to severe (grade III). The grading scale is a spectrum from no significant structural injury to complete rupture of the ligamentous structures. Landing from jumps, landing or stepping on another athlete's foot while in a strike during running, and stressing the ankle sprains.<sup>2</sup> In a comprehensive review, Beynon et al<sup>3</sup> evaluated intrinsic and extrinsic risk factors for ankle sprains in athletes and



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# CURRENT CONCEPTS REVIEW Injuries to the Ankle Syndesmosis

Tyler J. Van Heest, BA, and Paul M. Lafferty, MD  
Investigation performed at the University of Minnesota–Regions Hospital, St. Paul, Minnesota

- ▶ Despite being common, syndesmotic injuries are challenging to diagnose and treat.
- ▶ Anatomic reduction of the ankle syndesmosis is critical for good clinical outcomes.
- ▶ Intraoperative three-dimensional radiography and direct syndesmotic visualization can improve rates of anatomic reduction.
- ▶ The so-called gold-standard syndesmotic screw fixation is being brought increasingly into question as new fixation techniques emerge.
- ▶ Syndesmotic screw removal remains controversial, but may allow spontaneous correction of malreductions.

**Peer Review:** This article was reviewed by the Editor-in-Chief and one Deputy Editor, and it underwent blinded review by two or more outside experts. The Deputy Editor reviewed each revision of the article, and it underwent a final review by the Editor-in-Chief prior to publication. Final corrections and clarifications occurred during one or more exchanges between the author(s) and copyeditors.

Ankle injuries are commonly seen by orthopaedic surgeons for definitive treatment. Approximately 5% to 10% of all ankle sprains<sup>1,2</sup> and 23% of all ankle fractures<sup>3</sup> involve trauma to the distal tibiofibular syndesmosis. The coexistence of osseous or ligamentous injuries can critically destabilize the ankle.

Despite the common occurrence of ankle injuries, a recent survey of orthopaedic and trauma surgeons found disagreement with regard to the treatment of syndesmotic injuries.<sup>4</sup> The methods reported achieving reduction through several different techniques, including manual reduction, or use of reduction forceps, lig screws, or Kirschner wires. Similarly, indications for syndesmotic screw removal include limited ankle motion and the risk of screw breakage. Discrepancies also exist with regard to the number of screws used, number of cortices engaged, level of placement of the syndesmotic screws, time to weight-bearing following surgery, type of anesthesia used during removal, and timing of screw removal.

With such variation and disagreement in treatment strategies, orthopaedic surgeons need to understand the complex nature of the distal tibiofibular joint, pitfalls associated with treatment, and current evidence regarding management of syndesmotic injuries.

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# Evidence Based Practice

- ▣ Evidence Category A
  - Recommendation based on consistent and upper quality patient-oriented evidence
  
- ▣ Evidence Category B
  - Recommendation based on limited quality patient-oriented evidence (variation among study findings)
  
- ▣ Evidence Category C
  - Recommendation based on consensus, usual practice, disease-oriented evidence or case series for studies of diagnosis, treatment, prevention or screening

# Ankle Sprains

- ▣ 28,000 in the U.S. each day
- ▣ Upward of 45% of all athletic injuries
  
- ▣ Most result from a mechanism of foot inversion with plantar flexion
- ▣ Most result in damage to the lateral ligamentous structures
  - ATF - CF - PTF

# Statements

- ▣ 37 specific statements were presented
  - Diagnosis (13)
  - Treatment and Rehabilitation (12)
  - Return to Play Considerations (3)
  - Prevention (3)
  - Special Considerations (6)

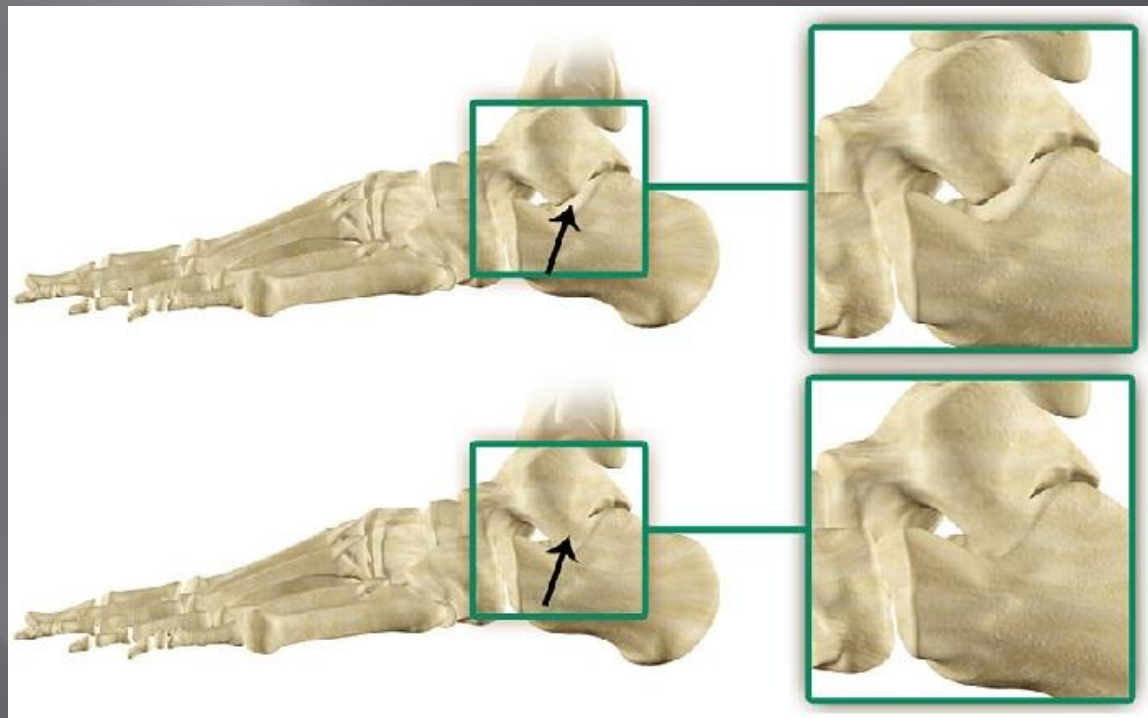
# Diagnosis

- ▣ (5) Clinicians must be vigilant in assessing associated lesions both local and distant to the talocalcaneal joint.  
(Ev-A)
- ▣ Special consideration should be given to those that may accompany ankle sprains or present with similar symptoms
  - Tarsal Coalition
  - Cuboid Syndrome
  - Peroneal Tendon Subluxation
  - Peroneal Tendonitis
  - Fracture at the base of the 5<sup>th</sup> metatarsal
  - Synostotic Ankle Sprains



# Tarsal Coalition

- ▣ Bridging between any two adjacent tarsal bones
- ▣ Cartilaginous, fibrous, or osseous
- ▣ 90% occur at the calcaneo-navicular or talo-calcaneal joint



# Tarsal Coalition

- ▣ Bridging between an to adjacent tarsal bones
- ▣ Cartilaginous, fibrous, or osseous
- ▣ 90% occur at the calcaneo-navicular or talo-calcaneal joint
- ▣ Signs & Symptoms
  - Pain at coalition site or adjacent joint
  - Point tenderness over sinus tarsi
  - Limited ROM
  - Peroneal spasm
- ▣ Definitive diagnosis through further diagnostic tests



# Cuboid Syndrome

- ▣ Inflammation of cuboid, subluxation of cuboid at the calcaneocuboid joint, or inflammation of joint capsule and/or ligamentous tissue
- ▣ Mechanism
  - Extreme or repetitive inversion motion
  - Forceful contraction of the peroneal musculature
- ▣ Signs & Symptoms
  - Pronated foot posture
  - Pain over lateral mid-foot
  - Pain on palpation of plantar surface of cuboid
  - Radiograph displays plantar subluxation of cuboid

# Peroneal Tendon Subluxation

- ▣ “the other lateral ankle injury”
- ▣ Injury to the peroneal retinaculum leading to recurrent subluxation and inflammation of the peroneal tendon



# Peroneal Tendon Subluxation

- ▣ “the other lateral ankle injury”
- ▣ Injury to the peroneal retinaculum leading to recurrent subluxation and inflammation of the peroneal tendon
- ▣ Mechanism
  - Forced dorsiflexion with inversion while peroneal muscle is contracted
  - Forced plantar-flexion with inversion
- ▣ Signs & Symptoms
  - Inflammatory signs similar to lateral ankle sprain
  - Audible snap at time of injury
  - Repetitive snapping or popping sensation with active dorsiflexion/eversion or passive ankle circumduction

# Peroneal Tendonitis

- ▣ Inflammation of the peroneus tendons
  - Longus, Brevis or both

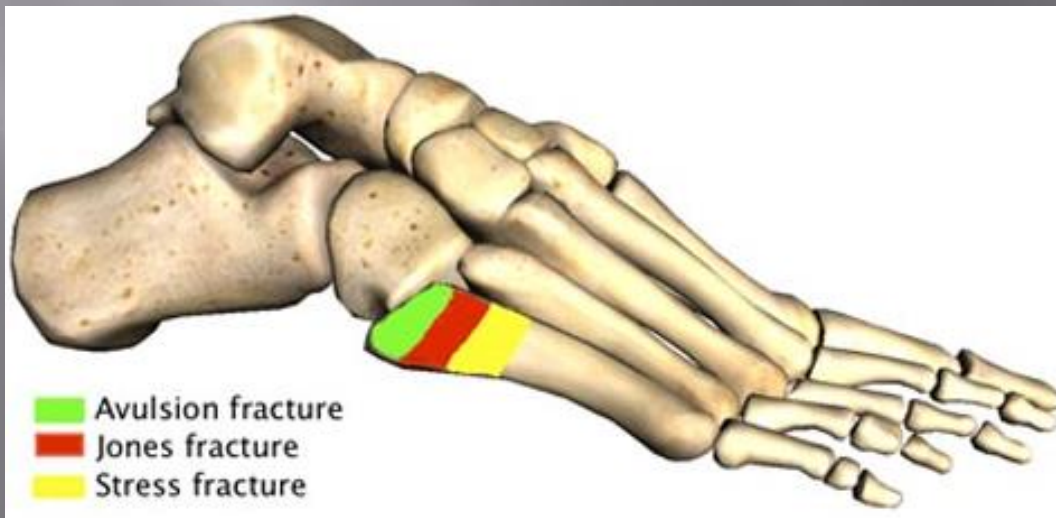


# Peroneal Tendonitis

- ▣ Inflammation of the peroneus tendons
  - Longus, Brevis or both
- ▣ Mechanism
  - Excessive contraction of peroneal muscles
  - Repetitive force causing degeneration and/or inflammation to the tendons
- ▣ Signs & Symptoms
  - Point tenderness over muscular structures
  - Gradual on set
  - Inflammatory signs
  - Pain with passive inversion and resisted eversion of the foot

# Avulsion Fracture 5<sup>th</sup> Metatarsal

- ▣ Pseudo-Jones Fracture
- ▣ Most common fracture to the fifth metatarsal
- ▣ Styloid avulsion from the peroneus brevis tendon



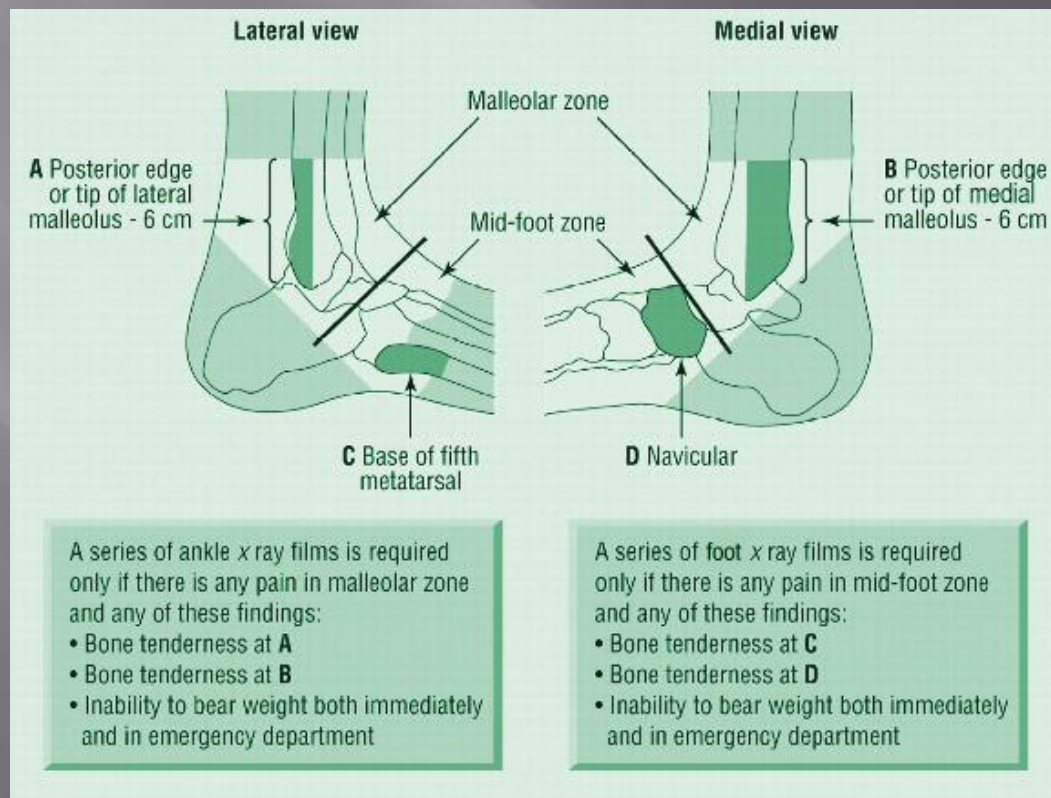


# Avulsion Fracture 5<sup>th</sup> Metatarsal

- ▣ Pseudo-Jones Fracture
- ▣ Most common fracture to the fifth metatarsal
- ▣ Styloid avulsion from peroneus the brevis tendon or plantar aponeurosis
- ▣ Mechanism
  - Forcible inversion of foot along with plantar flexion
- ▣ Signs and Symptoms
  - Pain with weight bearing
  - Point tenderness at 5<sup>th</sup> metatarsal styloid process
  - Inflammatory signs
- ▣ Definitive diagnosis through further diagnostic tests

# Diagnosis

- (7) The Ottawa Ankle Rules are a valid clinical tool to determine the need for radiographs on the acutely injured ankle and mid-foot. (Ev-A)



# Treatment and Rehabilitation

- ▣ (14) Cryotherapy should be applied to acute ankle sprains to reduce pain, minimize swelling formation and decrease secondary injury. (Ev-C)
- ▣ (15) Compression should be applied to acute ankle sprains to minimize swelling. (Ev-C)
- ▣ (16) The limb with the acute ankle should should be elevated to minimize swelling. (Ev-C)

# Ice – Compression -Elevation

- ▣ Although I.C.E. is nothing new an alternative treatment has been used that has shown positive clinical benefits.



# Treatment and Rehabilitation

- ▣ (18) Functional rehabilitation is more effective than immobilization in managing grade I and grade II lateral ankle sprains. (Ev-A)
  - Ankle Mobility Rehabilitation
    - ▣ Combining Flexband Ankle Strengthening with Joint Traction
    - ▣ Restores proper range of motion
    - ▣ Assists in the realignment of ligamentous tissue as healing occurs
    - ▣ Prevents muscle atrophy through early resistive training





# Treatment and Rehabilitation

- ▣ (20) Electrical stimulation can be used as an adjunct to minimize swelling during the acute phase of injury. (Ev-C)
  
- ▣ High-Voltage Pulsed Current
  - Twin-peaked monophasic wave form
  - Short pulse duration
  - Frequency of 120pps
  - Intensity at maximum sensory
  - Monopolar pad placement (dispersive at lumbar region, active pads at medial and lateral malleolus)
  - Negative polarity proved more effective in edema reduction (repels negatively charged plasma proteins)



# Treatment and Rehabilitation

- ▣ (22) Cryokinetics can be used to reduce pain and thereby allow early rehabilitative exercises. (Ev-C)
  - Cryokinetics is a rehabilitation technique involving ice application followed by progressive active exercises
  - Cryokinetics basically allows exercise which is pain-free, relatively soon after the injury. The anaesthesia or numbness arising from ice application does not remove pain sensing mechanisms, it only removes the current pain from tissue damage. So if active exercises are too vigorous pain will still occur.

# Cryokinetics Application Procedures

- ▣ Initial Ice Immersion
  - Use ice immersion, ice massage, or cold-pack application
  - Numbing generally takes 12-20 min.
  - The patients sensation is more significant than the time of application
  - Use a toe cap

# Cryokinetics Application Procedures

- ▣ Exercise the numbed body part
  - All exercise should be
    - ▣ Active
    - ▣ Progressive
    - ▣ Pain-free
  - Exercise should last 2 to 3 minutes, the duration of the numbness
    - ▣ Re-numbing takes 3 to 5 min.
  - Begin with simple range-of-motion activities and progress through full-sport activity.

# Exercise Progression For an Ankle Strain

- ▣ Non-weight-bearing range of motion
- ▣ Weight-bearing
  - Wight shifts
- ▣ Weight-bearing range of motion
  - Over strides
- ▣ Walking
- ▣ Strengthening the ankle musculature
- ▣ Jogging
- ▣ Hopping and jumping
- ▣ Running
- ▣ Agility activities





# Return to Play Considerations

- ▣ (26) The athletes perception of function should be included in any return to play decision making. (Ev – C)
  - Foot and Ankle Disability Index

[http://www.orthopaedicscore.com/corepages/foot\\_and\\_ankle\\_disability\\_index\\_fadi.html](http://www.orthopaedicscore.com/corepages/foot_and_ankle_disability_index_fadi.html)

**The Foot & Ankle Disability Index (FADI) Score**

Clinician's name (or ref) \_\_\_\_\_ Patient's name (or ref) \_\_\_\_\_

Please answer every question with one response that most closely describes your condition within the past week. If the activity in question is limited by something other than your foot or ankle, mark N/A

	No difficulty at all	Slight difficulty	Moderate difficulty	Extreme difficulty	Unable to do
1. Standing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Walking on even ground	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Walking on even ground without shoes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Walking up hills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Walking down hills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Going up stairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Going down stairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Walking on uneven ground	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Stepping up and down curbs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Squatting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Sleeping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Coming up to your toes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Walking initially	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Walking 5 minutes or less	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Walking approximately 10 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Walking 15 minutes or greater	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Home responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Activities of daily living	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Personal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Light to moderate work (standing, walking)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Heavy work (push/pull, climbing, carrying)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Recreational activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	NO PAIN	MILD	MODERATE	SEVERE	UNBEARABLE
23. General level of pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Pain at rest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Pain during your normal activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. Pain first thing in the morning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you very much for completing all the questions in this questionnaire.

The Foot & Ankle Disability Index (FADI) Score is

To save this data please print or [Save As CSV](#)

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(NB. A FADI score may not be calculated if there are greater than 3 missing items.)

There is one further small section to this score. This is optional. Just click below to select

**SPORTS MODULE**

Reference for Score:  
Martin RL, Burdett RG, Irgang JJ. Development of the Foot and Ankle Disability Index (FADI) J Orthop Sports Phys Ther. 1999; 29: A32-A33

**The Foot & Ankle Disability Index (FADI) Score - Sports Module**

Clinician's name (or ref) \_\_\_\_\_ Patient's name (or ref) \_\_\_\_\_

Please answer every question with one response that most closely describes your condition within the past week. If the activity in question is limited by something other than your foot or ankle, mark N/A

	No difficulty at all	Slight difficulty	Moderate difficulty	Extreme difficulty	Unable to do
1. Running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Jumping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Landing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Squatting and stopping quickly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Cutting, lateral movements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Low-impact activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Ability to perform activity with your normal technique	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Ability to participate in your desired sport as long as you would like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you very much for completing all the questions in this questionnaire.

The Foot & Ankle Disability Index (FADI) Score is

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Reference for Score:  
Martin RL, Burdett RG, Irgang JJ. Development of the Foot and Ankle Disability Index (FADI) J Orthop Sports Phys Ther. 1999;29:A32&A33



# Return to Play Considerations

- ▣ (27) Functional performance testing should be a component of the return to play decision making process. (Ev-B)
  - Star Excursion Balance Test
    - ▣ a dynamic test that requires strength, flexibility, and proprioception
    - ▣ It is a measure of dynamic balance that provides a significant challenge to the injured athlete
    - ▣ Can be used to assess physical performance as well as screen for deficits in dynamic postural control due to musculoskeletal injuries

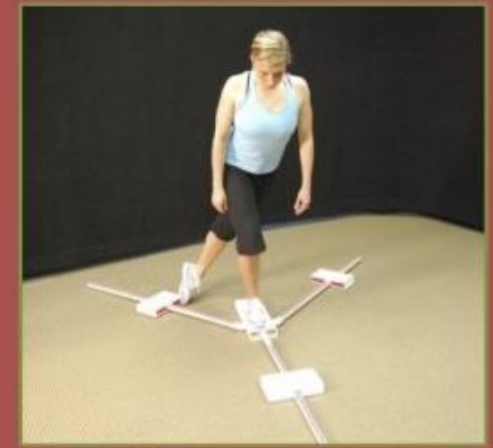




Anterior Reach



Posteromedial Reach

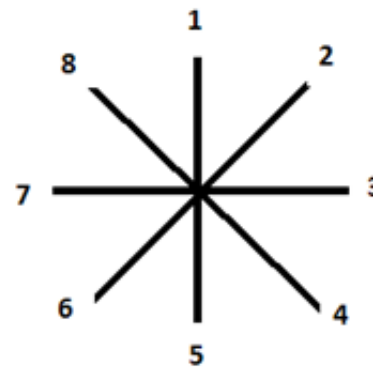


Posterolateral Reach

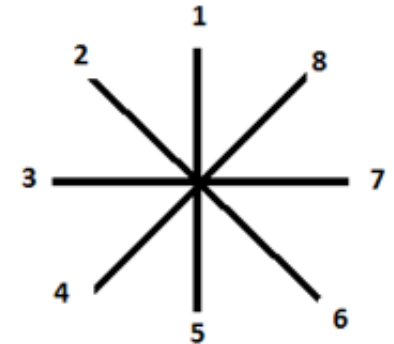
[https://www.youtube.com/watch?v=L8ZSSeDgzJo&feature=player\\_embedded](https://www.youtube.com/watch?v=L8ZSSeDgzJo&feature=player_embedded)

<https://m.youtube.com/watch?v=OQPUdZYkII8>

Standing on LEFT limb



Standing on RIGHT limb



# Diagnosis

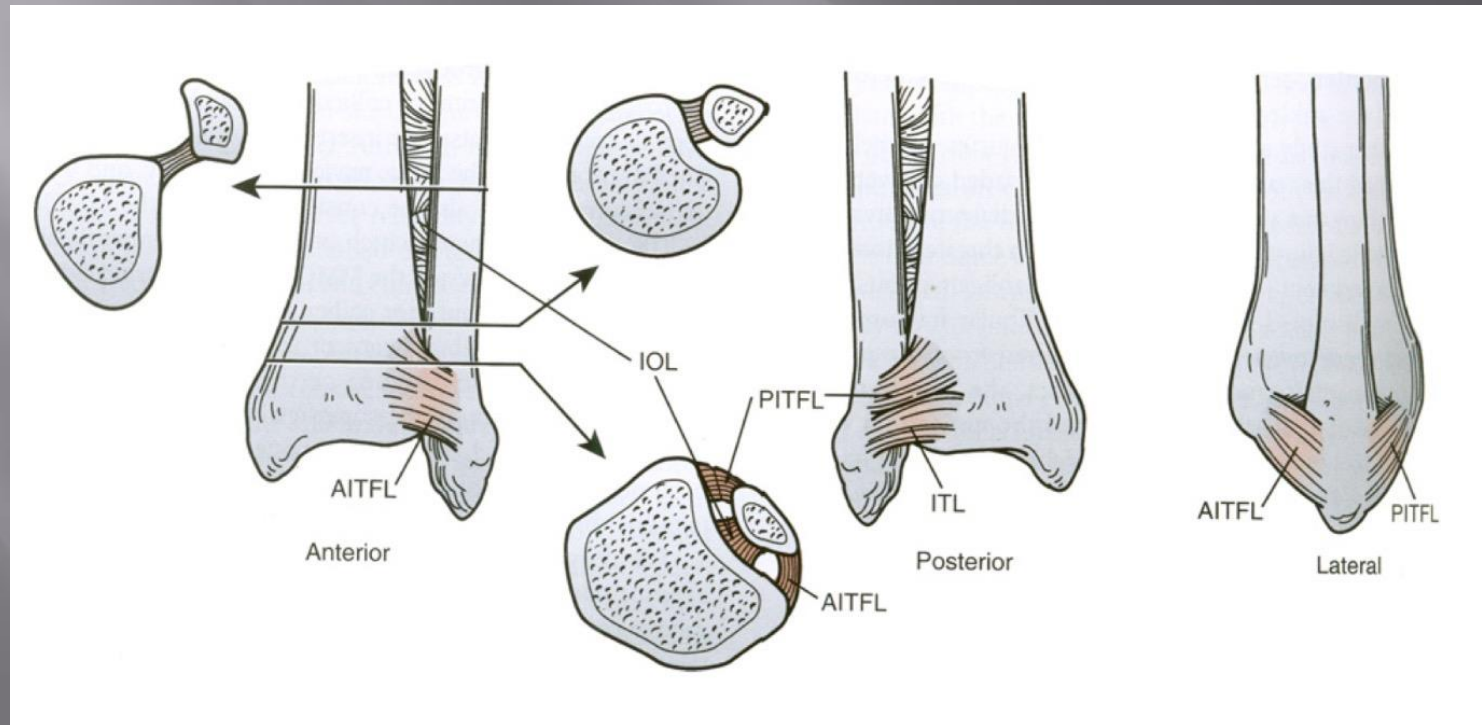
- ▣ (6) Special tests for high ankle sprains should be performed to assess injury to the anterior-inferior tibiofibular ligament. (Ev-C)

## Special Considerations

- ▣ (32) Syndesmotic ankle sprain evaluation should consist of palpation, clinical testing, functional evaluation, radiographs and MRI if indicated. (Ev-C)
- ▣ (33) Syndesmotic ankle sprains should be treated more conservatively than lateral ligament ankle injuries. (Ev-C)
- ▣ (34) Surgical fixation should be considered for syndesmotic ankle sprains that demonstrate widening of the ankle mortise greater than 2 mm or incongruity on standard or stress radiographs. (Ev-C)

# Syndesmotic Ankle Sprains

- ▣ Injury to the tibiofibular joint
  - Anterior inferior tibiofibular ligament (AITFL)
  - Interosseous membrane (IM)
  - Posterior inferior tibiofibular ligament (PITFL)



# Syndesmotic Ankle Sprains

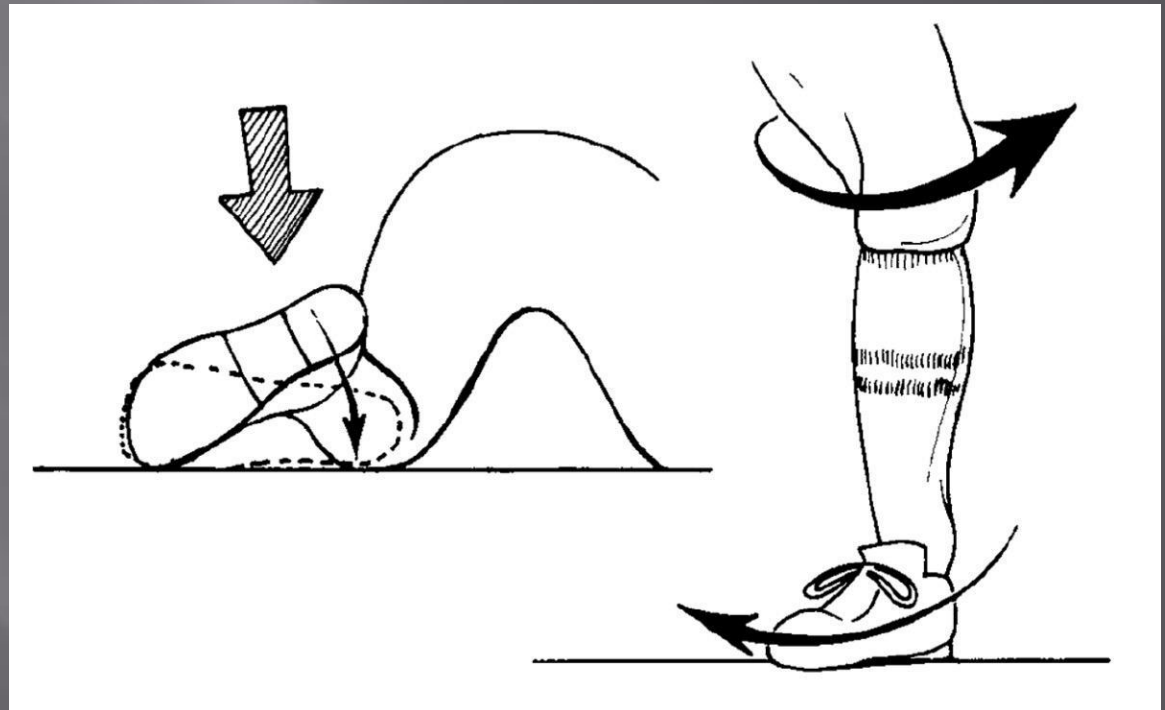
- ▣ Account for approximately 11%- 17% of all athletic ankle injuries.
- ▣ 18% of individuals who present with lateral ankle sprain symptoms are diagnosed with syndesmotic injury.
- ▣ Said to be:
  - Difficult to diagnose
  - Problematic to treat
  - A source of long term impairment
  - Lengthy recovery (twice that of lateral ligamentous injury)



# Mechanism of Injury

- ▣ External rotation of talocrural joint (ankle)
- ▣ Hyper-dorsiflexion
- ▣ Force on lateral aspect of foot with athlete in downed position

Widens the  
talocrural mortise





# Signs & Symptoms

- ▣ Anteriolateral ankle pain
- ▣ Point tenderness over anterior syndesmosis
- ▣ Possible deltoid ligament tenderness
- ▣ Delayed swelling and ecchymosis

# Orthopedic Tests

- ▣ Squeeze Test
- ▣ External Rotation Test
- ▣ Crossed Leg Test
- ▣ Cotton Test (Tibiofibular Shuck Test)
- ▣ Fibular Transition Test

# Orthopedic Tests

Stress tests for distal tibiofibular syndesmosis sprains.

Stress Test	Description
Cotton <sup>17</sup>	The talus is translated from medial to lateral in the ankle mortise. The test result is positive if there is excessive motion (compared to that of the opposite side) or pain.
Crossed leg <sup>35</sup>	The patient sits with the middle of the injured leg across the top of the opposite knee. Pressure is applied to the medial aspect of the proximal tibia and fibula at or near the knee to apply shear strain to the distal syndesmosis ligaments. The test result is positive if there is pain at the distal tibiofibular joint. This is essentially a functional squeeze test performed by the patient.
External rotation <sup>12</sup>	The patient sits over the side of a examination table with the knee in approximately 90° of flexion. The examiner stabilizes the leg midway of the tibial shaft and applies an external rotation moment at the ankle. The test result is positive if there is pain in the region of the distal syndesmosis ligaments or interosseous membrane.
Fibular translation <sup>48</sup>	The fibula is translated in an anteroposterior direction. The test result is positive with pain in the region of the distal tibiofibular syndesmosis.
Squeeze <sup>28</sup>	The tibia and fibula are compressed midway up the leg to apply shear strain to the distal syndesmosis ligaments. The test result is positive if there is pain at the distal tibiofibular joint.

# Orthopedic Tests



Taping used in the syndesmosis stabilization test.<sup>64</sup> Patients perform heel raises, walking, running, and vertical hopping (if possible) before and after 1.5-in. (3.8-cm) athletic tape is circumferentially applied over the tibiofibular syndesmosis to provide joint stability. The test result is positive if the patient's complaints of pain and/or instability in the region of the distal syndesmosis are relieved with the taping.

# Injury Grading

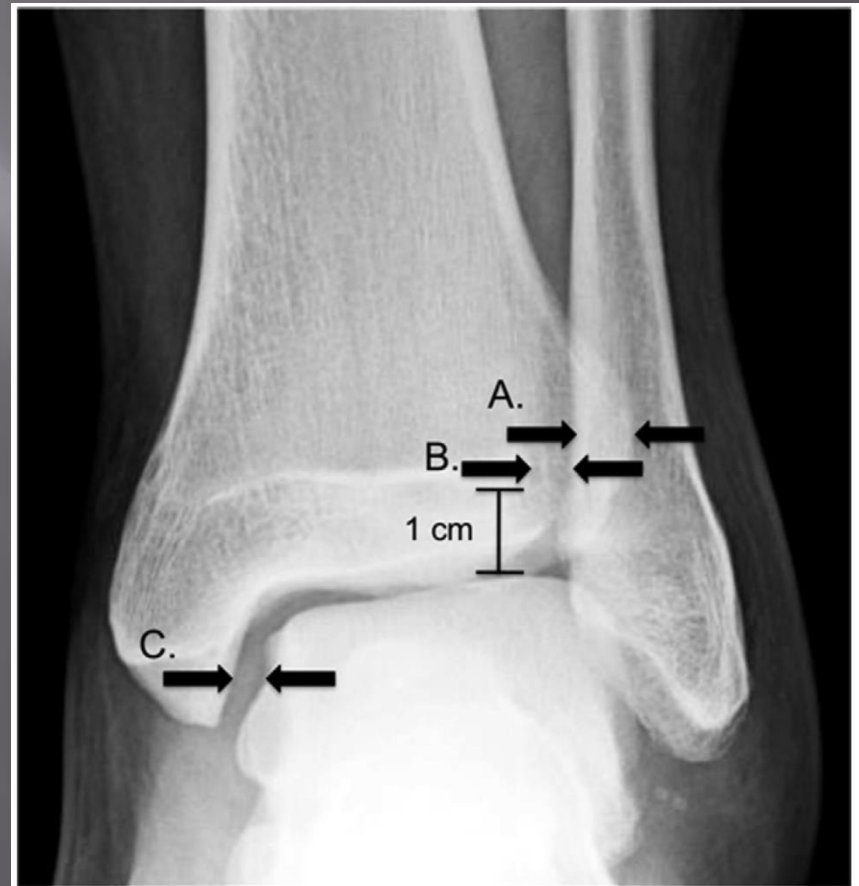
- ▣ 1<sup>st</sup> Degree
  - Isolated injury to AITFL  
Without Tib-Fib Separation
- ▣ 2<sup>nd</sup> Degree
  - AITFL sprain with IM injury
- ▣ 3<sup>rd</sup> Degree
  - AITFL sprain, IM tearing,  
PITFL injury

All may display  
some degree of  
deltoid ligament  
involvement

# Radiographic Testing

## ▣ Relationship of Distal Tibiofibular Joint

- Tibiofibular Overlap (A)
- Tibiofibular Clear Space (B)
- Medial Clear Space (C)
  - ▣ Medial malleolus and medial border of talus



# Bone Scans

- ▣ Increased uptake in region of distal tibiofibular joint.
- ▣ 93% accurate in diagnosis of synesmotic sprain without distal fibular fracture

## CT – MR Imaging

- ▣ Have been proven superior to radiographs in providing precise bilateral comparison regarding Tib-Fib separation
- ▣ Specific clear space measurements



# Treatment

- ▣ Unstable injuries should be surgically stabilized
  
- ▣ Stable injuries should be treated with:
  - R.I.C.E. until stability is determined
  - Immobilization (short leg cast/walking boot)
  - Neutral dorsiflexion with slight internal rotation
    - ▣ 1<sup>st</sup> degree – 1-3 weeks
    - ▣ 2<sup>nd</sup> degree – 4-6 weeks
  - Non-weight bearing activities as tolerated
    - ▣ Limited dorsiflexion

# Treatment Progression

Three-phase rehabilitation program.

Rehabilitation Phase	Goals, Sample Treatments, and Criteria for Progression
Acute	<i>Goal:</i> Joint protection while minimizing pain, inflammation, weakness, and loss of motion.
	<i>Joint protection:</i> Immobilization in a walking cast, boot, custom orthosis, lace-up ankle brace, or ankle stirrup. External rotation and end-range dorsiflexion are avoided.
	<i>Weightbearing:</i> Based on assessment and patient symptoms—varies from nonweightbearing to full weightbearing.
	<i>Pain and inflammation control:</i> Compression, elevation, cryotherapy, electrical stimulation, manual therapy, other modalities, and/or alternative therapies such as acupuncture.
	<i>Maintenance of strength and mobility:</i> Gentle motion, cycle ergometer, progressive resistance exercise with bands, cords, ankle weights, and/or electrical stimulation.
	<i>Progressed when:</i> Able to ambulate in full weightbearing on various surfaces and traverse stairs with minimal discomfort.
Subacute	<i>Goal:</i> Normalize joint mobility, strength, neuromuscular control, and return to basic function in activities of daily living.
	<i>Mobility:</i> Low-load, long-duration stretching with cords, bands, or towels; repetitive motion through the range of motion; cycle ergometer; joint mobilization; and/or aquatic therapy.
	<i>Strengthening:</i> Cords, bands, ankle weights, heel raises, step up/down, calf press with isotonic equipment, and/or neuromuscular training exercises.
	<i>Neuromuscular training:</i> Progressive use of air cushions, rocker boards, wobble boards, air-filled domes, trampolines, or other perturbation of support surfaces.
	<i>Progressed when:</i> Can jog and hop with minimal discomfort.
Advanced training	<i>Goal:</i> Prepare for return to sports participation.
	<i>Neuromuscular training:</i> Perturbation of support surfaces.
	<i>Functional/agility drills:</i> Running, jumping rope, hopping, shuffling, carioca, and/or figure-8 running with or without use of props such as cones, hurdles, and ladders.
	<i>Strength/power:</i> Advanced strengthening, plyometrics.
	<i>Sports-specific drills:</i> Dribbling drills, running reception patterns, shooting balls, skating/rollerblading.
	<i>Return to sports when:</i> Performs sport tasks at game speed with minimal discomfort and quality movement.

THANK YOU