

# Patients Experience Significant and Meaningful Changes in Self-Report of Function During the First Two Weeks After an Ankle Sprain Injury:

A Report From the Athletic Training Practice-Based Research Network

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## Ankle Injuries

- Ankle injuries are common during sport participation (Lambers, 2012; Fernandez, 2007; Hootman, 2007)
  - Among the most prevalent injuries in high school athletics (Nelson, 2007; Fernandez, 2007)
  - Account for 20-30% of all sport-related lower extremity injuries (Doherty, 2014; Swenson, 2013)

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## Ankle Sprains

- They are potentially associated with long-term consequences including: (Arnold, 2011; Wikstrom, 2009; Anandacoomarasamy, 2005)
  - Recurrence (1-in-3)
  - Residual symptoms including pain and instability
  - Functional limitations during daily and recreational activities
  - Long-term disability

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## Ankle Injuries

- Most ankle injuries are classified as ligamentous sprains (Nelson, 2007)
- Tissue healing time for ligaments is 6-12 weeks (Hubbard, 2008)
- An estimated 95% of athletes with ankle sprains return to play by day 10 post-injury (Medina McKeon, 2013)

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## Ankle Injuries

- NATA position statement on management and treatment of ankle injuries (Kaminski, 2013)
  - Recommendation: include patient perception of function in return-to-play decisions
- However, little is known about short-term changes in self-report of function following ankle sprain injuries

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## Purpose

- To estimate the extent of short-term changes in self-report of function, as measured by the Foot and Ankle Ability Measure (FAAM), during the first two weeks after an ankle sprain injury

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## Inclusion Criteria

- Patients had been:
  - Diagnosed with an ankle sprain injury by an athletic trainer within the Athletic Training Practice-Based Research Network (AT-PBRN)
  - Receiving usual care from an athletic trainer

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## Procedures

- Chart review
  - Patients were retrospectively identified within the electronic medical records of the AT-PBRN
  - ICD-9 codes: 845 (sprain, unspecified) and 845.03 (sprain, tibiofibular ligament)
- The FAAM was completed during treatment sessions
  - Time 1: 0-5 days post-injury
  - Time 2: 10-15 days post-injury

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## Instrumentation: FAAM

- A valid, reliable and responsive patient-rated outcome measure (Martin, 2005)
  - Activities of daily living (FAAM-ADL): 21 items
  - Sport (FAAM-Sport): 8 items
  
- Interpretation of scores
  - Range from 0-100, with higher scores indicating better HRQOL
  - Minimal clinically important difference (MCID)
    - FAAM-ADL = 8 points
    - FAAM-Sport = 9 points

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### Foot and Ankle Ability Measure (FAAM)

Please answer **every question** with **one response** that most closely describes to your condition within the past week.

If the activity in question is limited by something other than your foot or ankle mark **not applicable (N/A)**.

	No difficulty	Slight difficulty	Moderate difficulty	Extreme difficulty	Unable to do	N/A
Standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking on even ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking on even ground without shoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking up hills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking down hills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Going up stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Going down stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking on uneven ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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### FAAM Sports Scale

Because of your **foot and ankle** how much difficulty do you have with:

	No difficulty at all	Slight difficulty	Moderate difficulty	Extreme difficulty	Unable to do	N/A
Running	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jumping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starting and stopping quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cutting/lateral movements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low impact activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to perform activity with your normal technique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to participate in your desired sport as long as you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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## Statistical Analysis

- Summary statistics are reported for scores at Time 1 and Time 2
- Differences between Time 1 and Time 2 scores were evaluated using Wilcoxon Signed-Ranks
  - Alpha set at 0.05, two-tailed
- Percentage of patients who exceeded the MCID between Time 1 and Time 2 is reported

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## Patient Demographics

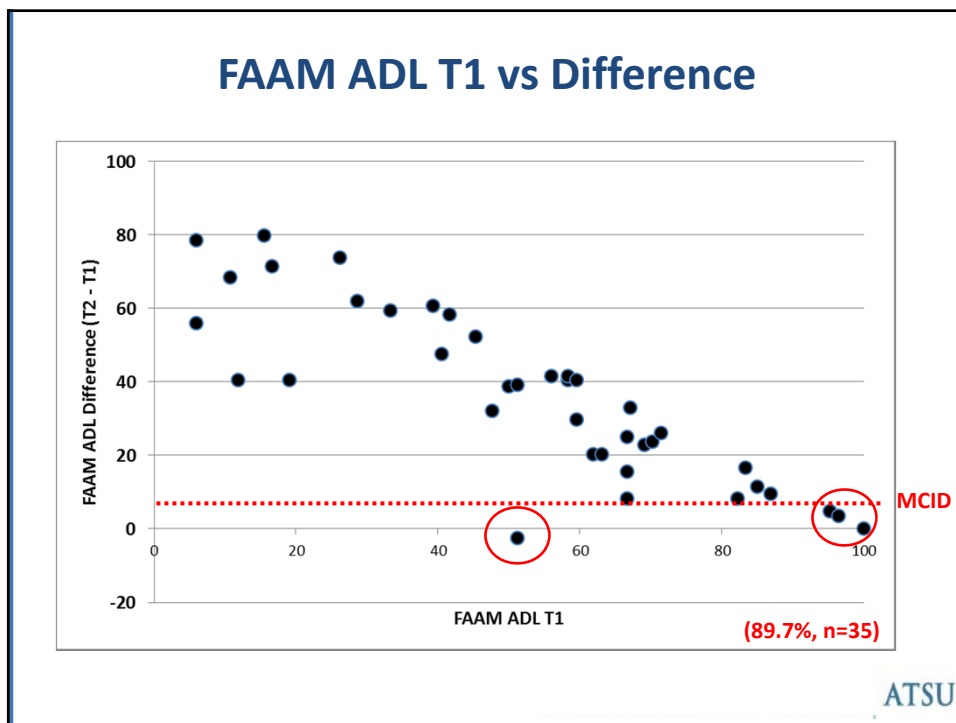
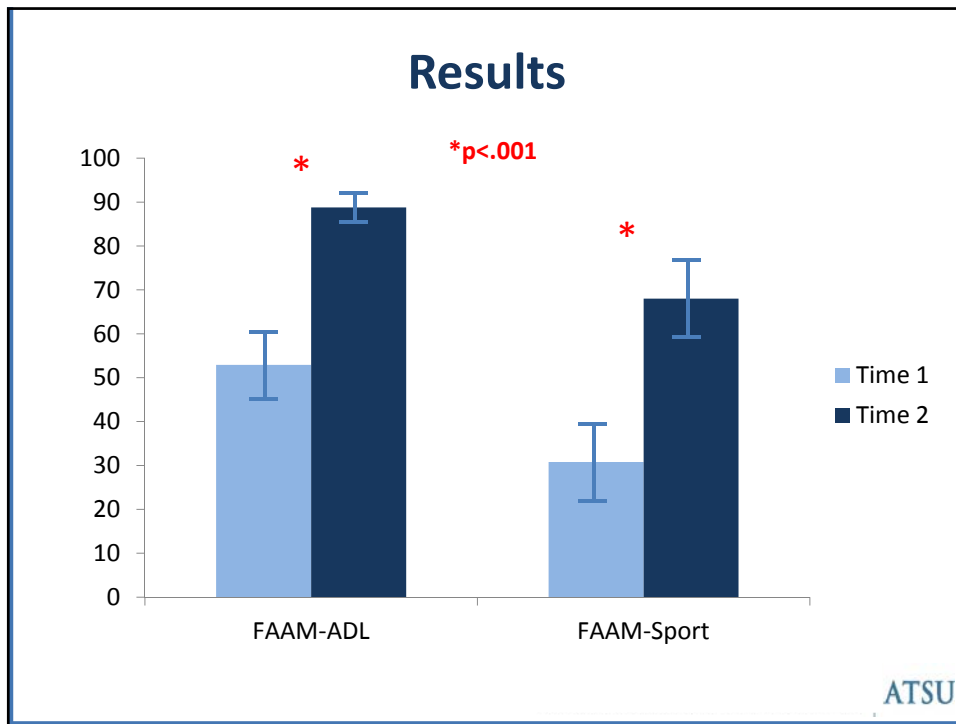
	n	Age (years)	Height (cm)	Weight (kg)
<b>Male</b>	20	16.7±1.4	168.7±10.7	70.1±3.2
<b>Female</b>	19	16.5±2.3	143.3±23.4	67.5±3.0

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## Results

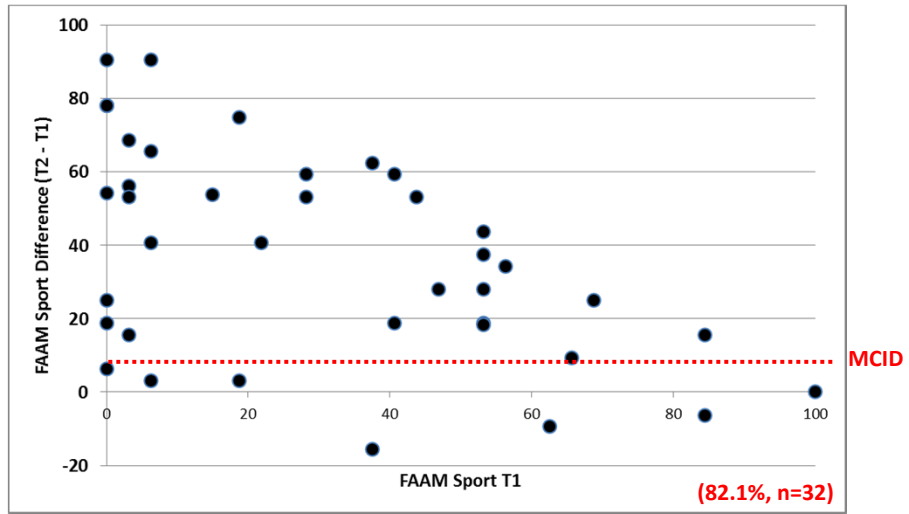
	Sprain - unspecified (ICD-9: 845)	Sprain - tibiofibular (ICD-9: 845.03)	Total
<b>Basketball</b>	6	3	<b>9</b>
<b>Football</b>	5	2	<b>7</b>
<b>Soccer</b>	6	0	<b>6</b>
<b>Volleyball</b>	5	0	<b>5</b>
<b>Softball</b>	2	1	<b>3</b>
<b>Track</b>	2	0	<b>2</b>
<b>Baseball</b>	2	0	<b>2</b>
<b>Tennis</b>	1	0	<b>1</b>
<b>Field Hockey</b>	1	0	<b>1</b>
<b>Cross Country</b>	1	0	<b>1</b>
<b>Badminton</b>	1	0	<b>1</b>
<b>Other</b>	1	0	<b>1</b>
<b>Total</b>	<b>33</b>	<b>6</b>	<b>39</b>

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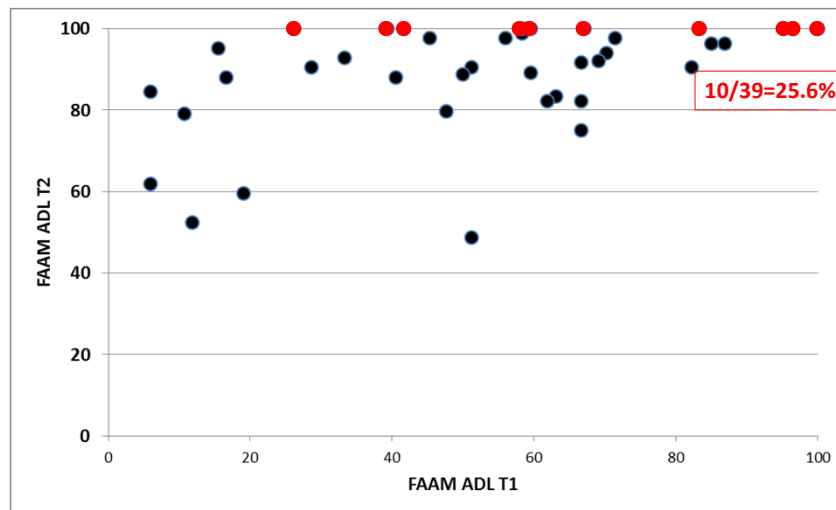


## FAAM Sport T1 vs Difference



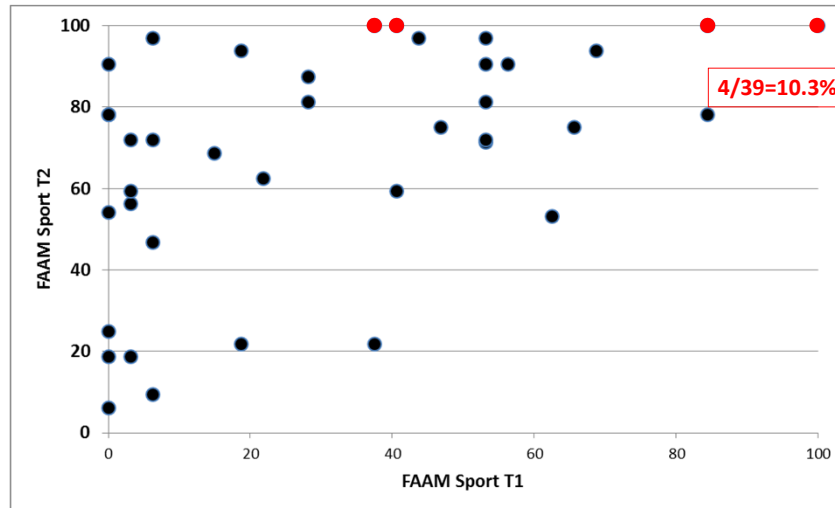
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## FAAM ADL T1 vs T2



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## FAAM Sport T1 vs T2



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## Discussion

- Patients who suffer an ankle sprain injury generally report significant and meaningful improvements in function during the first two weeks post-injury
- These functional improvements are in-line with reported return-to-play time frames
  - 95% of athletes with ankle sprains return to play by day 10 post-injury (Medina McKeon, 2013)

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## Discussion

- However, most patients continue to report deficits in general and sport function at two weeks post-injury
  - ADL: 74%
  - Sports: 90%

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## Discussion

- Ankle sprains have the highest recurrence rate of any musculoskeletal injury (Medina McKeon, 2013)
- These findings suggest the need for better return-to-play guidelines
  - Patients may be returning to play even though functional deficits still exist
- Functional deficits may persist long-term even after athletes are cleared for full participation (Lam, 2013)

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## Clinical implications

- Findings reinforce the importance of using patient-rated outcome measures for treatment and return-to-play decisions
  - Supported by the NATA position statement regarding the need to incorporate an evaluation of self-report functional status for return-to-play decisions (Kaminski, 2013)

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## Limitations and future directions

- Retrospective analysis of medical records
  - ICD-9 codes are general (ie, 845: sprain – unspecified) and specific diagnoses (ie, inversion, eversion sprains) are not reported
- Future investigations
  - Relationship between FAAM scores at return-to-play and the risk for short- and long-term consequences
  - Exploring the incorporation of score threshold guidelines for safer return-to-play clearance

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**Thank you!**



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