Introduction

- Lisfranc injuries are increasingly common among athletes.1, 2, 3
- Tarsometatarsal joint injuries often damage the articular cartilage and increase predisposition for post-traumatic arthritis and functional deformity.4, 5
- Lisfranc injury-related morbidity has substantial consequences for the athlete, such as decreased performance and premature retirement from sports.1, 3
- ORIF has been established as the standard of care.2, 4 However, there’s no consensus on the optimal technique for stabilization of the Lisfranc joint.2, 6
- Extra-articular fixation has been described as a favorable option due to avoidance of further iatrogenic articular disruption.2, 3, 6

![Figure 1.1. Plain films following ORIF of the Lisfranc joint using an extra-articular dorsal-locking plate.](image)

Purpose

To assess the pre- and post-operative patient-reported outcomes (PROs) of athletes with Lisfranc injuries following ORIF using extra-articular fixation

Methods

Data Collection

- PROs were prospectively collected between December 2016 and August 2018 via an institution-based patient-reported outcomes registry.

Inclusion Criteria

- Athlete
- 15-45 years of age
- Lisfranc Injury
- Open treatment for tarsometatarsal dislocation (CPT 28615)
- Extra-articular fixation

PROs

- Foot and Ankle Ability Measure, Activities of Daily Living (FAAM-ADL)
- Foot and Ankle Ability Measure, Sports (FAAM-Sports)
- Global Rate of Change (GRC)
- Patient Acceptable Symptom State (PASS)

Data Analysis

- PROs were assessed pre-operatively and post-operatively at two time intervals: (1) prior to removal of hardware (ROH) and (2) after ROH.
- Wilcoxon signed-rank tests were used to assess the difference between pre- and post-operative FAAM outcome scores.
- Descriptive statistics were used to assess changes in FAAM, GRC, and PASS scores over time.

Results

Demographics

- 11 athletes (6 male) with a mean age of 19.0 years.
- Sports included running, football, gymnastics, soccer, hockey, and basketball.
- Competition levels included recreational, high school, and college.
- All athletes had scheduled removal of hardware 3–6 months (mean 4.13 months) after initial ORIF.
- 100% of athletes returned to sports by 1-year post-operatively.

FAAM

- Post-operative FAAM-ADL scores both prior to ROH (p=0.022) and after ROH (p=0.005) were significantly higher than pre-operative FAAM-ADL scores.
- Post-operative FAAM-Sports scores after ROH (p=0.013) were significantly higher than pre-operative FAAM-Sports scores.
- Prior to ROH, the magnitude of change on the FAAM-ADL scale was greater than that on the FAAM-Sports scale when compared to pre-operative scores.
- After ROH, the magnitude of change on the FAAM-Sports scale was greater than that on the FAAM-ADL scale when compared to pre-operative scores.

GRC

- 100% of athletes considered the condition of their foot to be “better” both prior to ROH and after ROH.

PASS

- 67% of athletes reported satisfaction with their symptom state prior to ROH.
- 50% of athletes reported satisfaction with their symptom state after ROH.

![Mean FAAM Scores Over Time](image)

![Δ FAAM Scores Over Time](image)

Discussion

- Extra-articular fixation of Lisfranc injuries in the athlete demonstrates significant improvement in PROs and return to sport.
- ROH may be an important time point in the post-operative sequence.
- In fact, athletes demonstrate a greater magnitude of improvement in sports function following ROH, possibly due to restoration of dynamic range of motion of the midfoot.
- Further studies are needed to compare outcomes and return to sport between extra-articular fixation and trans-articular fixation of Lisfranc injuries in the athlete, with or without ROH.

References

[Insert list of references here]

Acknowledgements

Foot and Ankle Injury Research (F.A.I.R) Group
University of Pittsburgh