

Most NFL players with injuries to the midfoot return to game action, study finds

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Nearly 93 percent of National Football League (NFL) athletes who sustained traumatic injuries to the midfoot returned to competition less than 15 months after injury and with no statistically significant decrease in performance, according to new research from the Perelman School of Medicine at the University of Pennsylvania. The findings, which focus on Lisfranc injuries - characterized by fracture of the midfoot bones and/or disruption of the midfoot ligaments - between 2000-2010, were presented today at the American Academy of Orthopaedic Surgeons (AAOS) annual conference in Las Vegas.

"While Lisfranc injuries have a reputation for resulting in poor player performance in the NFL, our study is the first to fully assess their career impact, including effect on athletic performance following return to competition," said lead author Kevin J. McHale, MD, a fifth-year orthopedic resident at the Perelman School of Medicine at the University of Pennsylvania. "Our findings will assist sports physicians in setting realistic goals and expectations when selecting a plan of care. They will also help address such important questions from athletes as 'Will I ever play again? Will I be back in time for playoffs? How will this injury affect my performance after I return?'"

Lisfranc injuries can occur when a player lands on the heel of another player's foot, or when a player's cleats embed in the turf as they maneuver, resulting in a fracture or dislocation of the midfoot. According to the NFL's Foot and Ankle Committee, the injuries may be a result of shoe companies using lighter weight materials and increasing

the flexibility of players' shoes. Depending on the severity, injuries are treated with prolonged rest and immobilization or surgery, often bringing a players' season to a premature close. For example, just weeks into the 2014 season, Chicago Bears Tight End Zach Miller suffered a Lisfranc injury and missed the remainder of the season. In the Penn study, which included 11 offensive players and 17 defensive players, 22 players required surgery and six were managed non-operatively.

The Penn team found that 26 of the 28 players (92.9 percent) returned to competition in the NFL. With the exception of the two players who never returned to the NFL, the remaining 26 athletes returned to play at a median 11.1 months from time of injury and missed a median 8.5 NFL regular season games. There was no statistically significant difference in time to return to play or games missed when comparing offensive and defensive players.

The majority of players who returned to the NFL (84.6 percent) sustained season-ending Lisfranc injuries, returning to the competition between nine and 15 months following injury. Only three players (11.5 percent) returned to play during their injury season, with one additional player returning midway through the season following an offseason injury.

On average, players treated non-operatively returned to play five months and three games earlier compared to those treated operatively. Although it is possible that surgical intervention may result in a longer time to return, the authors suggest this result is more likely a reflection of greater initial injury severity in players who underwent surgery.

In addition to determining the number of players who resumed playing after their injuries, the study assessed players' level of performance using objective data: specifically, offensive and defensive power ratings. Offensive power ratings are derived from total yards/10 + total

touchdowns x6. Defensive power ratings are derived from total tackles + total sacks x2 + total interceptions x2. Analysis of athletic performance in both offensive and defensive players revealed declines in performance following return to football after Lisfranc injury that did not reach statistical significance.

"It is important to note that 14 of the 28 players produced an offensive or defensive power rating in at least one post-injury season that exceeded their pre-injury level of play, demonstrating that minimally, a return to pre-injury performance is possible," said co-senior author Brian J. Sennett, MD, chief of Sports Medicine at the Perelman School of Medicine and the University of Pennsylvania. "Future studies should focus on identifying specific factors associated with more positive or negative prognoses."

The design and findings of the current study parallel a similar study by Dr. Sennett and James L. Carey, MD, MPH, director of the Penn Center for Cartilage Repair and Osteochondritis Dissecans Treatment, on ACL injuries in NFL running backs and wide receivers, which was published in the American Journal of Sports Medicine in 2006.

"Of note, the ACL-injured NFL athletes did not fair quite as well," said Carey, who is also co-senior author on the current study. "Of the ACL-injured players, one-fifth never returned to play in another regular season NFL game. For those [players](#) who returned to NFL action following an ACL injury, performance fell by one-third."

The Lisfranc joint was originally described by Jacques Lisfranc de Saint-Martin, a Napoleonic-era field surgeon. He observed that riders who caught their feet in the stirrups when they were knocked off their horses would often suffer serious injuries to the joint that now bears his name. In some early cases, amputation of the foot was carried out following the [injury](#).

Provided by University of Pennsylvania School of Medicine

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