

# Stretch–Shortening Cycle vs Power Demand: A League–Wide Positional Analysis of Achilles Tendon Injuries in Professional Football

## INTRODUCTION

Achilles tendon injuries are catastrophic in professional football, often resulting in prolonged absence and uncertain return to prior performance. The tendon serves as a key elastic energy store during sprinting, cutting, and explosive push-off, suggesting that stretch–shortening cycle (SSC) demands may influence injury risk. This study evaluated the positional distribution of Achilles tendon injuries during the 2025–2026 NFL season based on biomechanical demand profiles.

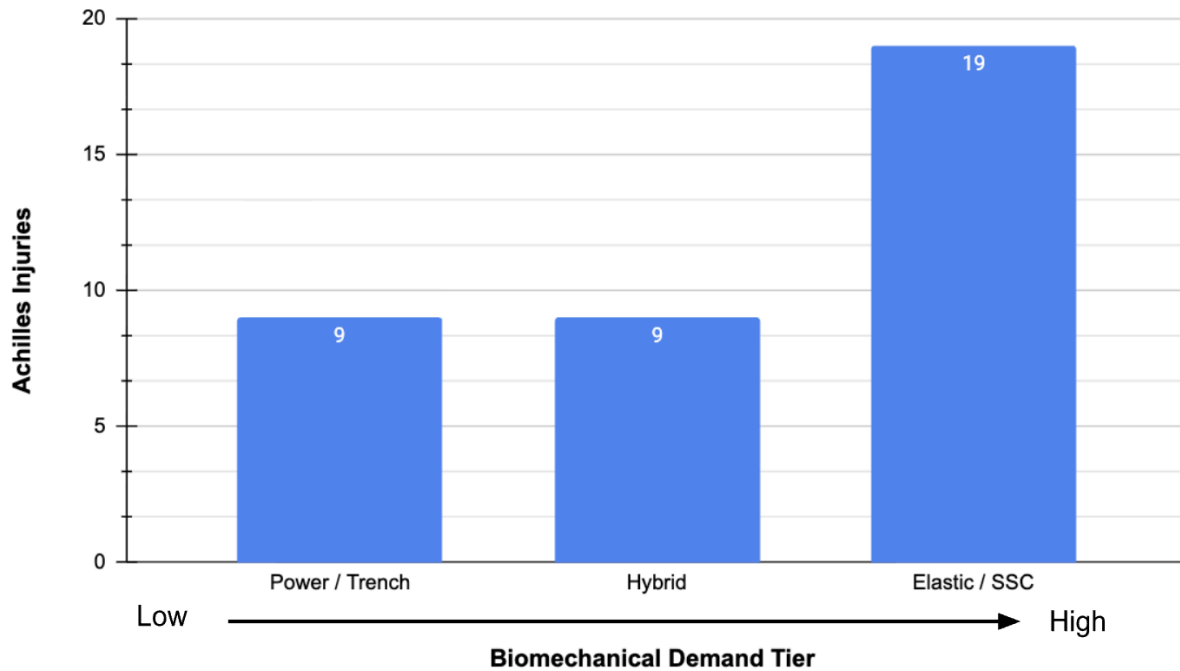
## METHODS

A retrospective cohort study was conducted using publicly available NFL injury reports and injured reserve (IR) transactions from the 2025–2026 season. All reported Achilles injuries were identified and recorded. Player position and team affiliation were collected. Positions were categorized into three biomechanical demand tiers: SSC-dominant (WR, RB, DB, CB, S), hybrid (LB, TE, DE), and trench/power-dominant (DT, DL, OL, QB) roles based on primary movement demands. Descriptive statistics were used to evaluate positional distribution and relative injury burden across biomechanical tiers.

## RESULTS

A total of 37 Achilles injuries were identified. Of these, 19 (51.4%) occurred in SSC-dominant positions, 9 (24.3%) in hybrid positions, and 9 (24.3%) in power-dominant positions. SSC-dominant roles demonstrated the greatest injury burden. A gradient distribution was observed, with injury frequency increasing alongside greater repetitive elastic loading demands.

## Achilles Tendon Injuries by Positional Biomechanical Demand



**Figure 1.** Achilles tendon injuries by positional biomechanical demand (Power/Trench, Hybrid, Elastic/SSC) during the 2025–2026 NFL season. Injury counts increase with higher stretch-shortening cycle demand.

### DISCUSSION AND CONCLUSION

The predominance of Achilles injuries in SSC-dominant positions supports a relationship between repetitive high-strain tendon loading and injury risk. Hybrid and power-dominant roles demonstrated similar injury distributions. These findings highlight the influence of biomechanical demand on injury patterns and underscore the importance of position-specific load management, targeted conditioning strategies, and heightened awareness of tendon loading in professional football.