153

LOWER EXTREMITY STRAINS IN THE U.S. NATIONAL FOOTBALL LEAGUE, 2015–2019

^{1,2}Mackenzie Herzog, ³Leigh Weiss, ¹Rebecca Lee, ^{4,5}Allen Sills, ^{1,2}Christina Mack. ¹IQVIA Injury Surveillance and Analytics, Durham, USA; ²University of North Carolina at Chapel Hill, Chapel Hill, USA; ³New York Giants, East Rutherford, USA; ⁴National Football League, New York, USA; ⁵Vanderbilt University Medical Center, Nashville, USA

10.1136/bjsports-2021-IOC.142

Background Lower extremity (LEX) strains (hamstring, quadriceps, adductor, and calf strains) are among the most common injuries in sports.

Objective Describe the incidence of LEX strains in professional American football.

Design Descriptive epidemiological study.

Setting U.S. National Football League (NFL).

Participants NFL players during the 2015–2019 seasons.

Assessment of Risk Factors Frequency was calculated by setting (game, practice, conditioning), season (offseason, preseason, regular season, postseason), and roster position. Game incidence rates were calculated for season, roster position, and play type.

Main Outcome Measurements LEX strains identified in the standardized league-wide electronic medical record (n=32 teams).

Results Across 5 seasons, 5,780 LEX strains were reported among 2,769 players (1-season risk: 26.7%, 95% CI 26.0%–27.3%), 69% (n=4,015) of which resulted in time-loss. Among time-loss strains, 58.5% were hamstring (n=2,347), 21.3% were adductor (n=855), 11.8% were calf (n=474), 8.0% were quadriceps (n=323), and 0.4% affected multiple muscles (n=16). Most were reported during preseason practices (n=1,076; 27%) and regular season games (n=1,060; 26%). Among game injuries, the highest rate was in preseason (2.9/10,000 player-plays; 95% CI 2.6–3.2). Defensive secondary players sustained the highest proportion of injuries (27%, n=1,082); but, in games, punters and kickers had the highest rate (3.8/10,000 player-plays; 95% CI 2.7–5.3). Among preseason practice strains, 72% (n=775) were reported during training camps. In games, punt plays had nearly twice the rate as kickoff plays (14.9/1,000 plays; 95% CI 13.1–17.0 vs. 7.5/1,000 plays; 95% CI 6.2–8.9, respectively) and over three times the rate as pass (4.3/1,000 plays; 95% CI 4.0–4.7) and run (2.6/1,000 plays; 95% CI 2.3–2.9) plays.

Conclusions LEX strains impact 1 in 4 NFL players each season and occur mostly during preseason practices and regular season games. The 2-week period of training camp practices comprised 19% of all time-loss strains. In games, punt plays had the highest rate.

154

ABSTRACT WITHDRAWN

155

CLINICALLY-ORIENTED ASSESSMENTS OF HAMSTRING MUSCLE STRENGTH ARE RELIABLE

Ellevyn Irwin, Grainne O'Callaghan, Aine Tunney, Eamonn Delahunt, Ulrik McCarthy Persson. University College Dublin, School of Public Health, Physiotherapy and Sports Science, Dublin, Ireland

10.1136/bjsports-2021-IOC.143

Background Hamstring muscle strain injuries are a prevalent non-contact injury incurred by field sport athletes. A low level of hamstring muscle strength has been reported to be a risk factor for hamstring muscle strain injury, whereby reliable, clinically-oriented assessments of hamstring muscle strength are required to assist clinicians to implement 'targeted' injury prevention strategies and make objective return-to-participation/sport decisions.

Objective To evaluate the interrater reliability of five different clinically-oriented assessments of hamstring muscle strength.

Design Interrater reliability study.

Setting Sports clubs.

Patients (or Participants) Twenty male field-sport athletes with no reported history of hamstring muscle strain injury within the previous 6 months participated.

Interventions (or Assessment of Risk Factors) Three sports physiotherapists independently assessed participants' hamstring muscle strength using the following clinically-oriented assessments: (1) supine mid-range maximum voluntary isometric contraction (MVIC); (2) prone inner-range MVIC; (3) prone mid-range MVIC; (4) prone mid-range 'eccentric break'; (5) supine outer-range 'eccentric break'.

Main Outcome Measurements Intraclass correlation coefficients (ICCs) and 95% confidence intervals (CI) were calculated to determine interrater reliability. We chose the ICC (2,3) model, which corresponds to a 2-way mixed model, with measurement of the mean of 3 raters and absolute agreement.

Results Excellent interrater reliability was demonstrated for the supine mid-range MVIC (ICC=0.86; 95% CI = 0.70–0.94) and prone mid-range MVIC (ICC=0.79; 95% CI = 0.60–0.91). Good interrater reliability was demonstrated for the prone inner-range MVIC (0.72; 95% CI = 0.44–0.88), prone mid-range 'eccentric break' (ICC=0.67; 95% CI = 0.33–0.85), and supine outer-range 'eccentric break' (ICC=0.67; 95% CI = 0.34–0.85). The highest and lowest force values were registered during the supine outer-range 'eccentric break' (310±57.8N) and prone inner-range MVIC (127±31.4N), respectively.

Conclusions Clinically-oriented assessments of hamstring muscle strength are reliable. These assessments can be used as an integral part of injury prevention, rehabilitation progression and objective return-to-sport decisions.

156

THE NORDIC HAMSTRING EXERCISE – IS IT A PART OF THE WEEKLY TRAINING IN FEMALE ELITE FOOTBALL?

¹Connie Linnebjerg, ²Hansen Mette, ¹Clausen Mikkel Bek, ³Jesper Bencke, ²Mikkel Oxfeldt, ¹Mads Bjørndal Sonne, ⁴Mads Karlsson, ⁵Per Hölmich, ¹Mette Kreutzfeldt Zebis. ¹Department of Physiotherapy, Faculty of Health and Technology, University College Copenhagen, Copenhagen, Denmark; ²Research Unit for Exercise Biology, Department for Public Health, Aarhus University, Aarhus, Denmark; ³Human Movement Analysis Laboratory, Department of Orthopedic Surgery, Copenhagen University Hospital, Amager-Hvidovre, Hvidovre, Denmark; ⁴Department of Orthopedic Surgery M, Institute of Sports Medicine Copenhagen, Bispebjerg Hospital, Copenhagen, Denmark; ⁵Sports Orthopedic Research Center – Copenhagen, Department of Orthopedic Surgery, Copenhagen University Hospital, Amager-Hvidovre, Hvidovre, Denmark; ⁶Hvidovre, Denmark

10.1136/bjsports-2021-IOC.144

Background The hamstring muscle strengthening is an integral part of validated injury prevention programs in football. However, it is unknown whether hamstring muscle strengthening exercises are used in female elite football.