Participants 42,054 adult U.S. players (3,481 teams and 7,673 Rugby-7s matches).

Assessment of Risk Factors Match injury rates, site, type, and severity.

Main measurement outcome Incidence (per 1000 player-hour (ph)), severity and details of mechanisms were captured using Rugby Injury Survey & Evaluation (RISE) report methodology. All-injuries (medical-attention and time-loss) and time-loss injuries were defined. Days (d) absent before return-to-training/competition (including post-tournament) were recorded.

Results A total of 498 HNF injuries were encountered (all-injury rate=16.7/1000ph; men=17.3/1000ph; women=15.5/1000ph; IRR:1.1; CI:0.9–1.4). Head/face was the most commonly injured site (all-injuries=90.8%; time-loss=86.8%) followed by neck/cervical spine (all-injuries=9.2%; time-loss=13.2%). Concussions were the most common type of injury (36.7%; 6.1/1000ph) followed by facial lacerations (28.7%; 4.8/1000ph). Incidence of concussions was similar between sexes (IRR:1.0; CI:0.7–1.3). Longer return-to-sport were seen among women (46.4d) than men (32.1d; $P=0.047$) post-concussion. Scalp/face lacerations were more common among men than women (IRR:2.5; CI:1.6–4.1; $P<0.001$). Time-loss injuries occurred similarly among men and women (IRR:1.5; CI:1.0–2.6; $P=0.061$). HNF injury severity was similar between sexes (29.3 ± 32.4 days absent from play). The tackle (71.5%) was the most common injury event. Men sustained HNF injuries mostly with direct contact with another player (IRR:1.3; CI:1.0–1.7; $P=0.023$), while women were injured with impact with the playing surface (IRR:1.8; CI:1.0–3.2; $P=0.032$).

Conclusions Incidence of HNF injuries were similar between sexes among U.S. rugby-7s players. Sex differences with concussion severity and contact mechanism of HNF injuries were seen between sexes. Recognition of HNF injury patterns and sex differences will allow for a more effective injury prevention plan in this emerging U.S. collision sport.

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Background Rugby union is a collision-based sport, as such the occurrence of injuries resulting in time-loss from participation is inevitable. In 2015 New Zealand Rugby (NZR) began an injury surveillance program with all NZ-based Super Rugby teams to capture all time-loss injuries.

Objective To examine the incidence, burden, severity, nature and cause of match injuries in NZR Super Teams.

Design A prospective observational study.

Setting Match injuries sustained during the 2015–2018 Super rugby seasons.

Patients (or Participants) All contracted rugby players (n=190) over the four seasons.

Main Outcome Measurements Primary outcomes of interest were incidence (injuries/1000 player match-hours), injury burden (days absence/1000 player-match-hours), median severity (days absence), location (%), diagnosis (%) and mechanism (%).

Results From 2015–2018 the following incidence was documented 122, 85, 94 and 81 injuries/1000 player-match-hours respectively. During the first year the initial injury incidence was 122 injuries/1000 player-match-hours, which was significantly higher than 2018, 81 injuries/1000 player-match-hours. The days absence increased over the period from a median of 7 days missed in 2015 (burden: 2262 days absence/1000 player-match-hours) to 16 in 2018 (burden: 3206 days absence/1000 player-match-hours). There was a significant difference in the incidence of injury by position, where forwards sustained 106 injuries/1000 player-match-hours and backs 85. The most at risk position was the hooker (118 injuries/1000 player-match-hours) and the lowest inside backs (59 injuries/1000 player-match-hours). Tackling was the most common mechanism of injury 27%, followed by being tackled 25% and collisions 12%. The head was the most common injury location (19%), followed by the shoulder (13%) and knee (10%). The three most commonly diagnosed injuries were sprains (28%), concussions (20%) and muscle rupture/strains/tear/cramp (16%).

Conclusions The current data supports the international trend in professional rugby where the time-loss associated with each injury is increasing, resulting in higher levels of injury burden.

Pasindu Silva. *University of Sri Jayewardenepura, Colombo, Sri Lanka*

Background Sri Lankan university rugby players only have 3–4 years to understand the game and master its techniques. Due to the nature of the game, players can be seriously injured without proper skills.

Objective This study aimed to understand the injury patterns of University-level rugby players according to their positions.

Design This prospective study of university-level rugby players was carried out after the Sri Lanka University Games (SLUG) 2019 concluded.

Setting The study population was players in the squads of universities that participated in SLUG 2019, which is considered an amateur rugby tournament.

Patients (or Participants) The participants who volunteered were screened with the following inclusion criteria: 1. Age range: 23±3 years, 2. Registered for SLUG 2019, 3. Injury-free for a window of 6 months before the start of the season, 4. Free from systemic injuries

Interventions (or Assessment of Risk Factors) The study examined which player positions are more prone to injuries. Accordingly, the risk factors identified were: contact injury, contact event, injury location and injury type.

Main Outcome Measurements Significant associations between the player position and the above-mentioned risk factors were explored.

Results The most injury-prone position was the Lock position (18.4%) whereas the least injury-prone positions were Fly-

halves and Number 8s (2.6%). The most common injury location was the ankle (21.4%) and 42.9% of ankle injuries were suffered by Locks. There was a significant association ($p=0.010$) between player position and injury location. In contrast, no significant associations ($p>0.05$) were observed between player position and contact injury, contact event or injury type.

Conclusions The Lock position was more prone to injury than any other position during SLUG 2019 but the majority of the players were injured regardless of the playing position. Thorough physical conditioning and skill practice could be key areas of concern to reduce injuries in university-level rugby.

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252 RELATIONSHIP BETWEEN BALANCE AND LOWER EXTREMITY ROM, H/Q RATIO, HAMSTRING TIGHTNESS, BEIGHTON SCORE IN PROFESSIONAL FOLK DANCERS AND PROFESSIONAL FOOTBALL PLAYERS

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Background One of the factors of performance is to be agile that would require combination of speed, balance, power and coordination. Balance analysis is often used as an indication of risk of frequent injuries. In most of the sports, proprioceptive education programs are adapted to prevent lower extremity functional injuries.

Objective We aimed to determine the difference in balance between professional dancers and professional footballers and its relationship with lower extremity ROM, muscle strength (hip abductor- adductor, quadriceps, hamstring), H/Q ratio, hamstring tightness (Sit and reach, Straight Leg Raise (SLR) test), hypermobility test (Beighton score).

Design Prospective comparative study.

Setting Professional folk dancers (Fire of Anatolia Dance Group) and Premier League football players.

Patients (or Participants) Volunteered 20 professional folk dancers and 20 Premier League football players

Interventions (or Assessment of Risk Factors) Hamstring tightness, decreased ROM, Beighton score (smaller or equal of 3, greater or equal of 5) is the risk factor for static and dynamic balance decrease.

Main Outcome Measurements SportKAT 4000 (Kinesthetic Ability Trainer) measurements ($p<0,005$) are better in dancers (eyes open with both feet, right leg only, left leg only, eyes closed both feet, eyes open dynamic both feet) compare to athletes. Active ROM angles ($p<0,005$) are significantly higher in dancers' hip, knee and ankle compare to athletes. Our findings showed that dancers' Beington score was $3,8\pm3$ and athletes' score was $2,5\pm1,5$. Hamstring lenght in dancers was $95,5\pm10$ and athletes was $76,6\pm7,1$.

Results Dancers' static and dynamic balances ($p<0,005$) are significantly better than athletes. H/Q ratios are not different between dancers and athletes; however, dancers' Hamstring length ($p<0,005$) is higher compare to athletes.

Conclusions Decreased flexibility and ROM cause lesser resistance to perturbation and balance problems. We think that dancer are better in static and dynamic balances compare to athletes due to greater ROM degrees and Hamstring flexibility.

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253 RISK MANAGEMENT THROUGH AN ASSERTIVE PRESEASON ASSESSMENT

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Background Preseason assessment is common in sports teams and aims to analyze athletes' physical and functional parameters. These data assist physical therapists to develop global and individualized injury prevention programs and to identify any improvement throughout the season.

Objective To determine predictors for musculoskeletal injuries in youth male soccer athletes.

Design Cohort study.

Setting One youth soccer team facility.

Patients (or Participants) One hundred sixteen young male soccer athletes.

Interventions (or Assessment of Risk Factors) All data were collected in two days. Athletes were aleatory selected to perform the tests and the physical therapists, previously trained, applied the following tests: single leg hamstring bridge (SLHB), bridge test with unilateral knee extension, passive hip internal rotation (IR) range of motion (ROM), hip abductor strength, hamstring flexibility and composite score of Y-Test. Considering it could have an interference in other tests, Y-Test were the last measure in all athletes. Injuries were collected throughout the season.

Main Outcome Measurements any lower limb (LL) injury occurring during scheduled games or practices that cause an athlete to miss a subsequent game or practice session.

Results The Classification and Regression Trees (CART) model identified as predictors of LL injuries in youth soccer athletes: SLHB, bridge test with unilateral knee extension, passive hip internal rotation ROM, hip abductors strength, hamstrings flexibility and composite score of Y-Test result. The model had an accuracy of 76% ($p< .0001$) and the correct classification was 88.6% for injury and 56.6% for non-injury.

Conclusions The SLHB, bridge test with unilateral knee extension, passive hip internal rotation ROM, hip abductors strength, hamstrings flexibility and composite score of Y-Test should be included in pre-season assessment in youth soccer athletes. The results of these tests could be used as parameters to develop a prevention program in soccer.

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254 PRE-SEASON CLINICAL ASSESSMENT OF THE HIP EXTENSORS, EXTERNAL ROTATORS AND ABDUCTORS IN COMPETITIVE SPRINTERS

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