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THE CLINICAL BURDEN OF SEVERE SPORTS INJURIES IN ENGLAND AND WALES

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Background Severe sports injury has substantial individual and societal health and financial implications. There has been limited study of the number, type, and clinical burden of severe injuries. Trauma research networks, such as the Trauma Audit Research Network (TARN) in England and Wales, may facilitate estimating the burden of severe sports injury.

Objective To estimate the number of severe sport-related injuries treated in hospitals in England and Wales between January 2012 and December 2017, and identify the 10 main contributing sports.

Design Five-year retrospective study.

Setting English and Welsh hospitals.

Patients All patients whose injury mechanism was indicated as sport, or whose incident description field featured one of 62 sporting activities, and qualified for inclusion in the TARN database. Inclusion criteria are: transfers or direct admissions whose inpatient stay is 3 days or more, admissions to High Dependency Areas and mortality after admission.

Assessment of Risk Factors Hospital-recorded age, sex and sporting activity at the time of injury.

Main Outcome Measurements A severe (TARN-recorded) injury, during in-game sporting activity. Extracted data included treatment duration, injury characteristics and sport code.

Results There were 15,799 sports injuries between 2012 and 2017. In 2012 there were 2,087 injuries (13.3% of incidents), and by 2017 there were 2,906 (18.6% of incidents). Patients were on average 37.7 (± 19.5) years, and 6,396 (40.5%) were female. The average length of hospital stay was 9.5 days (SD ± 15.6 , range 1 to 738). Horse-related activities accounted for 5,585 of injuries, followed by football (soccer) with 1,439 injuries, motor racing (n=938), cycling (n=917), motocross (n=826), off-road cycling (n=669), rugby (n=660), trampolining (n=620), running (n= 501), and skiing (n=326).

Conclusions Horse-related, football, motor racing and cycling injuries presented with the most injuries, and should be the focus of prevention efforts. Further work will examine sports participation data, and quantify severe injury risks associated with sports participation.

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INJURY RATES AND MECHANISMS OF INJURY IN FEMALE HIGH SCHOOL RUGBY

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Background In Canada, unlike many countries, youth rugby players often have their first exposure to the sport in high school (ages 15–16). There are few studies examining injuries in female high school rugby union.

Objective To describe injury rates and mechanisms among females participating in high school rugby union.

Design Prospective cohort study.

Setting Rugby pitches (Calgary, Canada).

Participants Female high school rugby players (ages 15–18) participating in 2018 (7 teams, n=214) and 2019 (7 teams, n=207) seasons.

Assessment of Risk Factors Mechanism of injury was recorded by team designates on an electronic injury report form, validated by a certified athletic therapist.

Main Outcome Measurements Training and match injuries were identified by a team designate or study therapist if the player 1) required medical attention, 2) was unable to complete the session, and/or 3) unable to participate in activity for $\geq$ one day.

Results There were 155 match [93.7 injuries/1000-match-hours (95%CI, 78.6–111.7)] and 85 training injuries [5.3 injuries/1000-training-hours (95%CI, 4.0–6.9)] across two years of injury surveillance. Match injuries most commonly occurred while tackling [62 injuries (40%) 37.5 injuries/1000-match-hours (95%CI, 27.1–51.8), being tackled [47 injuries (30%), 28.4 injuries/1000-match-hours (95%CI, 20.3–39.8)], and during a ruck/maul [12 injuries (8%), 7.3 injuries/1000-match-hours]. Training injuries most commonly occurred while tackling [20 injuries (24%), 1.2 injuries/1000-training-hours (95%CI, 0.7–2.4)], being tackled [17 injuries (20%), 1.1 injuries/1000-training-hours (95%CI, 0.7–1.7)], and running [9 injuries (11%), 0.6 injuries/1000-training-hours (95%CI, 0.3–1.0)].

Conclusions Tackling was identified as the most common mechanism of injury among female high school rugby players, with the highest rates in the active tackler during matches. Safe tackling interventions are an ideal primary prevention target to reduce the risk of injury within this population.

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SURVEILLANCE: INJURY INCIDENCE AND INJURY PATTERNS IN PROFESSIONAL FOOTBALL PLAYERS REGISTERED IN EGYPTIAN FOOTBALL LEAGUE

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Background Injury surveillance is an important pre-requisite for injury prevention planning. There is lack of information about injuries, rates, patterns and the procedures used for injury prevention of football players in the professional Egyptian soccer league.

Objective To record and describe the injury incidence and characteristics in male professional football participating in Egyptian football league by using a club based injury surveillance system.

Design Prospective study, where a random of 6 governors among 27 different governors existing in Egypt were selected and including all participating with man first team at football Egyptian league.

Setting Any injury detected for athletes in the first male team of professional football Egyptian league that were registered in

Egyptian Football federation was recorded with its characteristics and methods of management .

Patients (or Participants) 42 different teams including 928 players that were followed during season 2017- 2018.

Interventions (or Assessment of Risk Factors) Data collection was difficult as this was the first surveillance done so we used direct contact with athletes by Facebook messenger, WhatsApp and phone calls as well as club surveillance sheets.

Main Outcome Measurements Injury incidence rates and characteristics.

Results 2869 injuries occurred during 441 hours of exposure, giving an injury incidence of 8.4 injuries/1,000 hours. The injury incidence during matches was higher than in training. The most common injury recorded was thigh strain (310 injuries), representing 17% of all injuries. Ankle sprain was second common injury recorded (180 injuries). Meniscal injuries recorded were (126) injuries while ACL injuries recorded were (77 injuries) Re-injuries constituted 13% of all injuries The incidence of match injuries showed an increasing injury tendency over time in both the first and second halves.

Conclusions This is the first recorded surveillance for injury detection of football professional athletes recorded and published in Egypt. We need more studies and establishing injury prevention programs and implementing them with more injury surveillance in the future.

291 ABSTRACT WITHDRAWN

292 THROWING ELBOW INJURY PREVENTION: FOREARM FLEXOR INJURY ASSOCIATION WITH MEDIAL ELBOW ULNAR COLLATERAL LIGAMENT INJURY

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Background The forearm flexors (FF) are a stabilizing biomechanical aspect of the medial elbow. However, there are no studies investigating the association of concomitant UCL injuries and FF injuries in throwing athletes.

Objective Our hypothesis is a considerable number concomitant FF injuries occur with (medial) UCL injury in throwing athletes. Additionally, we hypothesized that an increased severity of UCL injury in throwers is associated with a greater likelihood of concomitant FF injury.

Design Descriptive retrospective epidemiological study.

Setting Academic, tertiary care medical center.

Patients Patients with sports-related throwing UCL injuries from 1/1/10 to 12/31/19 for patients aged 12–24 years.

Assessment of Risk Factors Electronic medical records and key word searches identified all patients. A board certified and fellowship trained Musculoskeletal Radiologist reviewed all imaging studies.

Main Outcome Measures The primary study outcome measures planned before data collection included: UCL and FF structural injury on advanced imaging (MRI and/or MRI-Arthrogram), location of UCL injury, concomitant FF injury with UCL injury, UCL-Reconstruction (UCL-R) and associated

FF injury, and concomitant FF injury and complete UCL tear.

Results Fifty-four patients (46 male, 8 female, mean age 17.1 years, SD 2.3) were included. Fifty-four UCL injuries (21 complete ruptures, 16 proximal partial injuries, 17 distal partial injuries) were confirmed by magnetic resonance imaging (MRI). Twenty-eight FF injuries (22 strains, 6 tears) were diagnosed with MRI and/or MRI-arthrogram. There was a significant association between sustaining a FF injury and UCL reconstruction (UCL-R) ($X^2 = [1, N = 54], = 3.97, P = .046$) (15/22, 68.2%), as well as FF injury and UCL injury location ($X^2 = [1, N = 33], = 3.86, P = .049$) (10/17, distal partial UCL injury, 58.8%). Analysis of FF injury and complete UCL tear is not significant ($X^2 = [1, N = 54], = 3.02, P = .08$) (14/21, 66.7%).

Conclusions FF injury is related to UCL injury in throwing athletes. Future prospective studies should investigate association of FF and UCL injury in a throwing athlete as a means to prevent further injury.

293 MYSTERIOUS BREATHING PROBLEMS IN ATHLETES – WHAT CAN IT BE?

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Background Respiratory problems are common complaints among athletes, potentially influencing their sport performances as well as their health. Exertional dyspnoea unresponsive to asthma medication have been referred to as ‘mysterious breathing problems’.

Objective To address if exercise related breathing problems in athletes with exercise induced laryngeal obstruction (EILO) are perceived as uncontrolled asthma.

Design Retrospective descriptive cross sectional study.

Setting Register data from hospital-based national reference clinic during 2013–2016. Symptoms, previous diagnostic work-up and pulmonary function were obtained from referral letters or chart reviews. EILO was diagnosed from video-recorded laryngoscopy performed during maximal cardiopulmonary treadmill exercise (CLE-test).

Participants Elite athletes competing on national and/or international level, referred for work-up due to exercise induced breathing problems.

Assessment of risk factors Respiratory symptoms, lung function tests, asthma, use of asthma medication, EILO.

Main outcome measurements Respiratory symptoms, lung function test results, asthma, use of asthma medication, EILO with laryngeal movements scored from video-recorded CLE tests using a standardized system, blinded to the clinical data.

Results EILO was diagnosed in 94/101 athletes, of whom 70/94 had moderate/severe supraglottic obstructions and only 3 had a primary vocal cord dysfunction (VCD). Test for asthma was available in 76/101 athletes; 28 confirming and 38 excluding asthma. In total 83/101 athletes had used asthma medications, 39 reporting current use. Only 4 reported that asthma medication had been effective, 3 of whom with a positive test for asthma. However, all these 4 subjects were also