

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291 ABSTRACT WITHDRAWN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

Jason L Zaremski, Marissa Pazik, Cooper W Dean, Niran Vijayaraghavan, Nicholas P Fethiere, Kevin W Farmer, MaryBeth Horodyski. *University of Florida, Gainesville, Florida, USA*

10.1136/bjsports-2021-IOC.269

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?

^{2,4}Hege Clemm, ²Ida Hammer, ^{1,2}Maria Vollsæter, ^{2,3}Ola Røksund, ^{1,2,5}Thomas Halvorsen. ¹Department of Clinical Science, University of Bergen, Bergen, Norway; ²Department of Pediatric, Haukeland University Hospital, Bergen, Norway; ³Western Norway University of Applied Science, Bergen, Norway; ⁴Norwegian Olympic Committee, Bergen, Norway; ⁵Department of sports medicine, The Norwegian School of Sport Sciences, Oslo, Norway

10.1136/bjsports-2021-IOC.270

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

diagnosed with EILO; i.e. they had both conditions. Treatment for EILO resolved breathing problems in the majority.

Conclusions EILO is common in athletes, but too often referred to as 'mysterious breathing problems'. Asthma does not rule out EILO as comorbidities are common. Apparent persistence of respiratory symptoms must not lead to indiscriminate escalation of asthma treatment, as symptoms may be due to undiagnosed and treatable laryngeal obstruction.

294

PREVENTING INJURY TO THE FETUS: USING 3-DIMENSIONAL POWER FLOW DOPPLER ULTRASONOGRAPHY TO ANALYZE PLACENTAL BLOOD FLOW DURING RESISTANCE TRAINING IN PREGNANT ATHLETES TO GUARD AGAINST FETAL HYPOPERFUSION

^{1,4}Sara Gould, ²Chase Cawyer, ^{3,4}Louis Dell'Italia, ²Lorie Harper, ^{4,5}Marcas Bamman. ¹University of Alabama at Birmingham, Department of Orthopedics, Division of Sports Medicine, AL, USA; ²University of Alabama at Birmingham, Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine, AL, USA; ³University of Alabama at Birmingham, Department of Medicine, Division of Cardiovascular Disease, AL, USA; ⁴Birmingham Veteran Affairs Medical Center, AL, USA; ⁵University of Alabama at Birmingham, Department of Cell, Developmental, and Integrative Biology, AL, USA

10.1136/bjsports-2021-IOC.271

Background Peak fertility and athletic performance coincide, placing a subset of women into competition with sparse guidance. The Valsalva maneuver has been hypothesized to increase maternal blood pressure and intra-abdominal pressure, resulting in decreased blood flow to the fetus during resistance training.

Objective We present a technique employing three dimensional (3D) power Doppler ultrasound analysis to evaluate placental blood flow during resistance exercise. This technique may be used to prevent fetal injury by guiding training parameters.

Design This is a proof of principal study describing the technique and documenting its use to determine placental blood flow.

Setting This research was conducted in an academic clinical enter. Participants varied from an actively exercising, former collegiate athlete, to participants who performed no scheduled physical activity.

Patients (or Participants) Four normal weight women less than 35 years of age with uncomplicated pregnancies were included.

Interventions (or Assessment of Risk Factors) One repetition maximum (1RM) via modified chest press was determined. Ultrasonography with power Doppler and 3D volume measurements were then performed on the visualized portions of the placenta. The vascular flow index (VFI) was then calculated for each phase.

Main Outcome Measurements VFI was measured during lifting and at rest. The paired t-test was used for statistical analysis. Z scores from previously established normative data (Noguchi, et al 2009) provided benchmarks.

Results VFI was not significantly different between lift and rest phase for any of our participants. All measurements were within a standard deviation of previously established normative data. There were no incidences of fetal bradycardia.

Conclusions 3D power flow Doppler imaging can guide resistance training during pregnancy to prevent fetal injury due to hypoperfusion. Resistance training up to an RM1 of 50lbs did

not result in a significant reduction in placental blood flow from resting state in the study population.

295

ABSTRACT WITHDRAWN

296

EFFECTS OF SALBUTAMOL PRIOR TO DIESEL EXHAUST EXPOSURE DOES NOT AFFECT DYSPNEA DESPITE REDUCING THE WORK OF BREATHING IN INDIVIDUALS WITH EXERCISE-INDUCED BRONCHOCONSTRICTION

¹Sarah Koch, ²Joseph Welch, ¹Andrew Ramsook, ¹Christopher Carlsen, ¹Jordan A Guenette, ¹Michael Stephen Koehle. ¹University of British Columbia, Vancouver, Canada; ²University of Florida, Gainesville, USA

10.1136/bjsports-2021-IOC.272

Background Individuals with exercise-induced bronchoconstriction (EIB) use inhaled β_2 -agonists prior to exercise to prevent respiratory symptoms. The resulting bronchodilation could increase the dose of inhaled pollutants and worsen dyspnea when exercise is performed in air pollution.

Objective To assess the effects of salbutamol, a β_2 -agonist, and diesel exhaust (DE) exposure during exercise on dyspnea and the metabolic cost of breathing in individuals with EIB.

Design Double-blind, randomised, repeated measures.

Setting Controlled human exposure study.

Participants Nineteen participants (9 women) with EIB (age 22–33 years).

Intervention Participants completed four exposure visits. After the inhalation of either 400 μ g of salbutamol or placebo, participants sat in the exposure chamber for 60min, breathing either filtered air (FA) or DE (PM_{2.5}=300 μ g/m³). Following the rest period, participants cycled for 30min at 50% of peak work rate while breathing FA or DE.

Main Outcome Measurements Dyspnea was rated using the 0–10 category-ratio Borg scale at baseline, 7.5min and 27.5min into the cycling bout. Transpulmonary pressure was calculated as the difference between esophageal and mouth pressure. The work of breathing (WOB) was then determined by integrating ensemble averaged transpulmonary pressure-tidal volume loops.

Results Dyspnea increased significantly ($p < 0.01$) from 0 ± 1 at baseline to 2 ± 1 at 7.5min and 3 ± 2 at 27.5min. Neither DE ($p = 0.71$) nor salbutamol ($p = 0.45$) affected dyspnea. WOB increased with exercise duration, starting at 8.3 ± 6.8 J/min at baseline to 95.5 ± 35.9 J/min ($p < 0.01$) at 7.5min and 105.0 ± 47.5 J/min ($p < 0.01$) at 27.5 min. Exposure to DE did not affect WOB ($p = 0.49$); however, salbutamol reduced WOB significantly ($p = 0.049$). At 7.5min in the salbutamol trial, WOB was reduced by 10.8 ± 2.9 J/min compared to placebo ($p = 0.048$). At 27.5min, WOB was reduced by 3.9 ± 1.3 J/min after salbutamol compared to placebo although this did not reach statistical significance ($p = 0.12$).

Conclusions The use of salbutamol prior to exercise in DE does not appear to affect dyspnea despite reducing the WOB in individuals with EIB.