004 INCREASED INJURY RISK IN YOUTH ATHLETICS WHEN GROWTH RATES ARE HIGH AND SKELETAL MATURATION IS LOW

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Background Studies addressing risk factors for injuries in youth athletics are scarce and although growth and maturation represent potential risk factors for adolescent athletes, the available literature is inconclusive.
Objective The aim of this study was to examine if growth rate, maturity status and maturity tempo are associated with injury risk in adolescent athletics.
Design Anthropometric, skeletal maturity and injury data collected prospectively over four seasons were included.
Setting The data collection was part of the ongoing monitoring of athletes at the Aspire Academy in Qatar.
Patients (or Participants) Participants were student-athletes, not yet specialized to event groups. Of the 129 athlete-seasons eligible for inclusion, 117 athlete-seasons (74 athletes) were included in the final sample.
Interventions (or Assessment of Risk Factors) Anthropometric measures were taken at the start and end of each season, while skeletal maturity was assessed at the start of each season using hand radiographs.
Main Outcome Measurements Time-loss injuries were recorded by medical staff and associations were assessed using generalized estimating equations.
Results Growth rate for stature was associated with greater risk of bone (Incidence rate ratio (IRR): 1.5 per SD above the mean, 95% CI: 1.1 to 1.9) and growth plate injuries (2.1, 1.5 to 3.1). Growth rate for leg length was associated with greater risk of overall (1.3, 1.0 to 1.7), bone (1.4, 1.0 to 1.9) and growth plate injuries (2.1, 1.4 to 3.0). Athletes with greater maturity status (0.6 per skeletal age year, 0.5 to 0.9; 0.8 per percent of mature height; 0.7 to 1.0) were less prone to growth plate injuries. Annual change in skeletal age was associated with an increased risk of bone injuries (1.5 per SD above the mean; 1.0 to 2.3).
Conclusions The results of this study suggest that rapid growth in stature and leg length, skeletal maturity status and maturity tempo represent risk factors for certain injury types in adolescent athletics. Regular monitoring therefore seems warranted.

005 IS INFERIOR DUAL-TASK PERFORMANCE A RISK FACTOR FOR INJURY IN YOUTH SOCCER? A PROSPECTIVE STUDY

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Background The effects of dual task (DT) performance on injury incidence in sports have barely been researched. Athletes often encounter situations where cognitive and motor tasks must be performed simultaneously, with interference between tasks. An inferior DT performance could be associated with a less adequate (motor) response, increasing the injury risk.
Objective To examine whether inferior DT performance could be identified as a risk factor for injury in elite youth soccer.
Prospective cohort study.
Setting Soccer-specific DT performance was evaluated by means of the Loughborough Soccer Passing Test (LSPT), followed by a prospective monitoring period (injury and sports exposure registry).
Participants 130 male youth soccer players, aged 12.8 ± 1.7 years
Assessment of Risk Factors Cox regression analyses, corrected for age, were performed to identify DT performance as a potential risk factor for traumatic injuries.
Main Outcome Measurements (1) LSPT test and LSPT test with additional cognitive task (LSPT+) scores, as well as the (2) Relative Dual Task Interference (RDTI).
Results 32% of players sustained an injury, resulting in a mean time loss of 16.12 ± 22.87 days. Overall injury incidence was 2.86 per 1000 exposure hours. The performance in both single and dual task conditions improved with age ($p<0.001$). Meanwhile, the RDTI remained relatively constant across all age groups ($p=0.816$). Survival analyses revealed no significant predictive effects of DT performance on injury occurrence. Age was significantly able to predict injury occurrence ($p=0.011$), with older players demonstrating a higher risk.
Conclusions Inferior DT performance could not be associated with increased injury risk in youth soccer. Age was a significant risk factor for injury incidence in this sample but did not present any association with DT performance. DT performance capacity cannot be seen as a risk factor for injury in youth soccer.

006 HOW DO FOOTBALL (SOCCER) INJURIES OCCUR? A SYSTEMATIC VIDEO ANALYSIS OF 345 MODERATE AND SEVERE MATCH INJURIES

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Background Although descriptions of injury inciting events are of key importance to understand the causes of any particular injury type, systematic analysis of inciting events remain rare.
Objective Identification and description of recurrent injury patterns in professional football.
Design Prospective video analysis of moderate and severe match injuries.
Setting Two highest divisions in German professional male football (Bundesliga, 2. Bundesliga).
Patients (or Participants) All players who played at least one competitive club match within the seasons 2014/15, 15/16 and 16/17 were included (n=1,449).
Interventions (or Assessment of Risk Factors) Systematic video analysis of all moderate and severe match injuries (time-loss ≥ 8 days) that were registered by clubs or physicians with the VBG (German statutory accident insurance for professional athletes) as part of the occupational accident reporting.

Main Outcome Measurements An observation form was developed and evaluated containing five categories: (I) general match and player information, (II) localisation of the injury on the pitch, (III) game situation and player/opponent behaviour, (IV) injury mechanism and (V) injured body location.
Results Of the 857 moderate and severe match injuries, 345 (40.3%) were clearly identified in the video footage and included to the analysis. Of these, almost half were contact injuries (49.3%), 23.2% non-contact injuries and the remaining 27.5% indirect-contact injuries. Most contact injuries were caused by collisions with the opponent (46.5%); non-contact injuries were commonly caused by structural overexertion (71.3%). Finally, nine recurrent comprehensive injury patterns were identified and described.
Conclusions Future preventive approaches should prepare players for the identified recurrent injury situations to reduce injury burden in professional football. One of the main findings was that own tackles are football-specific actions with a high risk for injuries, particularly for knee injuries. Thus, player behaviour and technique skills might present areas with considerable preventive potential. The resulting video database can be used in coaching education to demonstrate recurrent match situations with a high risk for injuries.

007 PREVALENCE OF HIP AND GROIN PAIN AND CHANGES IN HIP AND GROIN OUTCOME SCORE OVER A SEASON IN ELITE GAELIC ATHLETIC ASSOCIATION PLAYERS

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Background Athletic hip and groin pain is common in the Gaelic Athletic Association (GAA) but its prevalence at elite level is unknown. The changes in Hip and Groin Outcome Score (HAGOS) over a season in and the ability of HAGOS to identify those athletes who will go onto develop hip and groin symptoms has not been reported previously.
Objective The aim of this study was to report the prevalence of hip and groin symptoms and the changes in HAGOS score across a season in elite GAA players and examine the relationship between pre-season HAGOS scores and self-reported groin pain during that season.
Design Retrospective cohort study.
Participants There were 1241 elite intercounty GAA players who participated at the start of the 2017 and 2018 seasons.
Interventions (or Assessment of Risk Factors) Online Questionnaire.
Main Outcome Measurements The HAGOS questionnaire and self reported incidence of groin pain in previous season.
Results There was a high prevalence of hip and groin pain reported in elite GAA athletes over the course of a season (36%). There was no change on average across all the HAGOS subscales apart from Physical Activity which had a medium effect size change (d = 0.44) with 12 to 22% of athletes showing a decrease greater than minimal detectable change across HAGOS subscales over the course of a season and 15–34% showing an increase. There was poor ability to predict the incidence of hip and groin pain using pre-season HAGOS (AUC = 0.57 to 0.67).
Conclusions There is a high prevalence of hip and groin pain in elite GAA athletes with group HAGOS masking individual changes across cohort. There is poor ability of pre-season HAGOS to predict incidence of hip and groin pain in elite GAA athletes in the subsequent season.

008 EPIDEMIOLOGY OF INJURY IN ENGLISH SCHOOLBOY RUGBY UNION

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Background There is a perceived high risk of injury within youth rugby, but the available evidence in this population is limited. Understanding injury rates and patterns can inform injury reduction strategies.
Objective To describe the incidence and severity of schoolboy rugby injuries and determine whether there are differences between age groups.
Design A two-season (2017–19) prospective cohort study.
Setting English secondary schools.
Participants Schoolboy teams in the under-13 (U13), under-15 (U15) and under-18 (U18) age groups.
Assessment of Risk Factors Match exposure and the severity (days lost), type and event associated with 24-hour time-loss injuries.
Main Outcome Measures Injury incidence (injuries/1000h) and burden (days lost/1000h).
Results 11,706 player-hours and 379 match injuries from 66 teams were collected. The U18 age group had a significantly higher injury incidence (37.2 injuries/1000h, 95% CI: 33.1 to 41.8) than the U15's (24.7, 95% CI: 19.8 to 30.8) and U13's (20.8, 95% CI: 13.6 to 31.9) (P<0.01), which were not significantly different (P=0.24). The mean severity was 29 days lost (95% CI: 26 to 33) for U18, 31 (95% CI: 25 to 39) for U15 and 20 (95% CI: 13 to 31) for U13. Injury burden differed significantly between all groups (U18, 1085 days/1000h, 95% CI: 965 to 1220; U15, 767, 95% CI: 615 to 956; U13, 423, 95% CI: 276 to 648; P<0.01). Contact events accounted for 86% of all injuries, with the tackle accounting for 56%. This was the most common event associated with injury at U18 (22.2 injuries/1000h), U15 (11.4/1000h) and U13 (10.4/1000h). The most common injury type was concussion at U18 (9.0 injuries/1000h) and U15 (5.1/1000h) and bruising/haematoma (5.2/1000h) at U13.
Conclusions The U18 age group had the highest injury incidence and burden. The tackle was the most common injury event and should be the focus of further investigation or intervention.

009 A COMPARISON OF INJURIES BETWEEN MALE AND FEMALE AMATEUR RUGBY UNION PLAYERS

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