

## 040 INJURIES ARE NEGATIVELY ASSOCIATED WITH TEAM PERFORMANCE IN PROFESSIONAL CRICKET

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10.1136/bjsports-2021-IOC.38

**Background** A negative association between injuries and team success has been demonstrated across a number of sports, but the nature of this association in professional cricket teams is currently unclear.

**Objective** To examine the relationship between injuries and team success in professional cricket.

**Design** A retrospective analysis of all match time-loss injuries and County Championship point tallies for nine seasons (from 2010 – 2018 inclusive).

**Setting** Eighteen First-Class County Cricket (FCCC) cricket teams in England and Wales.

**Patients (or Participants)** Professional male senior first-team cricketers registered to one of the eighteen clubs (mean n = 507 players/season).

**Interventions (or Assessment of Risk Factors)** Two injury measures were assessed for within-team (linear mixed model) and between-team (correlation) effects; match time-loss injury incidence and burden, to account for both the frequency and severity (days lost from competition and practice) of injuries.

**Main Outcome Measurements** County Championship league points tally was used as the measure of team success.

**Results** A moderate negative correlation was found between injury burden and team performance ( $r = -0.36$ ; 90% CI: -0.7 to 0.1; *likely negative*). A reduction in match injury incidence of two match time-loss injuries per 1,000 days of play within a team (90% CI 1.4 to 3.0; *possibly negative*), or a reduction in match injury burden of 74 days per 1,000 days of play (90% CI 50.2 to 109.0; *possibly negative*) in any given season was associated with the smallest worthwhile change in County Championship points (+13 points) for Division 1, but not for Division 2.

**Conclusions** Moderate reductions in injury burden potentially have worthwhile effects on performance for a domestic cricket team in the County Championship Division 1.

## 041 RISK FACTORS FOR DOMINANT SHOULDER INJURY IN ELITE FEMALE AUSTRALIAN CRICKET PLAYERS: A PROSPECTIVE STUDY

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10.1136/bjsports-2021-IOC.39

**Background** In elite Australian cricket, shoulder injuries account for 11% of all injuries and 5.8% of all time-loss injuries in female players. However, even with over 400,000 females participating in cricket within Australia there are no studies exploring the risk factors for shoulder injury.

**Objective** Examine the risk factors for dominant shoulder injury in elite female cricketers during the 2017–2018 season.

**Design** Prospective cohort study.

**Setting** Australian national cricket league.

**Participants** A total of 115 elite, female cricketers were included with a mean (SD) age of 26.0(4.4) years. 39 players had missing data for some pre-season risk factors; however, all players were monitored for injury throughout the entirety of the 2017–2018 season.

**Assessment of Risk Factors** Univariate and multivariate logistic regression determined the relationship between aerobic fitness and musculoskeletal screening tests with incidence of dominant shoulder injury.

**Main Outcome Measurements** Pre-season aerobic fitness, musculoskeletal screening tests (shoulder range of motion, shoulder strength, hip strength, scapula dyskinesis, hypermobility and combined elevation) and dominant shoulder injury requiring modification of throwing were recorded.

**Results** Fourteen players developed dominant shoulder injuries however as two resulted from trauma these were excluded so 12 injuries proceeded to analysis. Univariate analysis revealed shoulder internal rotation: external rotation (IR:ER) strength ratio (OR=1.84,  $p=0.01$ ), back foot hip abduction strength (OR=0.973,  $p=0.049$ ) and back foot hip adduction: abduction strength ratio (OR=1.44,  $p=0.047$ ) were significantly associated with injury. Only shoulder IR:ER strength ratio remained significant ( $p=0.016$ ) in the multivariate logistic regression model with a 79% increased risk of shoulder injury for every 0.1 ratio increase.

**Conclusions** This study identified that within elite female cricketers, a shoulder IR:ER strength ratio of greater than 1.00 is the strongest risk factor for developing shoulder injury. Therefore, injury risk reduction programs in elite female cricketers which focus on keeping the shoulder IR:ER strength ratio closer to 1:1 may assist to minimise shoulder injury burden.

## 042 CHANGE OF DIRECTION BIOMECHANICS AND THE RISK FOR NON-CONTACT KNEE INJURIES IN YOUTH BASKETBALL AND FLOORBALL PLAYERS

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10.1136/bjsports-2021-IOC.40

**Background** Studies investigating biomechanical risk factors for knee injuries in sport specific tasks are needed.

**Objective** To investigate association between change of direction (COD) biomechanics and knee injury risk among youth team sports.

**Design** Prospective cohort study.

**Setting** Youth basketball and floorball.

**Participants** 258 female and male players (aged 12–21).

**Assessment of Risk Factors** COD biomechanics were analysed using 3D-motion analysis. The COD test consisted of a quick