

Preliminary Analysis of Incident Rate of Head Impacts in Collegiate Women's Lacrosse.

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It has been estimated that a player (e.g., football and soccer) may experience more than 1,000 head impacts during a season and upwards of 10,000 during their careers. Many of these head impacts likely result in concussion signs and symptoms yet go unreported. Frequency and location of head impacts are important factors in determining the probability of head injury in athletes. **PURPOSE:** To investigate the incident rate and location of head impacts sustained in National Collegiate Athletic Association Division I (D1) women's lacrosse athletes comparing practices, games, and player positions over the course of one full season. **METHODS:** This was a descriptive epidemiology study with data collection occurring during games and practices. Nine female D1 Lacrosse athletes (height=65.875±1.642cm, mass=66±13.804kg, age=19.875±1.125years) wore goggles instrumented with the GForce Tracker (Gforcetracker Inc., Markham, Ontario, Canada). GForce tracker sensors are programmed to record acceleration-time history, location about the head, and magnitude of both linear acceleration (g) and rotational velocity for each impact. Incident rates per 1000 exposures and incidence rate ratios (IRRs) with corresponding 95% confidence intervals (CIs) were calculated for all sessions. **RESULTS:** 965 impacts over 20 g's throughout 331 exposures were recorded in the participants. Over the course of 41 games, 281 impacts occurred (IR=6.85, 95% CI=6.05-7.65; IRR= 1.00, 95% CI 0.85 – 1.17) while 684 impacts occurred (IR=2.35, 95% CI=2.18-2.53; IRR: = 1.00, 95% CI = 0.89 – 1.11) throughout 290 practices. Player position (attack, midfield, defense, and goalie) affected the head impact incident rate and location of impact. **CONCLUSION:** The head impact incident rate and location impact in D1 women's lacrosse varies on player position and session type. We speculate that impact incident rate is greater during games than practice because of the higher intensity of play. Comparing the relationship of rate of impact exposures and location of impacts can assist in creating strategies to prevent the frequency of head injury in athletes.