Evaluating Head Accelerations in Men's Varsity Lacrosse

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Lacrosse is one of the fastest growing sports in North America, and the physical nature of the sport puts players at risk of sustaining head injuries, including concussions. Concussions are generally caused by accelerations of the head, and repeated impacts to the head causing acceleration can be detrimental to the overall health of the brain. To evaluate head accelerations experienced by lacrosse players during gameplay, 12 members of a local varsity lacrosse team were fitted with i1 Biometrics Vector mouthguards. These mouthguards are equipped with accelerometers, and measure the magnitude of every head acceleration a player experiences and transmit the data wirelessly to a sideline computer. To evaluate the neurocognitive effects of head accelerations, each participant took a baseline neurocognitive test (ImPACT) prior to the season, and directly following the season. Acceleration data showed that, on average, defensemen sustained a greater number (83.5) of total hits than players of other positions. In addition, while goalies sustained fewer average hits (17) than field position players, they sustained hits that were on average a greater magnitude. Additionally, hits of lower magnitudes proved to be more common than hits of higher magnitudes, and only two hits higher than 90g (a commonly accepted threshold where it is likely a player will experience concussion-like symptoms) were recorded during the course of the study. Comparisons between hit data and neurocognitive testing showed no significant results.

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