The Impact of a Competitive Lacrosse Season on BESS Scores in Athletes Who Did Not Reportedly Sustain a Concussion

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**Context:** Concussions can disrupt the integrity of the vestibular system, and dysfunction within the vestibular system is the proposed etiology for balance deficits associated with a concussion injury. Balance disturbances are self-reported in approximately 30% of concussion cases, and balance deficiencies can last for up to 30 days after initial injury. Evaluation of sub-concussive impacts on neurological function is currently in its infancy, but it is theorized that cumulative sub-concussive impacts will result in neurological deficits including balance. **Objective:** To determine the effect of a competitive men’s lacrosse season on BESS scores, and to determine if a change in scores correlated to head impact data received from accelerometers placed within the players’ helmets. **Design:** Prospective Longitudinal Study **Setting:** Athletic Training Room **Participants:** 34 Division I Men’s Lacrosse players (age = 19.59 ± 1.42 years) **Interventions:** Competitive men’s lacrosse season **Main Outcome Measures:** Subjects performed pre and post-season BESS tests, and score differentials were correlated to their head impact data (average linear acceleration, HIC, GSI scores, and total number of head impacts for the season) received from the accelerometers. **Results:** There was not a significant correlation found between BESS scores and head impact data. The number of errors from pre to post season increased during the double leg stance on foam ($p < .001$), tandem stance on foam ($p = .009$), total number of errors on a firm surface ($p = .042$), and total number of errors on a foam surface ($p = .007$). Errors committed during the double leg stance on foam: pre = .029, SD = ± .171; post = .559, SD = ± .86. Errors committed during the tandem stance on foam: pre = 3.56, SD = ± 1.69; post = 4.79, SD ± 1.97. Total number of errors committed on a firm surface: pre = 3.6, SD = ± 2.5; post = 4.69, SD = ± 2.5. Total number of errors committed on the foam surface: pre = 9.4, SD = 2.68; post = 11.46, SD = ± 3.99. **Conclusion:** There does not appear to be a correlation between head impact data collected over the course of 1 season (total number of head impacts, average linear acceleration/impact, average HIC score/impact, and average GSI score/impact) and the change in BESS scores observed from pre to post-season. The BESS test may not be sensitive enough to detect balance deficits associated with cumulative sub-concussive impacts. However, the significant increase in the number of errors committed from pre to post season gives support to the recommendation for frequent assessment of baseline levels. **Word Count:** 423