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Hand Dominance and Head Impact Location in Collegiate Ice Hockey

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Ice hockey is a unique, high velocity sport whereby the boards are a part of the playing arena and head impacts with the boards are commonplace. As shot dominance, or handedness, often dictates player position (e.g., right hand shot dominant plays right wing), this could be associated with elevated head impacts to one side of the head since their non-dominant side would be closer to the boards. **PURPOSE:** The purpose of this study was to determine if handedness affects head impact location in collegiate ice hockey players. **METHODS:** 65 NCAA Division III male (36) and female (29) ice hockey players were assessed during the regular ice hockey 2017-2018 and 2019-2020 seasons. Head impact monitoring occurred during each practice and game using G-Force Tracker sensors attached to back of the helmet. Impacts were quantified and classified based on location (Right, Left, Crown, Back) and were confirmed by video analysis. The primary outcome measures were the percentage of the handedness side of the head with two different approaches: 1) handedness side as a percentage of left and right impacts (e.g., right/ (right + left)), and 2) handedness as a percentage of all impacts (e.g., right/ (left + right + front + crown + back)). Linear regressions were performed to determine if handedness predicts the percentage of impacts sustained for each of the outcome measures while controlling for participant gender. **RESULTS:** Participants experienced 90.8 $\pm$ 104.7 head impacts per season (Range: 2 – 567). Men experienced significant more head impacts than women (Men: 133.6 $\pm$ 122.9 and Women: 37.8 $\pm$ 29.5, $p<0.001$, d=1.07). For side head impacts only (right, left), handedness was a significant predictor (48.5% to the non-dominant side, $p=0.012$, $R^2 = 0.069$). Handedness was not a significant predictor of impacts to the dominant side (25.2% to the non-dominant side, $p=0.178$, $R^2=0.034$) amongst impacts to the five potential locations. **CONCLUSION:** Amongst side to side (Right and Left) impacts, players received more impacts on their non-dominant side as opposed to their dominant side. However, shot preference or handedness does not predict location of head impacts on right versus left location, or all five head impact location possibilities (Right, Left, Front, Crown, Back).