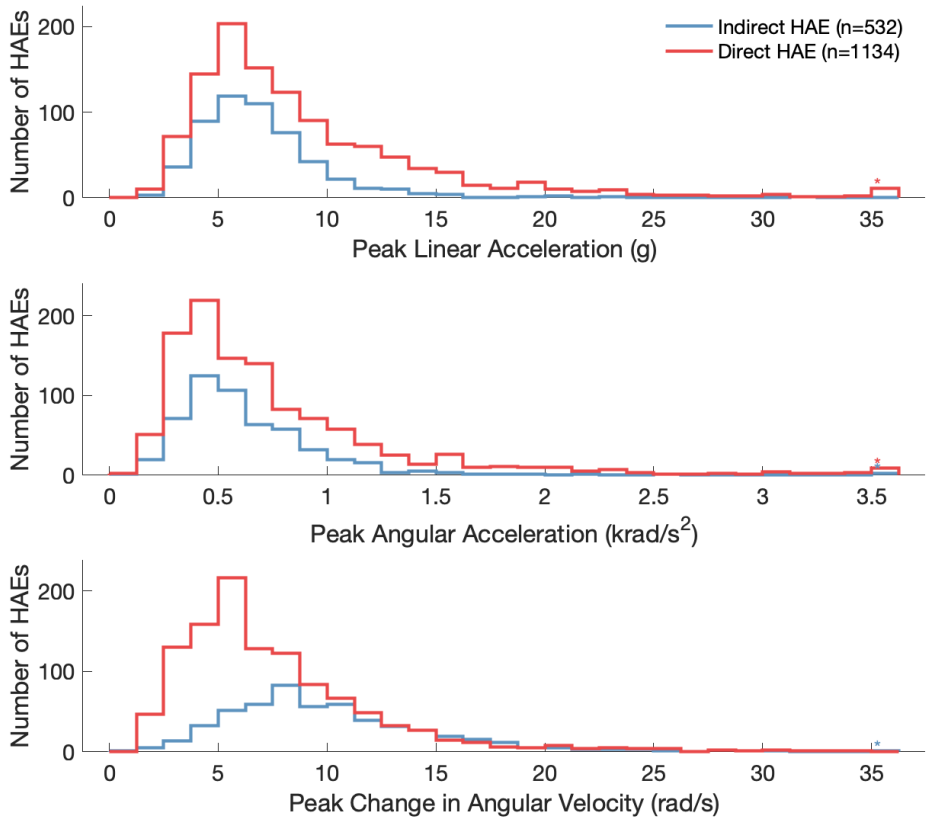

Fig. 1. Histograms of the kinematics of true positive direct and indirect HAEs. HAEs greater than 37.5 g (n=11), 3.75 krad/s^2 (n=11) and 37.5 rad/s (n=3) are not included within the histograms.

IV. DISCUSSION

Clearly, the application of a data acquisition threshold has a large influence on the number of true positive HAEs included in men's professional rugby league datasets. Interestingly, a greater number of indirect HAEs were removed by the 10 g threshold. The omission of lower magnitude HAEs when a data acquisition threshold is applied may withhold vital information on the loads placed on players' brains over their careers. Though, the inclusion of these HAEs can add to the data processing requirements of researchers and iMG technology whilst also likely to positively skew datasets. The clinical relevance of including or omitting these lower end of the spectrum HAEs is still unknown. However, it is needed given the concerns that the number of HAEs a player is involved in over their career can have potential long-term consequences on brain health [5].

An appropriate next step may be to gather a sample of voluntary HAEs from sports currently not associated with long-term brain health issues such as gymnastics and cheerleading where high inertial head loading may occur from voluntary movements. Non-contact versions of sports such as tag rugby and flag football would also be beneficial to include in the dataset. The analysis should be conducted on male and female cohorts as different thresholds could exist. It may be the case that linear acceleration is not the best metric for identifying lower thresholds for HAEs, particularly given the brains susceptibility to rotational motion [6].

V. REFERENCES

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