Simulation of puck flight to determine spectator safety for various ice hockey boards

Abstract:
The boards of ice hockey rinks are equipped with protective glass to prevent the spectators from being hit by the puck. According to international rules, the minimum height of the board with protective glass is 197 cm. This is not high enough to protect the spectators from puck-related injuries, and severe accidents have occurred in the past. This study investigates what increase in the height of the safety glass is necessary to reduce the risk of severe puck-related injuries to spectators. Puck flights towards the safety board are simulated, based on initial take-off conditions of the puck, by top-level players. The simulations show that increasing the security glass from a board height without any protective glass of 117 cm to a total band height of 380 cm will lower the relative frequency of shots with a potential to hit a spectator by 80%.