THE EFFECT OF STICK CURVATURE ON WRIST SHOT EXECUTION OF PEEWEE AND JUNIOR AGED ICE HOCKEY PLAYERS

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INTRODUCTION: Research on stick curvature is very important to the understanding of its effect on shot velocity and accuracy. In the past, studies have been focused on analysis of stick rigidity, skating and skate design (Lamontagne et al., 2001). The purpose of the present study is to evaluate the effects of stick curvature on the execution of a wrist shot by Novice, Atom, Peewee, Bantam and Junior aged ice hockey players. For the purpose of this work in progress, only the Peewee and Junior aged players will be included in the data analysis.

METHODS: Nine Junior (19.8±1.3yrs) and eight Peewee hockey players (12.0±1.0yr) wore their own equipment and performed the skill on a synthetic ice surface. Following an accommodation period of 8mins/blade, the subjects executed a total of 25 wrist shots from a distance of 6m at 4 targets (0.3mX0.3m) positioned in every corner and a 5th (0.15m ∅) positioned in the center at a height of 0.15m in a standard hockey goal. Five shots were performed per target, with five different blade curvatures (straight, 1cm, 1.5cm, 2.5cm, own stick). Shot velocity was measured with a Sports Radar 3400 (Radar Sports, U.S.A.) and ground reaction forces were measured by a force platform (Kistler Instrument Corp., U.S.A.) placed under the area from which the puck was shot. Orientation of the positive anterior-posterior forces was directed towards the goal.

RESULTS AND DISCUSSION: For the average velocity of the wrist shots, there was a statistically significant difference ($p>.01$) in the Junior category between the straight blade (17.0±2.0 m/s) and the player's own stick (18.6±2.2m/s). For the accuracy, significant differences ($p>.05$) were found between the straight blade (29.3%) and the 1cm blade (38.2%). There was a significant difference ($p>.05$) with the straight blade between the velocity of successful (17.6±1.9m/s) and non-successful shots (16.9±2.1m/s). The Peewee category showed significant differences ($p>.01$) in average velocity between the straight (12.0±1.8m/s) and 1cm curved blade (13.5±1.8m/s). Comparison of the two categories as well as the ground reaction force data analysis remains to be completed.

CONCLUSION: According to the preliminary results of this work, blade curvatures have an effect on skill execution of the wrist shot. In the case of the Junior players, an increase in blade curvature up to 1cm had a positive effect on accuracy and velocity when compared to the straight blade. On the hand, younger players only improve the velocity of the wrist shot when comparing the same two types of curvatures. With blade curvatures exceeding 1cm, no extra advantages are shown. Consequently, the use of appropriate equipment is important to optimize their development.

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