Hand Dominance Versus Stick Dominance in Youth Hockey

Owen Ala MD,[1] Lee Swiderek BS,[2] Eric Benson MD[1]
1. UNM Department of Orthopaedics & Rehabilitation 2. UNM School of Medicine

Hypothesis

Most American hockey players use a right hockey stick in contrast to other countries where most hockey players use a left stick.[1-3] We hypothesize that most Americans use the wrong hockey stick and that a right hand dominant hockey player should use a left hockey stick and vice versa to gain an inherent performance advantage by having the dominant hand controlling the stick.[4-7]

Methods

A novel test was created that simulates the back and forth motion of the hockey stick when handling a puck by moving the wrist into extreme supination and pronation (Image 1). The study tested a pediatric population ages 5-10 who had never participated in a stick sport (baseball, golf, hockey, etc.) to prevent stick dominance bias. Participants were tested with the stick in the left and right stick positions, and asked to hit targets placed on two platforms. The number of repetitions in 20 seconds and accuracy were recorded. Researchers were blinded to the participant's hand dominance. Consents to participate were obtained from the parents of each participant.

Repeated measures analysis of covariance (ANCOVA) was used to compare the number of hits with right stick vs. left stick, controlling for hand dominance, age, and gender as covariates.

Results

Forty participants were recruited ages 5 to 10 years old (average age being 7.2 years). There were 13 male and 27 female participants, of which 6 were left handed versus 34 right handed participants.

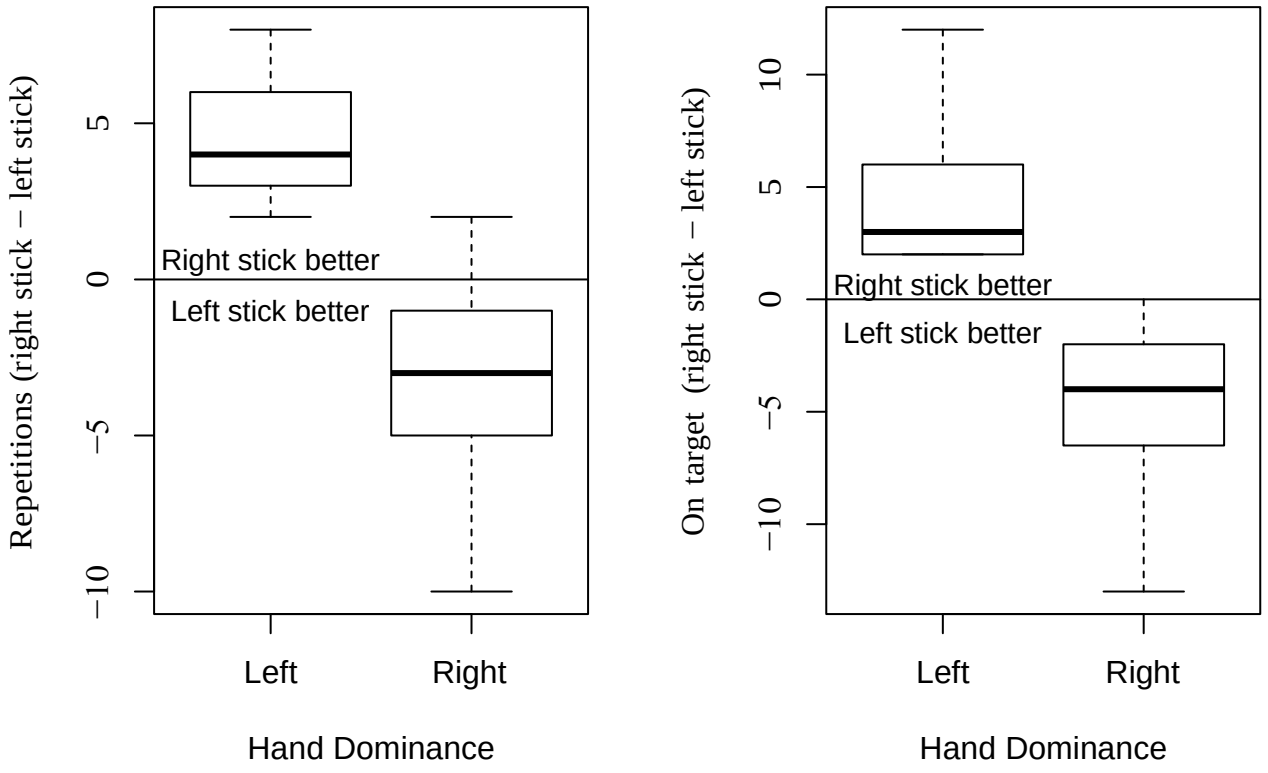

Figure 1: Results of all participants seperated by hand dominance. Both repetitions in 20 seconds and on target hits in 20 seconds were performed better by left hand dominant participants using a right stick or right hand dominant participants using a left stick.

Image 1: Study participant performing test with a left hockey stick (stick held to the left of his body). He alternates back and forth between hitting the white target on the box to his right and the red target on the box to his left. Notice the extreme supination and pronation of his top hand (right hand). The test is designed to mimic the supination and pronation and back and forth motions used while playing hockey.

Of the 34 right handed participants, all but 3 performed better with the hockey stick in the left position, with a 95% confidence interval of 2.3 to 4.2 ($p<0.0001$). All 6 left handed participants performed better with the hockey stick in the right position with a 95% confidence interval of 2.2 to 6.7 ($p<0.0001$). ANCOVA was used to simultaneously fit gender, age, and hand dominance to difference in repetitions and strikes on target between right and left sticks. Gender ($p=0.61$) and age ($p=0.73$) were not significant predictors of difference; hand dominance ($p<0.0001$) was the only significant predictor (Figure 1).

Summary Points

Right handed hockey players should use a left hockey stick and left handed players should use a right hockey stick. The hand situated at the top of the hockey stick exerts a greater degree of control and accuracy, making the dominant hand the logical choice; therefore, most Americans are using the wrong handed stick.

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