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An Investigation into the Relationship between Reactive Strength and the Game Realistic High-Speed Movement among Male NCAA DII Lacrosse Players

CONFERENCE ABSTRACT

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Abstract

High-speed movement is a critical physical component of field sports because these sports require dynamic movements performed at high velocity. Among lacrosse players, these high-speed movements are distinguishing factors between starters and non-starters. The reactive strength index (RSI & RSI_{mod}) can be used to quantify the stretch-shortening cycle, which is a mechanism that allows for the rapid muscular contractions required to sprint and change direction at a high velocity. This research aimed to recruit 30 NCAA lacrosse players from the Barton Men's Lacrosse team to participate in two data collection sessions. High-speed movement will be measured using the Change of Direction and Acceleration test (CODAT). Brower timing gates will be used to record the time taken to complete each run. Athletes will be given two acclimatization trials, and following three maximal efforts, their fastest time will be used in data analysis. RSI and RSI_{mod} will be measured using PASCO force platform data from both bilateral and unilateral drop jumps and countermovement jumps. RSI and RSI_{mod} will be calculated by dividing the values of jump height by contact time or movement time. The best RSI and RSI_{mod} scores will be used in a two-tailed Pearson bivariate correlation to assess the strength of their

relationship with CODAT times. Unilateral RSI/RSI_{mod} values from dominant and non-dominant limbs will be used to calculate the symmetry index (SI) of each athlete. The SI will then be compared to the athletes CODAT time to evaluate the relationship. Existing literature would suggest this research will find a moderate to strong negative correlation between high-speed movements and both measures for reactive strength. It is also expected that the athletes with lower SI values will perform better during high-speed movement trials.

Keywords: lacrosse, reactive strength index, change of direction and acceleration test