ABSTRACT

**Background:** Strains of the adductor muscle group of the hip are common amongst ice hockey players. The ratio of isometric strengths between the hip adductors and abductors has been offered as a risk factor for hip adductor strain; however, there is no description for how the ratio between hip adductor and abductor strength varies as a function of hip abduction angle.

**Hypothesis/Purpose:** The aim of this study was to determine the influence of hip joint abduction angle on measured ratios of hip adduction to abduction torque in experienced, recreational, male hockey players. The primary null hypothesis for this study was that hip joint abduction angle would not influence hip adduction-to-abduction torque ratios in male hockey players.

**Study Design:** Counterbalanced observational cohort.

**Methods:** Twelve uninjured, male, recreational hockey players, with a minimum experience level of midget AAA/minor competitive or equivalent. Participants performed maximal isometric side-lying hip adduction and abduction exertions against a rigidly constrained load cell at 0, 10, and 20 degrees of hip abduction. Measured peak torques from each exertion were used to derive the hip adductor-to-abductor torque ratio. Kinematics of the trunk, pelvis, and lower limbs were monitored using an optoelectronic motion capture system.

**Results:** Adductor-to-abductor torque ratio increased from 1.49 (SD = 0.20), to 1.92 (SD = 0.20) and to 2.30 (SD = 0.54) with successively increasing hip abduction angle \((p < 0.001)\). Peak torque was significantly different between all angles \((p \leq 0.016)\) except between adduction exertions performed at 10 and 20 degrees of abduction \((p = 0.895)\). Small changes in hip angle during the exertion were coincident with exertion direction, which confirmed the isometric nature of the task.

**Conclusion:** Hip abduction angle has a significant impact on the measured adductor-to-abductor torque ratio. The ratio increased due to a combination of increased adductor torque and decreased abductor torque as the hip abduction angle increased.

**Level of Evidence:** 2b

**Keywords:** Athletes, isometric dynamometry, groin pain, hip injuries, hip strength