

Assessment of Lower Extremity Strength Values In Male Collegiate Ice Hockey Players

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Introduction

Like most sports, ice hockey is an impressive combination of numerous variables. Players must have incredible balance, speed, and stamina, on top of being athletic enough to maneuver each task whilst wearing over twenty pounds of equipment. While ice hockey has been gaining popularity in the United States, not much research has been done on strength differences between different levels of hockey. The goal of this study was to expand on this limited database of knowledge and compare the strength differences between collegiate hockey players at the varsity and club levels. We hypothesized that due to the rigorous and elite nature of the NCAA Division I (D1) sports, D1 hockey players would have higher strength outputs for the ankle and knee compared to club hockey players.

Methods

Eighteen D1 hockey players (age = 21.7 ± 1.0 y; height = 179.8 ± 6.8 cm; weight = 83.3 ± 7.0 kg) and 14 club hockey players (age = 20.9 ± 1.6 y; height = 176.5 ± 6.4 cm; weight = 76.0 ± 11.8 kg) were tested using a HUMAC NORM Isokinetic Dynamometer (Figure 1). Signed consent and demographic data were collected prior to testing. Participants began by completing a standardized warm-up. Ankle inversion and eversion strength was tested at speeds of 30°/sec and 60°/sec. Knee flexion and extension strength was tested at speeds of 60°/sec and 180°/sec. Each test consisted of five warm-up repetitions followed by a 45-second break. After this break, the athlete completed five repetitions at maximum effort. Tests were done on both dominant and non-dominant limbs.

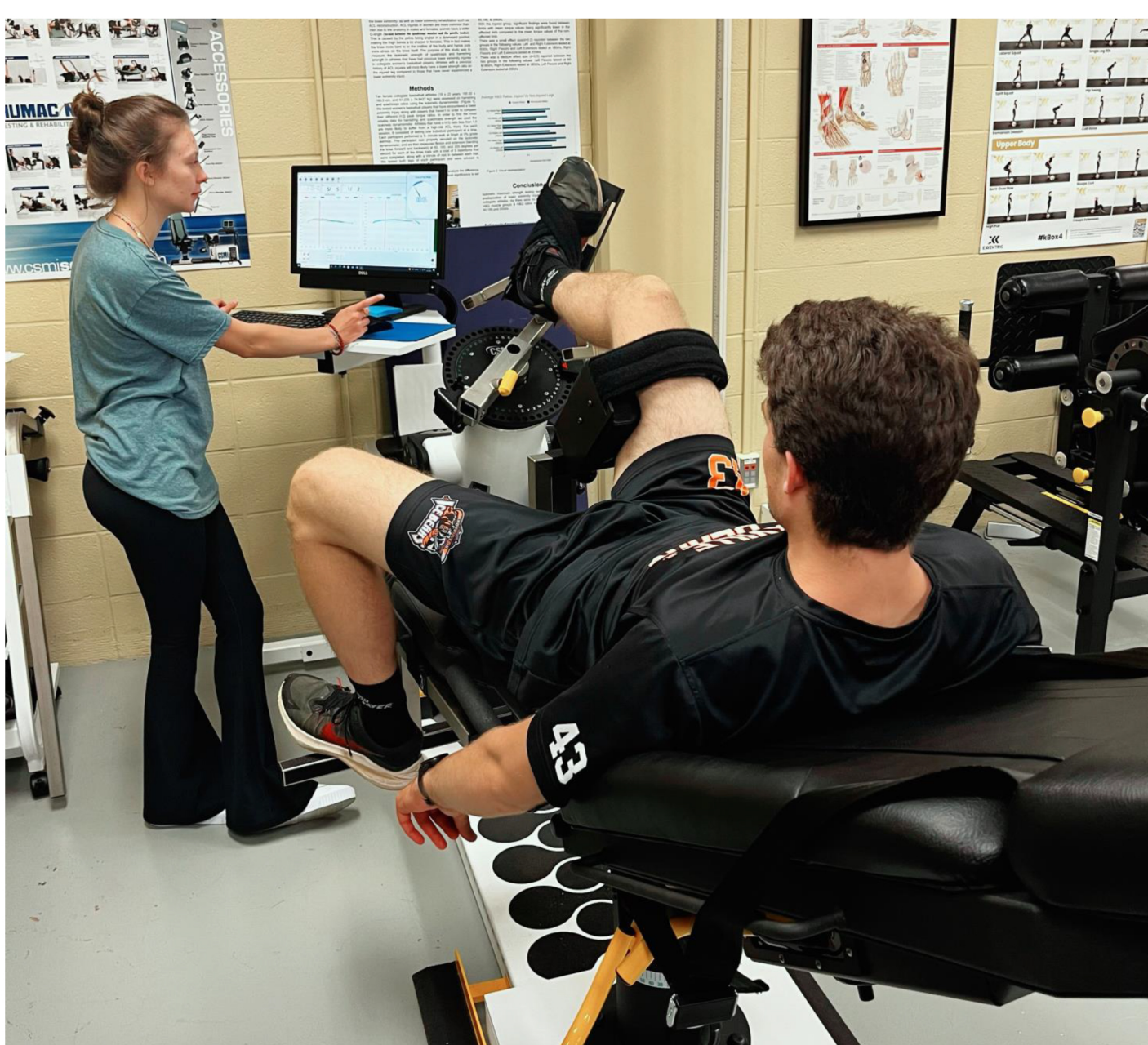
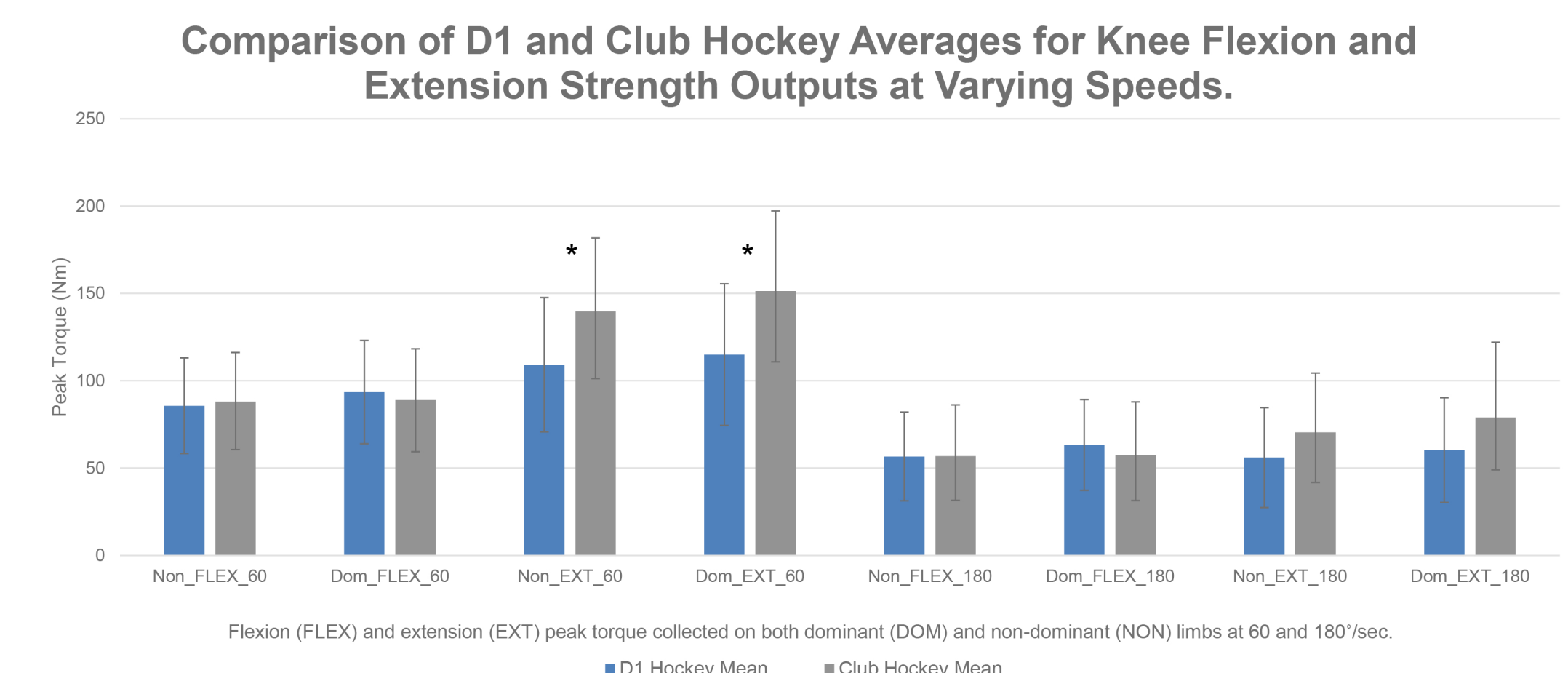
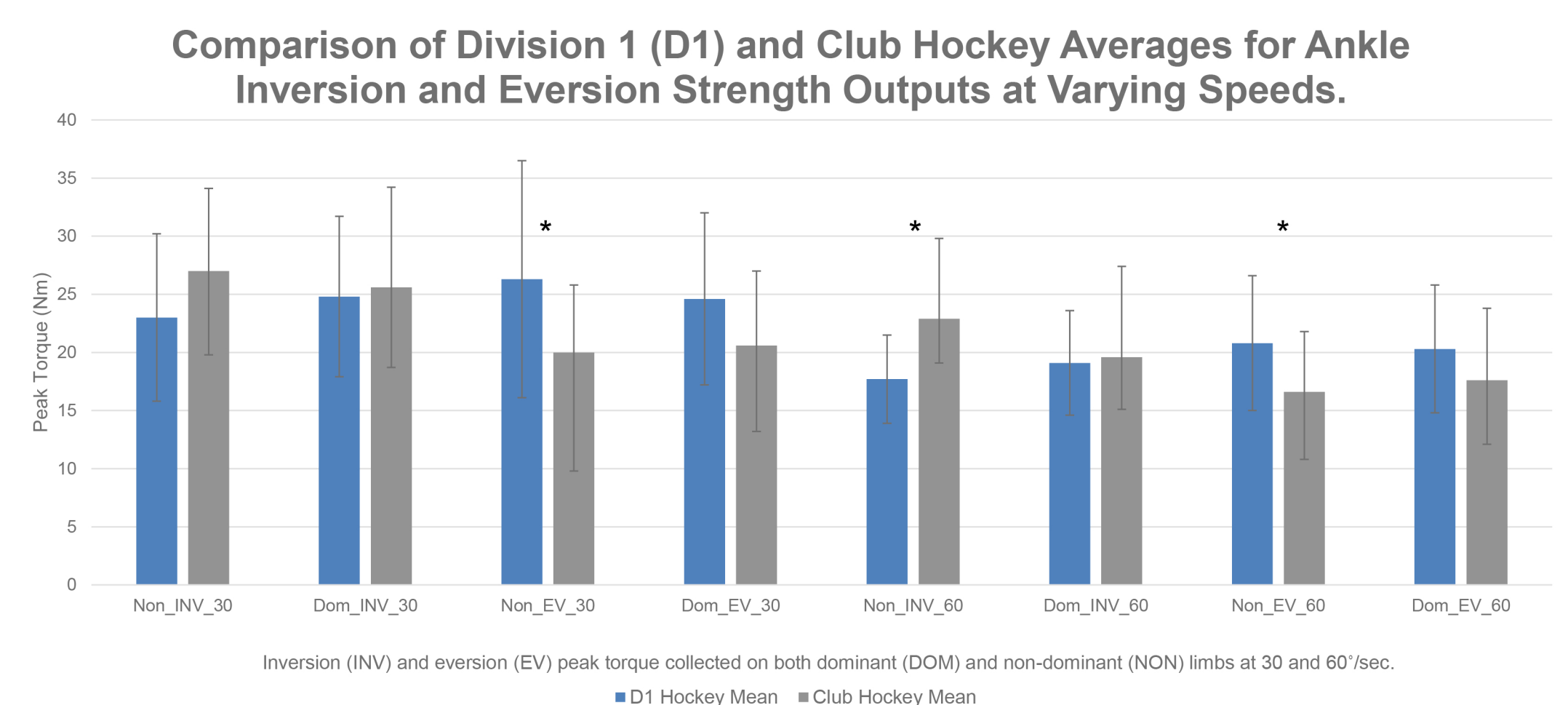


Figure 1: Participant performing ankle testing on the isokinetic dynamometer.

Results

- D1 players had significantly greater non dominant ankle eversion strength at speeds of 30°/sec ($p=0.047$) and 60°/sec ($p=0.043$) than club players.
- Club level players had significantly greater ankle inversion strength outputs of the non-dominant limb at 60°/sec ($p=0.012$).
- Club level players had significantly greater knee extension outputs at 60°/sec for both the non-dominant ($p=0.040$) and dominant limb ($p=0.024$).
- There were no significant differences found between knee flexion at either testing speed.



Conclusion/Application

Surprisingly, club hockey players had significantly greater non-dominant ankle inversion and knee extension strength outputs when compared to their D1 counterparts. This could be due to multiple factors. The club team has a wide range of athletic ability; this discrepancy could cause the club team to appear to have higher strength outputs due to a select few team members. Because of this variation, club hockey strength may be more heterogenous. Other factors such as fatigue and time of testing could have also played a role. Coaches should use this information to fine-tune workouts at both levels and should focus on evenly strengthening both dominant and non-dominant limbs. This homogenous approach can be used to help prevent injuries due to bilateral imbalances.

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