Seasonal Improvements in Lower-Body Power in Collegiate Women's Ice Hockey Athletes

Molly K. Henderson, Olivia J. Grabianowski, Quinn M. Mclaren, Kyle L. Sunderland
Department of Kinesiology, Exercise Science

Introduction

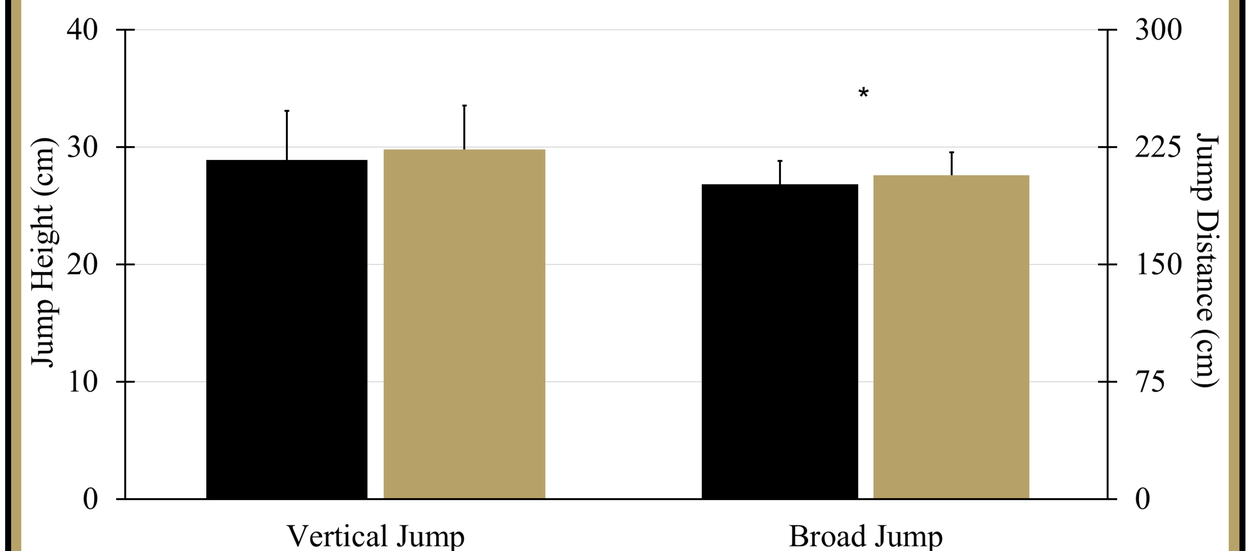
- Lower body output is a critical component when it comes to the success of an ice hockey player.
- With high numbers of explosive bouts occurring in hockey, lower body power directly influences sprinting, directional changes, and game performance.
- Decreased lower body output is a potential risk to lower body, injuries that are commonly seen in hockey.
- The anterior cruciate ligament (ACL) is one of the most prevalent injuries seen at the women's collegiate level and the risk can be avoided with the necessary lower body workouts.
- Proper explosive trainings need to be enforced before, during, and after the season to ensure the readiness of each athlete.
- There is limited research regarding collegiate female ice hockey players throughout the season.
- It is important to notice that both vertical jump and broad jump tests are tested at the National Hockey League (NHL) and Professional Women's Hockey League (PWHL).

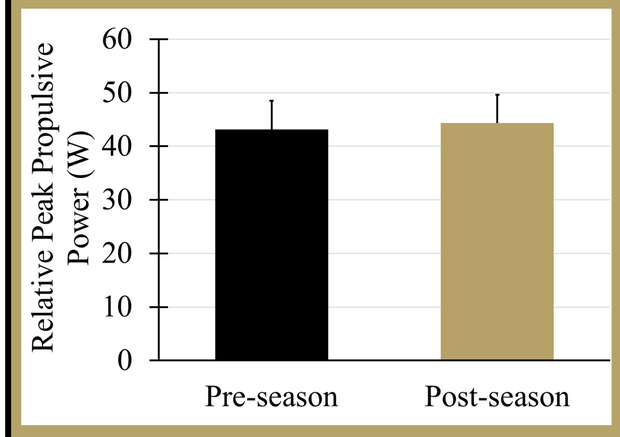
Purpose

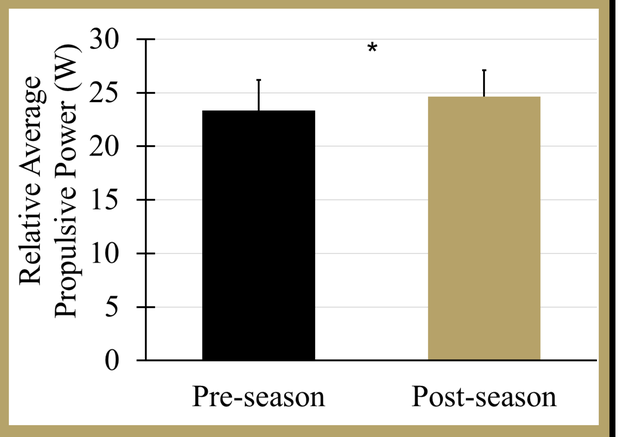
- To examine lower body power output changes from preseason to postseason using broad jump (BJ) and countermovement jump (CMJ) assessments in healthy female collegiate ice hockey athletes.

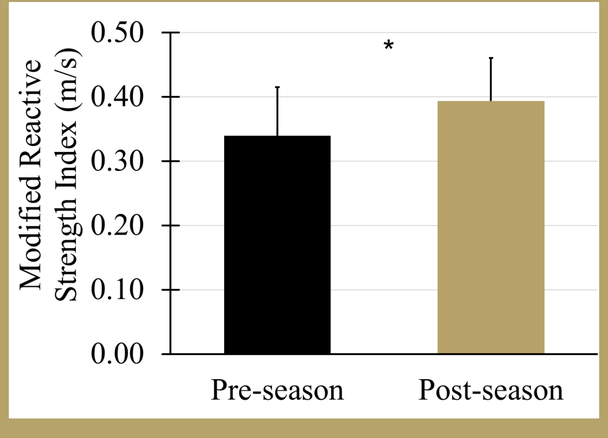
Methods

- Fifteen female collegiate ice hockey athletes (169±5.6 cm, 65.5±9.1 kg) volunteered for this study.
- All tests were conducted at a consistent time of day, starting with a warmup and followed by the CMJ and BJ.
- Peak output was calculated using jump distance (BJ)
- Peak output was calculated using force-plate derived metrics (CMJ)
- Paired T-tests were used to compare pre and post season data
- Significance set at $p < 0.05$









***Asterisk signifies graphs of significant changes**

Results

- There was no significant change in CMJ jump height from pre- to post-season (28.9 ± 4.2 cm vs. 29.8 ± 3.7 cm, p=0.123)
- There was no significant change in Rel. Peak Propulsive Power from pre- to post-season (43.1 ± 5.3 W vs. 44.4 ± 5.3 cm, p=0.053).
- There was a significant change in Rel. Avg Propulsive Power (23.3 ± 2.8 W vs. 24.7 ± 2.4 cm, p=0.002).
- There was a significant change in Reactive Strength Index-Modified (RSI-mod) from pre- to post-season (.34 ± .08 AU vs. .39 ± .07 cm, p=0.000).
- There was a significant change in Broad Jump distance pre- to post-season (201.2 ± 15.0 cm vs. 207.1 ± 14.5 cm, p=0.004).

Conclusions and Applications

- Overall, lower body explosive power outcomes increased from pre- to post-season.
- The results suggest that the power adaptations are to be contributed to the explosive efforts done throughout the season.
- Vertical jump height may not have increased due to a significant increase in body mass in the post season.
- This may result in a further dive into the explosive power work that was done, to build and improve on for the upcoming years.
- Therefore, it is important for lower body power to be assessed all year round to track jump metrics, explosive power across a season, and body mass fluctuations.
- Proper nutrition and diet habits should be incorporated when seeing the significant increase in body mass following the competitive season.

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