Maintenance of Anaerobic Power Across a Competitive Season in Collegiate Women's Ice Hockey Players

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Introduction

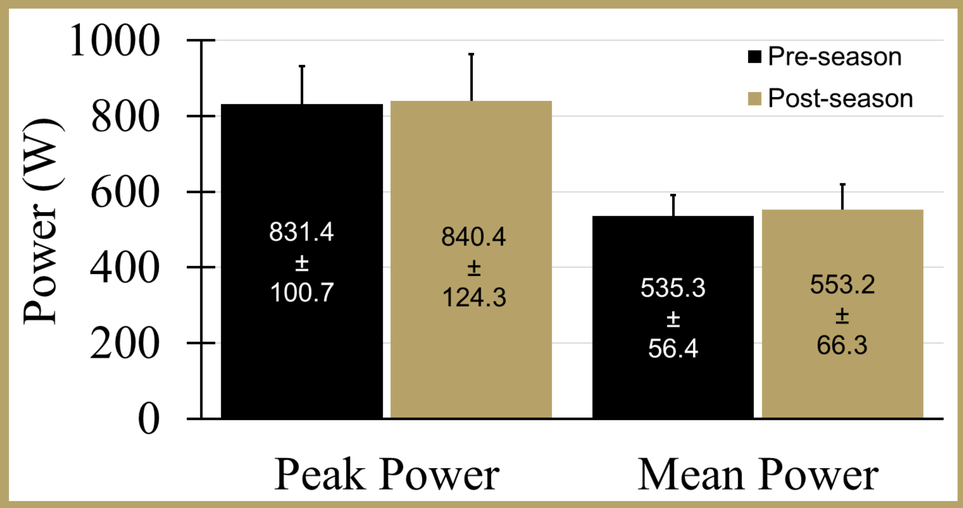
- Female athletes playing college-level ice hockey have a season of 30+ games over a 6-month period.
- Hockey is a long season with immense physical strain put on the body.
- Hockey consists of multiple short bursts of maximal energy with an average shift lasting 45 to 90 seconds, rest times can vary between shifts over the 60-minute game.
- It is important that power, especially in the lower body, does not decrease throughout the duration of the season.
- The Wingate test was developed to measure lower extremity power output which is especially important in sprinting or power-driven sports.
- Most research studies in ice hockey consist of male participants and therefore lacks the presence of female-based studies.
- It is important to investigate power output changes in female hockey players to further understand athlete strain over the duration of a season.

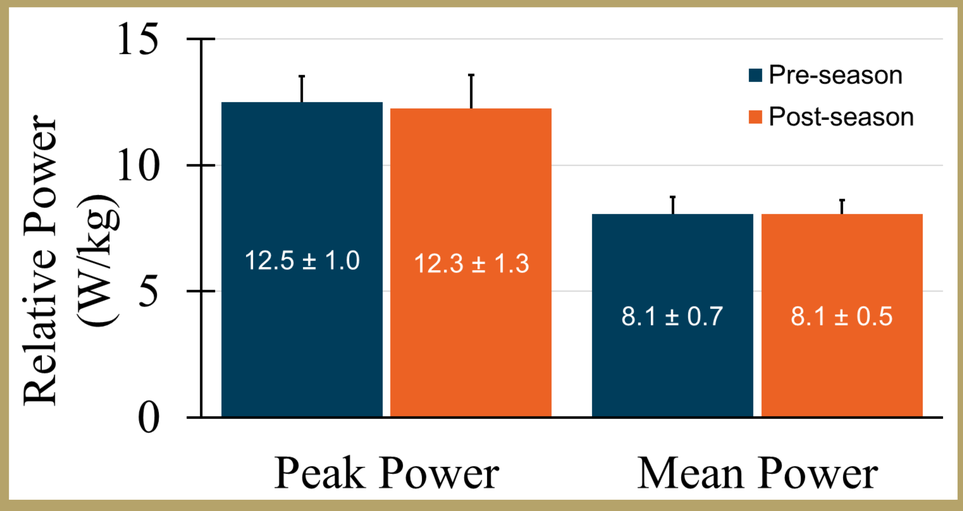
Purpose

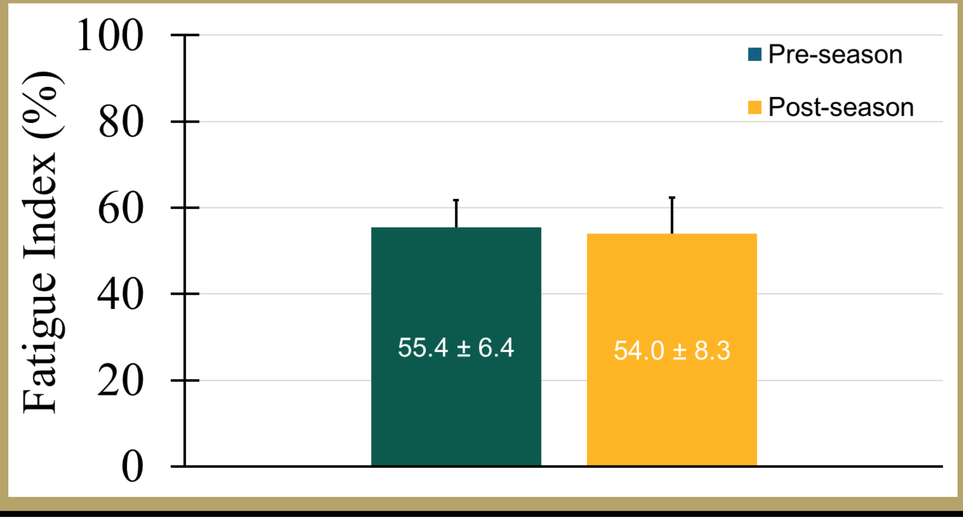
- To examine anaerobic power and capacity in women's college ice hockey players from pre-season to post-season.

Methods

- Fourteen female collegiate ice hockey athletes (168.2 ± 5.4 cm , 65.5 ± 9.1 kg) participated in this study.
- The first Wingate test was performed prior to the start of the team's first competitive season and the final test completed three weeks following the final game.
- Athletes completed a standardized warm-up including a short sprint on the cycle ergometer.
- Starting from a rolling start (100-110 RPM), the athlete completed a 30-second maximal effort sprint against 9% of body weight resistance.
- Power output was recorded in real-time.
- Absolute (W) and relative ($W \cdot kg^{-1}$) peak and mean power (W) and fatigue index (%) were compared between the pre-season and post-season.







Results

- Significance was set at $p < 0.05$
- There was no significant change in Absolute Peak Power from pre- to post-season (831.4 ± 100.7 W vs. 840.4 ± 124.3 W, p=0.648).
- There was no significant change in Relative Peak Power from pre- to post-season ((12.5 ± 1.0 W vs. 12.3 ± 1.3 W, p=0.280).
- There was no significant change in Aboslute Mean Power from pre- to post-season (535.3 ± 56.4 W vs. 553.2 ± 66.3 W, p=0.051).
- There was no significant change in Relative Mean Power from pre- to post-season (8.1 ± 0.7 W vs. 8.1 ± 0.5 W, p=0.957).
- There was no significant change in Fatigue Index from pre- to post-season (55.4 ± 6.4 W vs. 54.0 ± 8.3 W, p=0.466).

Conclusions

- Power did not increase nor decrease throughout the duration of the season but rather all variables were maintained when comparing pre- to post-season.
- These results highlighted female collegiate ice hockey lower body power and can be further investigated to determine other factors that play a role in maintaining power throughout a season such as nutrition, strength and conditioning, and injury monitoring.

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