**A Novel Test Protocol To Determine Key Indicators Of Endurance Exercise Ability**

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**PURPOSE:** Critical Power (CP) represents the highest exercise intensity that can be sustained for a prolonged period of time, and is an important determinant of endurance performance. Thus, the determination of CP traditionally requires multiple bouts of exhaustive exercise, performed on separate days. The aim of the present study was to design an exercise protocol from which CP, the work done above CP (W') and peak O2 uptake can be determined during a single visit to the laboratory.

**METHODS:** Twenty-three Pee wee and Bantam hockey players (ages 11-14) were recruited, with 20 participants completing the study. Pre- and post-testing consisted of an on-ice, 4-day training period, a 6.1m acceleration test and a 15.2m top-speed test. The training protocol consisted of eight sessions of five, BungeeSkate™ training exercises per session, two times per week for a 4-wk period.

**RESULTS:** The peak speed of this study showed that speed (7.14 ± 0.38 to 6.84 ± 0.33 sec) and top speed (2.11 ± 0.12 to 1.99 ± 0.17 sec) were significantly increased (p < .05) by 4.2% and 4.3% from pre- to post-testing in the training group. Acceleration was also slightly improved (1.48 ± 0.1 to 1.43 ± 0.13 sec) in the training group from pre- to post-training but not significantly.

**CONCLUSIONS:** A 4-wk BungeeSkate™ training intervention can improve acceleration and speed in youth hockey players. This training method could be a valid adjunct to existing strategies to improve skill development in hockey and shown to improve speed and acceleration in relatively short training sessions. This may be most advantageous for hockey coaches and players who are looking to maximize training benefits with limited ice time.

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**Use Of The Verification Phase For Confirming True VO2max In Sedentary Obese Adults**

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**PURPOSE:** The use of a constant-load bout of exercise to exhaustion shortly following a standard VO2peak test to verify VO2max has not been evaluated in sedentary obese adults.

**METHODS:** Sixteen obese (BMI = 35.2 ± 4.7 kg/m2; Age = 33.4 ± 7.8 yr) sedentary men (n=8) and women (n=8) first performed a ramp style VO2peak test (Ramp) on a cycle ergometer. After a 5:10 min active recovery period, subjects performed a constant-load bout to volitional fatigue at 100% of the maximum power achieved on the Ramp VO2peak test to verify attainment of true VO2max (Verification). Dependent t-tests, coefficients of variation (CV), inter-class correlation coefficients (ICC), and Bland-Altman plots were used to compare outcomes between the two tests.

**RESULTS:** One subject refused to perform the verification phase and two others did not complete a long enough verification phase (<90 seconds). Thus 13 subjects were included in data analysis. Maximum attained VO2 did not differ between the two tests (Ramp: 2.10 ± 0.62 L/min, Verification: 2.19 ± 0.56 L/min; P = 0.109).

**CONCLUSIONS:** A single exercise-test session, comprising an incremental exercise test followed shortly by a 3-min “all-out” cycling bout (CP3+R; 2) 3-min “all-out” cycling bout without the preceding Ramp (CP3). CP was determined as the mean power output attained during the final 30 s of CP3+R and CP3, and peak O2 uptake as the highest O2 uptake value attained during Ramp and CP3+R. W was calculated as the external work (in kJ) performed above CP during the the 3-min “all-out” cycling bout.

**RESULTS:** CP values from CP3+R (237 ± 121 W) and CP3 (239 ± 121 W) were not significantly different (mean difference: 2 ± 6 W; p=0.45) and were highly correlated (intra-class correlation coefficient, ICC = 0.998, 95%CI: 0.994-1.000). W was also not significantly different between tests (mean difference: 0.54 ± 1.41 kJ; p=0.26). The peak mean O2 uptake for Ramp (50.6 ± 13.0 ml kg·1-min·1) and CP3+R (51.9 ± 12.1 ml kg·1-min·1) were highly correlated (ICC = 0.981, 95%CI: 0.969-0.995) and were not significantly different (p=0.10).

**CONCLUSIONS:** A single exercise-testing session, comprising an incremental exercise test followed shortly by a 3-min “all-out” cycling bout, provides a practical and valid approach to individual's CP, W and peak O2 uptake.