The effects of supplemental carbohydrate ingestion on intermittent isokinetic leg exercise

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Background: The purpose of this investigation was to examine the effects of carbohydrate (CHO) supplementation on isokinetic leg extension/flexion exercise performance, blood glucose responses, blood free fatty acid (FFA) responses, and blood lactate (La) responses.

Methods: Eight resistance trained males (mean ± SEM, age: 23.7 ± 1.3 yrs, height: 180.0 ± 3.5 cm, body mass: 94.9 ± 4.9 kg) participated in a randomized, double blind protocol with testing sessions separated by 7-d. subjects were given CHO or placebo (P) while performing 16 sets of 10 repetitions at 120°s^-1 on a Cybex isokinetic dynamometer. Performance variables measured were; total work (TW), average work (AW), peak torque (PT) and average torque (AT). Plasma glucose (PG), FFA, and La were measured prior to testing (PRE), after set 8 (MID), and 16 (POST).

Results: Results indicated that the CHO treatment elicited significantly (p<0.05) more TW (CHO: 41.1 ± 3.9 kJ; P: 38.1 ± 3.9 kJ) and AW (CHO: 2.6 ± 0.2 kJ; P: 2.4 ± 0.2 kJ). There were no differences (p < 0.05) between treatments for PT of the hamstrings (CHO: 91.6 ± 6.5 Nm; P: 87.4 ± 8.5 Nm) and quadriceps (CHO: 129.7 ± 9.5 Nm; P: 123.0 ± 10.6 Nm). The AT of the hamstrings (CHO: 77.8 ± 5.2 Nm; P: 75.7 ± 8.7 Nm) and quadriceps (CHO: 116.9 ± 8.9 Nm; P: 110.0 ± 8.5 Nm) were not statistically difference (p < 0.05) between the treatments, PG was significantly higher at the POST blood draw in the CHO treatment. No significant differences (p > 0.05) were observed between the treatments for FFA and La concentrations.

Conclusions: The data d=from this investigation indicate that the use of CHO supplementation during isokinetic leg exercise allows for the performance of more work.