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### **Glycemic Response to Recovery Meal Differs following Concentric and Eccentric Exercise Bouts**

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#### *Abstract:*

Exercise-induced muscle damage causes temporary insulin resistance, suggesting that recommended carbohydrate recovery foods may not be advantageous in some circumstances. Higher carbohydrate consumption after exercise may promote inflammation and decreased insulin sensitivity in individuals at greater risk for metabolic diseases. **PURPOSE:** To determine post-exercise recovery meal influence on insulin and glucose response in women with lower body fat percentages. **METHODS:** Women (n=7, 26-39 years of age, BMI 19.1-32.3 kg/m<sup>2</sup>, body fat 20.0-47.4%) participated in a randomized cross-over study and completed 45 minute bouts exercise conditions, including eccentric walking, concentric walking, and a no exercise control. Following exercise a controlled post-exercise mixed meal tolerance test (MMTT) consisting of 76% carbohydrate, 18% protein, and 6% fat was consumed. The MMTT was performed 30 minutes post exercise with glucose measured at 0, 15, 30, 60, 45, 90, 120 minutes, and insulin measured at 0 and 60 minutes. A repeated measured ANOVA was used to compare glucose 30 minutes post exercise before, peak glucose during, and area under the curve for glycemic response to MMTT, and insulin response 60 minutes post MMTT. **RESULTS:** Blood glucose area under the curve was lower (p<0.05) for concentric exercise (Mean ± SEM; 12,269 min·mg/dL ± 340 min·mg/dL) compared to eccentric exercise (13,331 min·mg/dL ± 486 min·mg/dL) conditions. There was a trend (p=0.087) for glucose to be lower before the MMTT in the concentric (87.0 mg/dL ± 2.5 mg/dL) compared to eccentric (95.4 mg/dL ± 1.7 mg/dL) exercise. There also was a trend (p=0.087) for peak glucose during the MMTT to be lower during the concentric (127.3 mg/dL ± 3.6 mg/dL) and eccentric (142.1 mg/dL ± 4.8 mg/dL) exercise conditions. There was no significant difference in insulin levels measured 60 minutes after consumption of the meal between concentric (36.6 µIU/mL ± 9.0 µIU/mL) and eccentric exercise (36.0 µIU/mL ± 4.9 µIU/mL). **CONCLUSIONS:** Blood glucose responses following a recommended post exercise recovery meal were similar between subjects, but were lower following concentric exercise compared to eccentric exercise.

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