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The Influence of Caffeine on Resistance Exercise Performance and Post-Exercise Glucose Control

Daniel Hauck, William Braun, FACSM. Department of Exercise Science, Shippensburg University, Shippensburg, PA

PURPOSE: To study the effects of oral caffeine on resistance exercise performance and post-exercise glucose control in physically active young adults. **METHODS:** Seven volunteers participated in this study. Subjects completed four experimental trials. Each trial involved placebo (PL) or caffeine (Caf) consumption (4mg/kg of body weight) 30 min prior to testing. For each trial, subjects consumed a 25% glucose solution providing 1g/kg of glucose. Two resting trials (Rest Caf and Rest PL) and two exercise trials (Ex Caf and Ex PL) were performed. For exercise trials, the 75 min oral glucose tolerance test (OGTT) was conducted upon completion of the lifting protocol. The resting trials consisted of the OGTT. For Ex trials, subjects completed four sets (6 reps/set) of knee extension and biceps curl using the 10-RM load. The fifth set for each lift was completed to fatigue. Additional measures included blood pressure, heart rate, grip strength and blood lactate. **RESULTS:** Area under the curve (AUC) for glucose was 7.5% > than Ex PL; Rest Caf was 7.3% > than Ex Caf; and Rest PL was 3.2% > than Ex PL. No significant difference between treatment or interactions for blood glucose (BG) were present. Blood Lactate (mmol/L) was significantly greater for the Ex Caf condition (7.9 vs. 5.8 in Ex PL condition). Rest Caf mean arterial pressure (MAP) tended to be higher than Rest PL ($p=0.053$), Ex Caf MAP tended to be higher than Rest PL ($p=0.061$). No significant difference was present exercise heart rate or in repetitions to fatigue. There was a significant increase in handgrip performance from pre to post-exercise for both treatments. **CONCLUSION:** Caffeine ingestion was not found to influence resistance exercise performance; however, it was associated with a mild, non-significant reduction in glucose control during the post-exercise OGTT. The influence of caffeine on resistance exercise and post-exercise glucose should be investigated further with a larger sample size.