

Effects of Exercise Intensity on Post-Exercise Oral Glucose Tolerance Test Response

Urland, C., Bennett, W., Chattin, K., DeFrancisco J., Paulson S., Braun W. (FACSM)
Department of Exercise Science, Shippensburg University, Shippensburg PA

Glucose is an essential energy source for working muscle. Higher intensity exercise will increase the amount of glucose needed to fuel the working muscles. Whether exercise intensity affects blood glucose regulation during recovery from exercise is of interest.

PURPOSE: To examine whether fixed distance exercise (walking vs. running) causes differences in oral glucose tolerance test (OGTT) response following the exercise.

METHODS: Seven participants performed two exercise trials, consisting of one trial of running (7.5 mph for 3 miles using 2-min intervals with 2-min recovery segments) and one trial of continuous walking (4 mph for 3 miles). Each trial day, participants arrived having fasted for at least four hours prior to testing. Participants ingested 75 mg of dextrose, in 300 ml of water, immediately following completion of the assigned exercise. Blood glucose (BG) was sampled every 15 min over a 75-min OGTT period. Trial order was counter-balanced. **RESULTS:** VO_2 , HR, RER, and RPE for the running condition were significantly higher ($p < .02$). BG levels were significantly higher for running post exercise and at 15 minutes of the OGTT ($p < .01$). When outliers were removed ($n=2$), these differences disappeared. Area under the curve during the OGTT following running tended ($p = .109$) to be smaller (9535 ± 534 vs. $10,834 \pm 482$ a.u.) with outliers removed.

CONCLUSION: Based on the study results, when energy expenditure is controlled between low and high exercise intensities, BG regulation following exercise of the same fixed distance tends to be enhanced in following exercise of a higher intensity.

Supported by *Shippensburg University-UGR grant #2014/2015-14*.