ECCENTRIC AND CONCENTRIC RESISTANCE EXERCISE INDUCED CHANGES ON INSULIN SENSITIVITY AND INFLAMMATION

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ABSTRACT

Purpose: The aim of this study was to compare the effects of an acute bout of eccentric-only (ECC) resistance exercise to an acute bout of concentric-only (CON) resistance exercise on glucose tolerance and to investigate the role of inflammation in any observed differences. **Methods:** Fourteen overweight, untrained participants (BMI = 33.6 ± 1.2) performed either an ECC (N = 7) or CON (N = 7) resistance exercise session. An oral glucose tolerance test was administered days before and 24-hours post-exercise. The exercise session consisted of 1-repetition maximum (1RM) testing followed by three sets of ten repetitions at 75% of their contraction specific 1RM on a knee extension machine and leg curl machine. Blood samples were analyzed for IL-6 and TNFα and delayed onset muscle soreness (DOMS) was measured. **Results:** ANOVA calculations indicated a trend on glucose tolerance between the groups' pre- and post-exercise sessions ($p = 0.098$). There was also a trend observed in IL-6 between the 1h and 24h measurements ($p = 0.097$), but no differences between the groups. No changes in TNFα were observed. ECC exercise increased soreness that peaked at 48h and CON exercise induced no soreness changes. **Conclusions:** These data suggest that in an overweight, untrained population, an acute bout of ECC-only or CON-only resistance exercise may cause opposite effects on glucose tolerance; ECC exercise decreasing glucose tolerance, CON exercise increasing glucose tolerance. Opposing effects on glucose tolerance from the exercise occurred in lieu of a similar response in IL-6 and TNFα to the exercise.