

Acute Effects of Exercise on Cognition in Young Adults: Strength vs. Endurance Protocols

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Exercise has ample benefits for health in general but its potential effects on cognitive functioning (i.e., cognitive control, attentional processes) are only recently examined (McMorris & Hale, 2015). **PURPOSE:** to test the acute effects of a strength and aerobic protocol on executive functioning capacity within a young adult sample. **METHODS:** Subjects (N=60) were randomly assigned to strength or aerobic task conditions. Subjects in the strength condition squeezed a handgrip dynamometer at 30% of maximum voluntary contraction. Subjects in the aerobic condition performed a stepping task to the cadence of a metronome. In each condition, rate of perceived exertion (RPE) and heart rate (HR) were measured at 30-s intervals. Three alternate forms of the Trail Making Test (TMT) were administered to assess executive functioning scores. Subjects completed the TMT at rest, at RPE = 6 (moderate intensity), and at RPE = 9 (vigorous intensity). **RESULTS:** Analysis revealed a significant main effect for RPE condition. Relative to moderate and high exertion, under rest subjects took longer to complete TMT-A ($p < .001$). Following RPE = 6 and RPE = 9, subjects in the aerobic condition completed TMT-A significantly faster ($p < .001$) than subjects in the strength condition. A similar pattern was observed for TMT-B although this was not significant. **CONCLUSION:** Relative to strength-endurance (handgrip) task, aerobic (stepping) task seemed to further facilitate executive functioning skills. Implications and recommendations for the use of exercise to optimize cognitive functioning will be discussed. Directions for future research will be outlined.