

The Effects of Acute Resistance Exercise on Vascular and Cognitive Function

Wade, MJ., Lefferts, WK., Heffernan, KS. Monroe Community College, Syracuse University, NY

Arterial stiffness increases risk for cardiovascular diseases. Recent studies note that when arteries stiffen with age and disease, blood flow to the brain is affected and can impair cognitive function. Acute resistance exercise increases arterial stiffness. **PURPOSE:** To examine if artery stiffness from resistance exercise negatively affects cognitive function. **METHODS:** Fourteen healthy young adults (24 ± 5 years, Body Mass Index (BMI) $26 \pm 7 \text{ kg} \cdot \text{m}^{-2}$; 9 female) completed two separate visits. For the experimental visit, all participants completed cognitive testing and underwent measures of arterial stiffness before and after a bout of intense upper body resistance exercise. For the control visit, participants engaged in 30 minutes of seated rest. We estimated carotid to femoral pulse wave velocity (PWV) as a measure of aortic stiffness. Working memory and executive functions were assessed using an N-Back task and the Erikson flanker task, respectively. **RESULTS:** Aortic PWV increased after acute resistance exercise (5.2 ± 0.5 to $5.6 \pm 0.6 \text{ m/s}$, $p < 0.05$), but did not change following the control condition (5.2 ± 0.7 to $5.3 \pm 0.7 \text{ m/s}$, $p > 0.05$). There were no significant changes in the N-back percentage correct following acute resistance exercise (81.5 ± 14.0 to $80.8 \pm 16.9\%$, $p > 0.05$) or following the control condition (77.7 ± 17.7 to $75.0 \pm 15.0\%$, $p > 0.05$). There were also no significant changes in the Flanker percentage correct following acute resistance exercise (90.0 ± 6.0 to $90.0 \pm 5.54\%$, $p > 0.05$) or following the control condition (88.1 ± 9.6 to $90.0 \pm 6.0\%$, $p > 0.05$). **CONCLUSION:** Even though there was an increase in aortic stiffness after resistance exercise, there was no change in cognitive function. These findings suggest that unlike the artery stiffening that occurs with aging and disease, artery stiffening from acute resistance exercise does not have a negative effect on cognitive performance in young healthy adults.