

A Comparison of an Aerobic Exercise Program and a Resistance Training Program on Cognitive Functioning in Healthy College Students

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ABSTRACT

Cognitive functioning declines begin occurring as early as 30 years of age. Research has found evidence that exercise influences cognitive functioning in elderly patients with Alzheimer's and dementia. However, while cognitive functioning has often been linked to academic achievement, there is a lack of research examining exercise and cognitive functioning in young and healthy populations. Furthermore, research has found both aerobic and resistance training can impact cognitive functioning, but there is a lack of literature comparing the impact of exercise mode on cognitive functioning. **PURPOSE:** To explore the differences between an aerobic and resistance training program on cognitive functioning in healthy college students. **METHODS:** A total of 15 students ($n = 6$ M, $n = 9$ F) participated in this study. Participants completed a demographic questionnaire and the Stroop Effect Test with two congruent tables and one incongruent. Participants were then randomly assigned to either an aerobic or resistance training program. Participants assigned to the aerobic program cycled for 30 minutes at 60-70% of their age-predicted maximal heart rate. Participants in the resistance program completed a machine-based protocol consisting of ten strength exercises at 70% of their theoretical 1RM. These participants performed three sets of 12 repetitions in any order with 30-60 seconds of rest between exercises. All participants completed their assigned exercise protocol three times a week for four weeks. At the end of the exercise protocol, the participants completed the Stroop Effect Test a second time. An independent-samples t -test was calculated to compare mean Stroop Effect Test scores for participants in both training groups. A paired-samples t -test was conducted to compare Stroop Effect Test pre-test and post-test scores for all participants. **RESULTS:** No significant difference was found ($t(13) = .699, p = .497, g = .362$) between Stroop Effect Test scores of the aerobic training group ($M = 4.75, SD = 9.33$) and the resistance training group ($M = 7.71, SD = 6.63$). A significant increase in Stroop Effect Test scores from pre-test ($M = 43.80, SD = 8.44$) to post-test ($M = 49.93, SD = 10.23$) was found ($t(14) = -2.95, p = .01, d = .654$) for participants, regardless of exercise protocol. **CONCLUSION:** No significant difference in Stroop Effect Test scores between the aerobic and resistance group suggests that there is no difference between type of exercise and cognitive improvements in healthy college students. Results showed a significant improvement from the Stroop Effect Test pre-test and post-test scores for participants in both exercise groups, providing further evidence that exercise can improve cognitive function, regardless of exercise mode.