

## Abstract

The purpose of this study is to analyze the acute effects that exercise has on memory. It has been proposed that certain physiological changes that occur in response to exercise also contribute to memory retention. The physiological components analyzed are heart rate, blood pressure, and blood oxygen saturation. The subjects used for this study were Liberty University students ages 18-24 that were classified as low-risk by ACSM standards. Testing was performed on two, nonconsecutive days. The first day, the subjects performed a 1.5-mile run at their own pace, from which their  $VO_{2max}$  was calculated. The second day, subjects were administered three versions of a memory test comprised of a modification of the Reys Auditory Verbal Learning Test (RAVLT) and the Sport Concussion Assessment Tool Version 5 (Scat5). One version was administered at the beginning of the testing session. The second was given immediately after the subject exercised for 10 minutes at 50% of their pre-determined  $VO_{2max}$ . The third was administered 30 minutes after exercise. Prior to each memory test, blood oxygen levels, heart rate, and blood pressure was checked. Results showed no significant relationship between changes in any of the physiological factors and changes in scores for the RAVLT and CONC tests. However, results did show a trend between changes in HR and changes in IMMED test scores, although this was not statistically significant. When considering the fatigue factor and EPOC, this may indicate that aerobic exercise at a higher intensity could proactively improve immediate memory performance. The results of this study could assist researchers in determining what exercise intensity significantly benefits immediate memory the most.