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**The Impact of Varying Exercise Protocols on Neurogenesis and Angiogenesis in the Dentate Gyrus**

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Exercise is being considered for associations with improved neuronal health and longevity, synaptic plasticity, increased cerebral blood volume and angiogenesis, overall brain volume, and neurogenesis which collectively may have the power to forestall neurodegenerative disease. **PURPOSE:** To investigate the effects of varying exercise protocols on indices of neurogenesis and angiogenesis in the dentate gyrus of the hippocampus to inform efforts to forestall cognitive decline associated with neurodegenerative disease. **METHODS:** The indices of neurogenesis and angiogenesis were assessed using the surrogate measures of maximal oxygen uptake ($VO_{2max}$), cognitive function as assessed by the Rey auditory verbal learning test (RAVLT), and urinalysis of brain-derived neurotrophic factor (BDNF) concentration taken just prior to and just after a six-week training protocol. Twelve college-aged males were randomized into either high intensity interval training group (HIIT) or a steady-state training group (SS) and were compared to six sedentary controls over the course of a six-week supervised training study. **RESULTS:** Findings reflect an association between exercise and improved cognitive function. Specifically, cognitive function improved significantly with HIIT training ($\Delta$RAVLT=3.66, p=0.045) and a significant correlation between cognitive function and improved $VO_2$ from HIIT training was also shown (r=0.98; p=0.010). Cognitive function and neurotrophin concentration both increased significantly with steady state training compared to controls ($\Delta$RAVLT=4.40, p=0.011; $\Delta$BDNF=54.00pg/ml, p=0.007). **CONCLUSION:** Varying exercise protocols have a varying impact on cognitive function as assessed by the RAVLT, urine BDNF, and $VO_2$. Findings hold implication for pathologies that involve cognitive decline.