The Effects of Cardiorespiratory Fitness on Behavioral and Neuroelectric Indices of Cognition

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Effects of cardiorespiratory fitness on cognition were assessed for 72 young adults. Participants completed an executive control task while behavioral and neuroelectric indices of cognition were obtained. Measures of reaction time, response accuracy, P3 amplitude and P3 latency were examined in relation to fitness to determine the unique influence of fitness on cognition. A graded maximal exercise test was used to measure fitness by assessing maximal oxygen consumption. Higher fitness was correlated with longer P3 latency at central and frontal midline sites and an expectancy effect in relation to P3 amplitude for specific trial types and conditions, suggesting a relationship between fitness and neural indices of certain cognitive processes. However, fitness did not exhibit a unique relationship with behavioral indices of cognition. These findings suggest that while fitness may have beneficial effects on some executive control functions, these effects are not manifest in improved expectancy effects in the behavior of healthy young adults.