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Associations Between Exercise and Inhibitory Cognitive Control in Young Adult Binge Drinkers

Luke G. Poole, Jonathon R. Bourque, Andrew A. Ude, Hannah M. Perdue, Amber H. Sarwani, Sophie J.H. Wilkinson, Marsha E. Bates, and Brandon L. Alderman. Rutgers, The State University of New Jersey, New Brunswick, NJ

Physical exercise and alcohol misuse result in opposing effects on numerous health outcomes. However, studies have demonstrated a paradoxical positive association between these health enhancing (exercise) and health compromising (alcohol use) behaviors. The influence of these co-occurring health behaviors on cognitive regulatory mechanisms has not been investigated. **PURPOSE:** To characterize associations between exercise behaviors and inhibitory cognitive control in young adults who endorse binge drinking. **METHODS:** Forty-six participants (28 females; age = 20.9 ± 2.1 years) reported their exercise and alcohol use behaviors and completed an alcohol-cued Go/No-Go task while electroencephalography (EEG) was recorded. Stimulus-locked N2 and P3 event-related potential (ERP) components were recorded to index inhibitory cognitive control. **RESULTS:** Exercise and typical alcohol use were not associated in this sample. No significant differences were found in the N2 component between participants classified as high versus low exercisers; however, lower P3 amplitude and shorter P3 latency was found in the high versus low exercise group, $ps < .10$. Amount of exercise performed per week, but not alcohol use, was also associated with enhanced (more-negative) N2 amplitude, attenuated P3 amplitude, and faster P3 latency, $rs < -.3$, $ps < .10$. **CONCLUSION:** No association was found between exercise and alcohol use. Greater weekly exercise participation was associated with greater inhibitory control; however, the impact of these health behaviors across the lifespan should be studied. **SIGNIFICANCE/NOVELTY:** These findings contrast previous studies suggesting an association between exercise and alcohol use in young adults. Associations were found between exercise and inhibitory cognitive control as indexed by No-Go N2 and P3 ERP components, suggesting a potential cognitive benefit of exercise despite concurrent alcohol binge drinking.

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