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


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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