Beer League on the Brain: Interactions Between Exercise and Alcohol Consumption on Brain Health

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Presentation Description:

'Beer league' sports are commonly played by adults, but the impacts of exercise followed by alcohol consumption on the brain has not been investigated. A mouse model is used to assess the combined impacts of exercise and alcohol on hippocampal neuron composition and behavioural performance through learning and memory tests.

Abstract:

In adulthood, recreational sports are often followed by socialization involving alcohol consumption. Exercise stimulates production of new neurons (neurogenesis) in the hippocampus, a brain region critical for learning and memory, while alcohol is known to negatively regulate hippocampal neurogenesis. The net effect of exercise followed by alcohol, as exhibited in 'beer league' sports, has not been examined. The current study examined the concurrent effects of two mediators of neurogenesis, alcohol and exercise, to investigate the combined role on brain structure and function in female C57BL/6 mice. One group was provided with three hours of running wheel access followed by four hours of voluntary alcohol access (20% ethanol w/ 0.1% saccharin) daily to model 'beer league' sports. The other three groups represented the alcohol only, exercise only, and control groups to assess main effects. Brains were extracted to assess hippocampal cell counts using doublecortin immunolabelling. Performance on learning and memory tasks (novel object recognition and spontaneous alternation) were assessed before and during the 'beer league' schedule. It was hypothesized that the net effect of voluntary exercise followed by alcohol consumption would produce a greater neuronal count and improved performance on learning and memory tasks compared to the control group and pre-treatment performance. No significant treatment effects were exhibited in novel object recognition or spontaneous alternation. Implications of results could apply to the participants of 'beer league' sports. This study adds to the growing body of literature that questions the interactions of alcohol and exercise, specifically in a voluntary fashion.

References/Acknowledgments:

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