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Mitigation of the Impact of Cognitive Fatigue on Simple Motor
Performance by Phytochemicals: The Effect of a
Blackcurrant Supplement

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Abstract

Cognitive fatigue can be brought on by prolonged periods of demanding cognitive activity which has been found to impair both cognitive and physical performance. Phytochemical supplementation can result in improvements in both cognitive and physical performance. However, the ability for phytochemical supplementation to reduce the effects cognitive fatigue has on subsequent physical performance has not been investigated. Therefore, the present study examined the effects that phytochemicals from a blackcurrant supplement had in reducing the effects of cognitive fatigue on simple motor performance. Sixty healthy participants completed 75 minutes of a vigilance task (cognitive fatigue) or 75 minutes of watching an emotionally neutral documentary (control). Half of the participants in each condition also received a blackcurrant supplement (3.2mg/kg) 1 hour before beginning the experimental session. Following the 75 minutes of time-on-task participants completed mood and motivation questionnaires as well as four motor tasks. Analyses revealed the vigilance task was successful in inducing cognitive fatigue, but this had little effect on subsequent motor performance compared to controls. Further analyses revealed the blackcurrant supplement had little influence on either cognitive or motor performance, although the lack of an effect of cognitive fatigue on motor performance made this finding difficult to interpret. Effect size calculations indicated that a larger sample would have likely resulted in statistically significant findings for the majority of the motor tasks. It is concluded that for the specific tasks used in the present study, cognitive fatigue did not impair subsequent motor performance. Nor did the blackcurrant supplement, at the dose used, enhance motor performance following cognitive fatigue. Possible explanations for these findings are discussed and some potentially useful future studies outlined.

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