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The Acute Cardiovascular Response to Exercise

CONFERENCE ABSTRACT

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Abstract

Caffeine is one of the most widely consumed psychoactive substances, and is commonly used for its stimulating effects on the central nervous system. By blocking adenosine receptors, caffeine increases alertness, reduces perceived effort, and may enhance exercise performance. While its effects on aerobic exercise are well-established, less is known about caffeine's impact on resistance training in the cardiovascular response. The purpose of this study was to examine the effects of caffeine on heart rate, blood pressure, and rating of perceived exertion during full-body circuit-style resistance training. College students ages 18 to 25 participated in two exercise conditions (caffeine and placebo) in a single-blind, randomized crossover design. Heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), and rating of perceived exertion (RPE) were measured at baseline, mid-exercise, and post-exercise. Data were analyzed using repeated measures ANOVA, and alpha was set at 0.05. Heart rate increased significantly over time ($p < .001$), rising from baseline to mid-exercise and remaining elevated post-exercise, with no significant effect of condition ($p = .09$). Systolic blood pressure showed significant effects of both condition ($p = .034$) and time ($p < .001$), increasing from baseline to mid-exercise and remaining elevated post-exercise. Rating of perceived exertion also showed effects of both condition and time ($p < .05$), increasing throughout exercise and differing between caffeine and placebo conditions. No significant

differences were observed for diastolic blood pressure ($p > .05$). Overall, caffeine increased systolic blood pressure and reduced perceived exertion during exercise, but did not significantly affect heart rate or diastolic blood pressure. These findings suggest caffeine alters both cardiovascular and perceptual responses to full-body circuit-style resistance training.

Keywords: caffeine, college students, blood pressure