

The Acute Effect of N-Acetylcysteine Supplementation on Repeat Sprint Performance in Recreationally Active Males

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Repeat sprints are the main mode of locomotion in most field and court based sports. During these movements there is an increased load placed on the aerobic energy system to aid in ATP production and recovery. This up regulation increases fatiguing factors such as Reactive Oxygen Species (ROS), N-Acetylcysteine (NAC) has been shown previously to scavenge ROS during aerobic exercise but to date the effects of acute supplementation on repeat sprint activities is unclear. **PURPOSE:** This study was designed to investigate the effect of acute NAC supplementation on peak sprint time, mean sprint time, and fatigue index during a repeat sprint protocol. **METHODS:** Eighteen recreationally active male college students (Age 20.3 years \pm 1.4, Height 177.9 cm \pm 7.33, Mass 71.5 kg \pm 7.3) volunteered to participate in this study. Each subject completed the repeat sprint protocol under 3 different conditions; the control trial which consisted of no pretreatment before sprints, the placebo which required the subjects to ingest 150ml of water mixed with crystal light lemonade drink mix® approximately 90 minutes before sprinting and the experimental trial, in which subjects ingested the 150ml crystal light solution mixed with 70mg/kgbtw of NAC powder 90 minutes prior to the start of testing. Each sprint protocol took place on an indoor track and consisted of 12 x 30 meter sprints separated by 35 seconds of passive recovery. SPSS version 20.0 was used for statistical analysis. **RESULTS:** Statistical analysis (ANOVA) revealed no statistically significant difference between the control, placebo, and experimental condition for mean sprint time, peak sprint time, and fatigue index, $p < 0.05$ for all measures. Of particular interest, mean sprint time by condition showed no descriptive difference with mean values of $4.72 \pm .18$, $4.72 \pm .21$, and $4.73 \pm .19$ for control, placebo, and experimental trials respectively. **CONCLUSION:** The findings of this study suggest that NAC supplementation of 70mg/kgbtw has no effect on repeat sprint performance, specifically mean sprint time, peak sprint time, and fatigue index. Further research is warranted to explore prolonged supplementation, type of recovery between sprints, and time spent in recovery.