

## Twelve Weeks of Nitrate, Beta-Alanine, or Combined Treatment in NCAA Division III Male Soccer Players

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Category: Masters

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### ABSTRACT

In a sport of long duration, such as soccer, with many high-intensity bouts interspersed within the match, enhancing performance to last the duration of the match and maintain high levels of intensity is paramount. Thus, with proper nutrition and physical preparation, supplements such as beta-alanine (due to its intracellular buffering capacity) and nitrate (due to its vasodilatory and ergogenic effects in endurance exercise) may have value in this population. **PURPOSE:** The purpose of this investigation was to examine the effects of chronic supplementation with nitrate, beta-alanine, or combined treatment in NCAA Division III male soccer players. **METHODS:** Twenty-two NCAA Division III male soccer players (age:  $19.1 \pm 1.1$  yrs; mass:  $74.8 \pm 8.0$  kg; body fat:  $13.6 \pm 4.0$ %) were randomly assigned into one of four groups: nitrate plus placebo (NIT), beta-alanine plus placebo (BA), placebo (PLA), or active treatments (ACT) and participated in this 12-week double-blind, placebo-controlled study. At pre-intervention testing, participants completed body composition measures,  $\text{VO}_2$  max, 30-second Wingate test on day one, and 40-yard dash and Yo-Yo Intermittent Recovery: Level 2 (YOYOIR2) on day two and testing sessions were repeated at 6- and 12-weeks post training and supplementation. A 4x3 repeated measures ANOVA was used to analyze the data with a-priori  $p$  value set at  $\leq 0.05$ . **RESULTS:** There was a significant time effect for the following variables indicating that the training protocol induced performance adaptations:  $\text{VO}_2$  max ( $p = 0.0$ ), Wingate peak power and mean power ( $p = 0.04$ ;  $p = 0.006$ ), 40-yard dash ( $p = 0.003$ ), and YOYOIR2 ( $p = 0.0$ ). Change in performance over time (% change) for  $\text{VO}_2$  max was NIT: 9%, BA: 7%, ACT: 12% vs PLA: 8%. Wingate mean power % change was NIT: 17%, BA: 6%, ACT: 4% vs PLA: 5%. Wingate peak power % change was NIT: 10%, BA: 11%, ACT: 10% vs PLA: 9%. YOYOIR2 % change was NIT: 48%, BA: 54%, ACT: 74% vs PLA: 10%. Despite this, there were no significant group by time effects for any variables. **CONCLUSION:** Although further research is warranted, addition of these supplements may be beneficial to soccer players.