No Effect of Short-Term Arginine Supplementation on Nitric Oxide Production, Metabolism, and Performance in Intermittent Exercise in Athletes

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INTRODUCTION
Arginine supplementation has been shown to alleviate endothelial dysfunction and improve exercise performance through increasing nitric oxide (NO) production in patients with cardiopulmonary diseases. In addition, arginine supplementation could decrease accumulations of lactate and ammonia, the metabolites involved in development of muscular fatigue. The aim of this study was to investigate the effect short-term arginine supplementation on performance in intermittent anaerobic exercise and the underlying mechanism in well-trained male athletes.

METHODS
Subjects
Ten elite male college judo athletes participated with a randomized cross-over, placebo-controlled design.
Design
The subjects consumed 6 g/day arginine (ARG trial) or placebo (CON trial) for 3 days, then performed an intermittent anaerobic exercise test on a cycle ergometer. Blood samples were collected before supplementation, before and during exercise, and 0, 3, 6, 10, 30, and 60 min after exercise.

RESULTS
ARG trial had significantly higher arginine concentrations than CON trial at the same time point before, during, and after exercise. In both trials, nitrate and nitrite (NOx) concentration was significantly higher during and 6 min after exercise comparing to the basal level. The increase in NOx concentration during exercise in both trials was parallel to the increase in plasma citrulline levels. There was no significant difference between the 2 trials in plasma NOx, lactate, and ammonia concentrations and peak and average power in the exercise.

CONCLUSIONS
The results of this study suggested that short-term arginine supplementation had no effect on NO production, lactate and ammonia metabolism, and performance in intermittent anaerobic exercise in well-trained male athletes.

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