

POSTER PRESENTATION

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# Oral L-citrulline supplementation enhances cycling time trial performance in healthy well-trained males

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## Background

L-citrulline is an amino acid that is an endogenous precursor of L-arginine and contributes to generating nitric oxide (NO). L-citrulline is known for increasing plasma L-arginine and NO more effectively than equivalent doses of L-arginine. NO plays an important role in sport performance but it is presently unknown whether L-citrulline enhances sport performance during rowing ergometer competition in humans. The aim of this study is to investigate the effect of oral supplementation of L-citrulline on cycling time trial performance.

## Methods

A randomized double-blind crossover study design was used. Twenty two well-trained males, aged between 20 and 39, consumed 2.4 g / day of L-citrulline or placebo for 7 days and they took 2.4 g of L-citrulline or placebo 1 hour before 4 km cycling time trial on day 8. Completion time of 4 km cycling, power output / VO<sub>2</sub> ratio (PO / VO<sub>2</sub>), plasma NO<sub>x</sub>, amino acids, Visual Analog Scale (VAS) were evaluated.

## Results

L-citrulline supplementation significantly improved cycling time trial performance by 1.5% ( $p < 0.05$ ) and increased PO / VO<sub>2</sub> during performance ( $p < 0.1$ ). Moreover there was a correlation between plasma NO<sub>x</sub> and PO / VO<sub>2</sub> ( $r = 0.47$ ,  $p < 0.01$ ) in L-citrulline group. L-citrulline significantly increased plasma L-citrulline and L-arginine, and improved the subjective feeling of muscular fatigue and concentration ( $p < 0.05$ ).

## Conclusion

Oral L-citrulline supplementation enhances cycling time trial performance by improving PO / VO<sub>2</sub> through up-regulation of plasma NO availability.

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