

# Eating your greens could enhance sport performance

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Nitrate supplementation in conjunction with Sprint Interval Training in low oxygen conditions could enhance sport performance a study has found.

Researchers from the University of Leuven in Belgium carried out a study with twenty-seven moderately trained participants. These were given nitrate supplements ahead of Sprint Interval Training (SIT), which took the form of short but intense cycling sessions three times a week.

Nitrate is commonly found in diets rich in leafy green foods, like spinach and is important for the functioning of the human body, especially during exercising.

To assess differences in [performance](#) in different conditions, the study included workouts in normal oxygen conditions and in hypoxia conditions, which are low oxygen levels such as those found in high altitudes.

The observations published in *Frontiers in Physiology* were unexpected: after only five weeks, the [muscle fiber](#) composition changed with the enhanced nitrate intake when training in [low oxygen conditions](#).

"This is probably the first study to demonstrate that a simple nutritional supplementation strategy, i.e. oral nitrate intake, can impact on training-induced changes in muscle fiber composition;" stated Professor Peter Hespel from the Athletic Performance Center at the University of

Leuven.

For athletes participating in sports competitions which require energy production in conditions with limited amounts of oxygen, this study is particularly interesting. In fact, exercising at high altitudes has become a training strategy for many athletes, albeit the uncertainties about such methods.

In these [conditions](#), performing intense workouts requires high input of fast-oxidative muscle fibers to sustain the power. Enhancing these muscle fiber types through nutritional intake could very well boost the performance in this type of events.

However, this remains a question mark for the time being. "Whether this increase in fast-oxidative muscle fibers eventually can also enhance exercise performance remains to be established;" said Professor Hespel.

He cautioned: "consistent nitrate intake in conjunction with training must not be recommended until the safety of chronic high-dose nitrate intake in humans has been clearly demonstrated".

In times where athletes push the limits of their bodies and thrive for ever greater performances, this is clearly only the beginning of the research into how athletes can improve their competitive edge through dietary supplements. Looking to the future, Professor Hespel suggested: "it would now be interesting to investigate whether addition of nitrate-rich vegetables to the normal daily sports diet of athletes could facilitate training-induced muscle fiber type transitions and maybe in the long term also exercise performance".

**More information:** Stefan De Smet et al, Nitrate Intake Promotes Shift in Muscle Fiber Type Composition during Sprint Interval Training in Hypoxia, *Frontiers in Physiology* (2016). [DOI:](#)

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