

Vitamin C may help people who suffer from airway obstruction or respiratory symptoms after exercise

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Vitamin C may reduce bronchoconstriction and respiratory symptoms caused by exercise according to a study published in *Allergy, Asthma & Clinical Immunology*.

Physical activity increases oxidative stress, and therefore, as an antioxidant [vitamin C](#) might have particularly evident effects on people who are participating in [vigorous exercise](#). In several studies, vitamin C administration attenuated the increases in oxidative stress markers caused by exercise. Furthermore, vitamin C is involved in the metabolism of histamine, prostaglandins, and cysteinyl leukotrienes, all of which appear to be mediators in the pathogenesis of exercise-induced bronchoconstriction.

A meta-analysis of three studies found that vitamin C halved post-exercise FEV1 decline in [participants](#) who suffered from exercise-induced bronchoconstriction. Five other studies examined subjects who were under short-term, heavy physical stress and a meta-analysis revealed that vitamin C halved the incidence of respiratory symptoms. Another trial reported that vitamin C halved the duration of the respiratory symptoms in male adolescent competitive swimmers.

FEV1 is the standard pulmonary function outcome for assessing whether a person suffers from exercise-induced bronchoconstriction. However, exercise-induced decline in FEF25-75 is twice as great as the decline in

FEV1. FEV1 measures the large-airway obstruction, whereas FEF25-75 measures small-airway obstruction. Therefore, FEF25-75 or the closely related FEF50 might provide relevant additional information about the possible effects of vitamin C.

Harri Hemila, MD, PhD, of the University of Helsinki, Finland, carried out a secondary analysis of a study which had 12 participants. The participants had [asthma](#), were on average 26 years, and suffered from exercise-induced bronchoconstriction. The FEV1 and FEF60 levels before and after exercise were reported on vitamin C and placebo days, but the data was not thoroughly analyzed originally.

In five out of the 12 participants, exercise caused a decline greater than 60% in FEF60. Such a dramatic FEF60 decline indicates that the absolute post-exercise level of FEF60 becomes an important outcome in its own right, in addition to its change from the pre-exercise level. Vitamin C administration increased the post-exercise FEF60 level in these 5 participants by between 50% and 150%. In contrast, no mean difference between the vitamin C and placebo days was detected in the other 7 participants. The increase in post-exercise FEF60 level by vitamin C is a novel finding, which indicates that vitamin C may have substantial effects on the small airways.

Dr. Hemila concludes that "given the safety and low cost of vitamin C, and the consistency of positive findings in the nine randomized trials on vitamin C against exercise-induced bronchoconstriction and respiratory symptoms, it seems reasonable for physically active people to test whether vitamin C is beneficial on an individual basis, if they have documented exercise-induced bronchoconstriction or suffer from [respiratory symptoms](#) such as cough or sore throat after taking vigorous [exercise](#)."

More information: "The effect of vitamin C on bronchoconstriction

and respiratory symptoms caused by exercise: a review and statistical analysis." *Allergy, Asthma & Clinical Immunology* 2014,10:58 [DOI: 10.1186/1710-1492-10-58](https://doi.org/10.1186/1710-1492-10-58)

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