



Vitamin D important for cardiorespiratory fitness?



Vitamin D is commonly associated with healthy bones. New research published in the *European Journal of Preventive Cardiology* suggests the same vitamin is also important for one's cardiorespiratory fitness – i.e., the ability of the heart and lungs to supply oxygen to the muscles during exercise. People with higher cardiorespiratory fitness are healthier and live longer.

Cardiorespiratory fitness, a reliable surrogate for physical fitness, is best measured as the maximal oxygen consumption during exercise, referred to as VO₂ max.

Dr. Amr Marawan and co-researchers performed a study to determine whether people with higher levels of vitamin D in the blood have improved cardiorespiratory fitness. The study was conducted in a representative sample of the U.S. population aged 20-49 years using the National Health and Nutrition Survey (NHANES) in 2001-2004. Data was collected on serum vitamin D and VO₂ max. Participants were divided into quartiles of vitamin D levels.

Of 1,995 participants, 45 percent were women, 49 percent were white, 13 percent had hypertension, and 4 percent had diabetes. Participants in the top quartile of vitamin D had a 4.3-fold higher cardiorespiratory fitness than those in the bottom quartile. The correlation remained significant, with a 2.9-fold strength, after adjusting for factors that could influence the association such as age, sex, race, body mass index, smoking, hypertension, and diabetes.

"Our study shows that higher levels of vitamin D are associated with better exercise capacity," said Dr. Marawan, assistant professor of internal medicine, Virginia Commonwealth University, Virginia, U.S. In this study, each 10 nmol/L increase in vitamin D was associated with a statistically significant 0.78 mL/kg/min increase in VO₂ max. "This suggests that there is a dose response relationship, with each rise in vitamin D associated with a rise in exercise capacity," the doctor added.

As this was an observational study, it cannot be concluded that vitamin D improves exercise capacity. However, as Dr. Marawan noted, the association was strong, incremental, and consistent across groups. The findings provide further impetus for having adequate vitamin D levels, "which is particularly challenging in cold, cloudy places where people are less exposed to the sun," according to the doctor.

On the other hand, Vitamin D toxicity can lead to excess calcium in the blood, which can cause nausea, vomiting, and weakness. "It is not the case that the more vitamin D, the better," said Dr. Marawan. "Toxicity is caused by megadoses of supplements rather than diet or sun exposure, so caution is needed when taking

tablets."

Regarding further research, Dr. Marawan says randomised controlled trials should be conducted to examine the impact of differing amounts of vitamin D supplements on cardiorespiratory fitness.

Source: [European Society of Cardiology](#)

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