

Girls with high level of vitamin D have stronger muscles

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Girls are stronger with higher levels of vitamin D, but this association is not found in boys. These are the results from a new large study from the Odense Child Cohort, recently published in the *Journal of Clinical Endocrinology and Metabolism*.

According to the study's first author, medical student Rada Faris Al-Jwadi, girls with low [vitamin D](#) have a 70 percent increased risk of being among the lowest 10 percent in a test for [muscle strength](#).

The researchers also found that girls were stronger if their vitamin D level was more than 50 nmol/L. The most surprising finding was that this difference was only evident in girls and not in boys.

The study shows no association with vitamin D levels in mothers during pregnancy or in the umbilical cord at birth. This leads to the conclusion that there is no prenatal programming effect of muscle [strength](#). We are talking about a more immediate effect of vitamin D, says Rada Faris Al-Jwadi.

According to Henrik Thybo Christesen, Professor at H.C. Andersen children's hospital, Odense University Hospital and University of Southern Denmark, the study offers no explanation for the difference between boys and girls. But other studies on children and adults have shown that vitamin D increases the levels of IGF-I, which is a growth factor that increases muscle strength.

Also, the IGF-I level is different in boys and girls, which could be part of the explanation. Based on this data, it is not possible to conclude that girls will get stronger muscles if they get more vitamin D through food, as supplement pills or via sun exposure, which are some of the most important sources of vitamin D.

In the study, the muscle strength of 881 five-year-old children in Odense Child Cohort was measured with a standardized test for hand grip strength. For

499 of the children, vitamin D status analyses were done. Low vitamin D levels were defined as serum 25OH-vitamin D below 50 nmol/L. The statistical analyses were adjusted for height, weight and body fat percentage and were statistically highly significant. This means that the association wasn't due to being overweight and thereby having lower vitamin D and lower [muscle](#) strength. It also means that it wasn't because [girls](#) were less physically active. The [body fat percentage](#) was calculated based on skin fold measurements.

More information: Rada Faris Al-Jwadi et al, S-25OHD is Associated with Hand Grip Strength and Myopathy at Five Years in Girls: An Odense Child Cohort Study, *The Journal of Clinical Endocrinology & Metabolism* (2018). [DOI: 10.1210/jc.2018-00281](https://doi.org/10.1210/jc.2018-00281)

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