

Obese adolescents benefit from high-dose vitamin D supplements

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Vitamin D deficiency is common in Americans, and especially in overweight and obese adolescents, according to the National Institutes of Health. University of Missouri researchers have found that providing obese adolescents with a high daily dose of vitamin D3 is safe and effective in improving their vitamin D status.

"Obese adolescents face an increased risk for deficiency because they tend to absorb vitamin D in their fat stores, which prevents it from being utilized in their blood," said Catherine Peterson, associate professor of [nutrition](#) & exercise physiology. "We found that a daily dose of 4,000 IUs of vitamin D3, the maximum intake level set by the Institute of Medicine (IOM), is both safe and effective at improving vitamin D status in obese adolescents."

Vitamin D is obtained by eating certain foods, taking supplements and through sunlight exposure. It is essential for maintaining healthy bones, muscles, nerves and immunity. The IOM recently set new dietary reference intakes for vitamin D. They recommend 600 IUs per day, with a tolerable upper intake of 4,000 IUs. Based on the guidelines, it is important to determine the effects of a vitamin D dose that is equivalent to the upper limit, especially in understudied groups, such as obese adolescents, Peterson said.

In the study, participants from the MU Adolescent Diabetes and Obesity clinic were randomly selected to receive a placebo or 4,000 IU/day of vitamin D3 for six months as part of their standard treatment. All obese

participants initially were deficient or insufficient in vitamin D status. Participants supplemented with [vitamin D3](#) had significantly greater increases in concentrations of 25OHD, the main indicator of vitamin D status, compared to those who received the placebo.

Obese adolescents are only about half as efficient at using vitamin D as their lean counterparts. For example, in lean adolescents it only takes about 100 IUs to increase their serum 25OHD levels by 1 ng/ml. In obese adolescents, it takes about 200 IUs to achieve the same increase

"If obese [adolescents](#) only consumed the recommended 600 IUs, they would be in trouble," Peterson said. "It takes 4,000 IUs to raise their vitamin D status within a sufficient range. This is much higher than the currently recommended daily amount for this age group. This indicates that physicians need to carefully evaluate the vitamin D status in their overweight and obese patients."

Provided by University of Missouri-Columbia

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