

Study reveals high levels of vitamin D inadequacy in UK adolescents

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A study, published in the *American Journal of Clinical Nutrition*, has shown high levels of vitamin D inadequacy in UK adolescents, and – for the first time – identified the intake needed by adolescents in order to maintain adequate serum vitamin D levels during the winter time. The research was undertaken by academics from the University of Surrey's Department of Nutritional Sciences in collaboration with colleagues from the University of Copenhagen and University College Cork.

Adolescents are particularly vulnerable to vitamin D deficiency, and previous studies have shown that vitamin D levels decrease during puberty. With adolescents less likely to spend time outdoors than younger children, they experience less exposure to the sun, which is how we naturally obtain vitamin D. Low vitamin D levels are also a problem at northern latitudes during the winter months when the sun is not sufficient for us to make vitamin D within our bodies, so dietary intakes become more important.

Vitamin D optimises calcium absorption and therefore plays an essential role in bone mineralisation and skeletal development. Since most rapid bone growth occurs during the adolescent years, it is vital that teenagers have sufficient levels of vitamin D in order to achieve peak bone mass by late adolescence. This is thought to help reduce age-related bone loss in later life.

In the trial, 110 white male and female adolescents were given varying levels of vitamin D3 supplements, while some were given a placebo

supplement, for a 20 week period during winter. This showed that vitamin D intakes of between 10 and ~30 ug/day are required to maintain an adequate level of vitamin D and avoid vitamin D deficiency.

The study forms part of a four-year EU-funded project, ODIN, which aims to investigate safe and effective ways of improving dietary vitamin D intakes through food fortification and bio-fortification. The key findings will be presented by lead author Dr Taryn Smith of the University of Surrey at the National Osteoporosis Society Conference, due to be held from 7 to 9 November 2016 in Birmingham.

Dr Taryn Smith commented, "The research has found that adolescence, the time when [bone growth](#) is most important in laying down the foundations for later life, is a time when vitamin D levels are inadequate. The ODIN project is investigating ways of improving vitamin D intake through the diet – and since it is difficult to obtain vitamin D intakes of over 10 ug/day from food sources alone, it is looking at ways of fortifying our food to improve the vitamin D levels of the UK population as a whole."

More information: T. J. Smith et al. Estimation of the dietary requirement for vitamin D in adolescents aged 14-18 y: a dose-response, double-blind, randomized placebo-controlled trial, *American Journal of Clinical Nutrition* (2016). [DOI: 10.3945/ajcn.116.138065](https://doi.org/10.3945/ajcn.116.138065)

Provided by University of Surrey

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