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Low Levels of Vitamin D Linked to Muscle Fat, Decreased Strength in Young People

ScienceDaily (Mar. 6, 2010) — A ground-breaking study published in the March 2010 *Journal of Clinical Endocrinology and Metabolism* found an astonishing 59 per cent of study subjects had too little Vitamin D in their blood. Nearly a quarter of the group had serious deficiencies (less than 20 ng/ml) of this important vitamin. Since Vitamin D insufficiency is linked to increased body fat, decreased muscle strength and a range of disorders, this is a serious health issue.

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"Vitamin D insufficiency is a risk factor for other diseases," explains principal investigator, Dr. Richard Kremer, co-director of the Musculoskeletal Axis of the Research Institute of the MUHC. "Because it is linked to increased body fat, it may affect many different parts of the body. Abnormal levels of Vitamin D are associated with a whole spectrum of diseases, including cancer, osteoporosis and diabetes, as well as cardiovascular and autoimmune disorders."

The study by Dr. Kremer and co-investigator Dr. Vincente Gilsanz, head of musculoskeletal imaging at the Children's Hospital Los Angeles of the University of Southern California, is the first to show a clear

link between Vitamin D levels and the accumulation of fat in muscle tissue -- a factor in muscle strength and overall health. Scientists have known for years that Vitamin D is essential for muscle strength. Studies in the elderly have showed bedridden patients quickly gain strength when given Vitamin D.

The study results are especially surprising, because study subjects -- all healthy young women living in California -- could logically be expected to benefit from good diet, outdoor activities and ample exposure to sunshine -- the trigger that causes the body to produce Vitamin D.

"We are not yet sure what is causing Vitamin D insufficiency in this group," says Dr. Kremer who is also Professor of Medicine at McGill University. High levels of Vitamin D could help reduce body fat. Or, fat tissues might absorb or retain Vitamin D, so that people with more fat are likely to also be Vitamin D deficient."

The results extend those of an earlier study by Dr. Kremer and Dr. Gilsanz, which linked low levels of Vitamin D to increased visceral fat in a young population. "In the present study, we found an inverse relationship between Vitamin D and muscle fat," Dr. Kremer says. "The lower the levels of Vitamin D the more fat in subjects' muscles."

While study results may inspire some people to start taking Vitamin D supplements, Dr. Kremer recommends caution. "Obviously this subject requires more study," he says. "We don't yet know whether Vitamin D supplementation would actually result in less accumulation of fat in the muscles or increase muscle strength. We need more research before we can recommend interventions. We need to take things one step at a time."

Funding

This study was funded by a grant from the National Institutes of Health, the U.S. Department of the Army, the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Dimensional Fund Advisors Canada Inc (a subsidiary of U.S.-based Dimensional Fund Advisors).

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