

## What's so important about Vitamin D?

Vitamin D is essential for good musculoskeletal health as it plays a key role in metabolising the minerals calcium and phosphorus, required to form and maintain healthy bone. It is also vital for supporting your mental health and getting through those dark January's! Whilst some vitamin D can be obtained through dietary sources, individuals are also reliant on sunlight which contains UVB light to metabolise vitamin D through their skin.

## Is it really necessary to supplement Vitamin D?

Even at latitudes below 37°N where sunlight is stronger, there is evidence of vitamin D deficiency and insufficiency globally appears to affect over one billion adults and children (Holick, 2017). Vitamin D<sub>2</sub>, called ergocalciferol, is found in dietary sources such as wild mushrooms, salmon, and included within fortified foods. However food sources of vitamin D can be limited, and there are challenges to good absorption of vitamin D, particularly in older adults whose absorption within the GIT may be compromised. In the UK, The Committee on Medical Aspects of Food and Nutrition (COMA) set the Daily Recommended Values (DRV) in 1991, and subsequently the SACN report of 2016 reviewed the DRV using the "Framework for the evaluation of evidence" which stated that there was "evidence that the risk of poor musculoskeletal health is increased at concentrations below 25 nmol/L" (SACN, 2016). Based on winter intake of vitamin D in the UK, it was estimated that the majority of the UK population (97.5%) would benefit therefore from the reference nutrient intake (RNI) to be set at **10 µg (400 IU)**. However it must be borne in mind that many countries have set the intake higher.

Particularly vulnerable to lack of sufficient UVB light are ethnic minorities in the UK, as evidence (Binkley et al, 2007, Sacke et al 2017) confirms that darker skin pigmentation inhibits the uptake of vitamin D. A one year prospective cohort study that assessed vitamin D levels in south Asian women in Surrey, highlighted this increased risk when they reported that there was a 75-79% deficiency rate (Darling et al, 2013). Even between April and October in the UK, clothing or sun protection may interfere with effective synthesis of vitamin D from UVB light. Conversely, individuals may avoid sun exposure due to the danger of burning or developing skin cancer, thereby increasing the risk of vitamin D deficiency.

Therefore, given the UK latitude as well as limited foods with Vitamin D, even a healthy adult may become insufficient or even deficient without supplementation.

### **I am a vegan, do I still need to supplement Vitamin D?**

The benefits of a plant based diet are considerable and given concerns over climate change and land useage vegetarian or vegan diets offer sustainable nutrition options. However, if the need for adequate vitamin D, calcium – and protein, is not met prior to BMD reaching its peak (between the ages of 20-30 years), then the incidence of osteopenia and osteoporosis later in life is increased, as well as impacting the bone health of children born to vegans and vegetarians. One area to be mindful of is that a study that examined dairy products and bone health for example (Rizzoli, 2021), found that apart from soy milk, other plant based milks did not provide the same complexity of micronutrients and calcium. As other micronutrients, such as magnesium appear to be implicated in the mechanisms of bone formation (Groenendijk et al, 2022), any vitamin/mineral deficiencies within a vegan or vegetarian diet could undermine bone health. Certainly therefore Vitamin D supplementation could be very beneficial. However all nutritional advice should be personalised and it is only by exploring an individual's actual diet can one accurately assess nutritional needs.

### **How should I take Vitamin D, and how much?**

Vitamin D is lipid soluble and therefore supplements can be sensitive to ingredients they are ingested with as was proved by one study that showed there was significantly better absorption of vitamin D supplements when taken within oil-based foods (Grossmann and Tangpricha, 2010). As mentioned above, whilst the UK RNI is 400 IU, this is based on an averagely healthy adult and bear in mind other countries of similar latitude have chosen a higher RNI level. Consider your age, ability to absorb, and current level of sunlight exposure. Whilst too much vitamin D can cause toxicity, the intake amount at which an individual displays hypervitaminosis D appears to vary, dependent on metabolism, as was identified in two case studies, (Kim et al, 2017), where one 75 yr old male exceeded 50,000 IU of ergocalciferol (D2) daily with 500 gms of calcium citrate, and consequently developed hypercalcaemia whilst another 60 yr old female took 40,000 IU of cholecalciferol D3 daily for ten months, displayed 479 ng/ml (ref range 30-80ng/ml),

yet 'showed no signs or symptoms of vitamin D toxicity'. These of course are extreme amounts and hypervitaminosis D is extremely rare.

A nutritional consultation can assess a client's diet and suggest appropriate changes to diet and nutrition. **Book Today.**

## References

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