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Could seasonal vitamin D supplementation alleviate exercise impairment in adults with CHD?

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Letter to the Editor

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To the Editor,

I was deeply engaged by the recent article by Vanreusel et al.[1] on the correlation between vitamin D levels and exercise capacity in adults with CHD. The research contributes significantly to the growing body of literature on vitamin D deficiency in this patient population and highlights its potential role in limiting exercise tolerance. However, I would like to offer some reflections on the seasonal variation in vitamin D levels and the potential benefits of seasonal vitamin D supplementation as a targeted clinical intervention to enhance exercise capacity.

Vanreusel et al.[1] clearly demonstrate that vitamin D deficiency is prevalent among CHD patients, with levels below the recommended threshold for optimal health. While the findings establish a strong link between low vitamin D levels and reduced exercise capacity, the study does not fully consider the seasonal fluctuations in vitamin D synthesis, particularly during the winter months when sunlight exposure is limited. Several studies have demonstrated that vitamin D levels vary seasonally, with deficiency rates typically increasing in colder months, which leads to muscle weakness and fatigue.[2,3] These seasonal variations may contribute to the observed declines in physical performance within the cohort, particularly during the winter when both physical activity and endogenous vitamin D synthesis are at their lowest. The role of vitamin D in musculoskeletal health is well-established, with deficiency linked to muscle weakness, reduced strength, and impaired endurance.[2,4–6] In the context of CHD, where physical activity is already constrained due to cardiac limitations, the impact of muscle weakness may be even more pronounced. Thus, seasonal vitamin D supplementation could serve as a relatively simple, yet effective intervention to address this deficiency during the winter months, potentially mitigating its negative effects on exercise capacity. By restoring vitamin D levels during periods of natural deficiency, it may be possible to enhance muscle strength and improve overall physical performance. Moreover, vitamin D's influence extends beyond skeletal health, impacting cardiovascular function through its effects on endothelial function, vascular tone, and arterial stiffness.[7] The benefits of vitamin D on vascular health and its anti-inflammatory properties may also help improve exercise tolerance in CHD patients by promoting better oxygen delivery to tissues and improving physical performance. Given the intimate connection between cardiovascular health and exercise capacity, optimising vitamin D status may offer a dual benefit, enhancing both muscle function and vascular function.

While Vanreusel et al.[1] provide a clear association between vitamin D deficiency and reduced exercise capacity, further investigation is warranted to evaluate the clinical benefits of seasonal vitamin D supplementation. Randomised controlled trials assessing the effects of wintertime vitamin D supplementation on exercise performance, with a focus on improving muscle function and vascular health, are urgently needed. Such studies should aim to determine the optimal dosage and duration of supplementation, as well as explore the impact on both short-term exercise capacity and long-term cardiovascular outcomes. Given the widespread prevalence of vitamin D deficiency, particularly in regions with limited sunlight, seasonal vitamin D supplementation should be considered as part of standard clinical practice for young patients with CHD, especially during the winter months. Routine monitoring of vitamin D levels, followed by appropriate supplementation, could provide a simple, cost-effective strategy to improve exercise tolerance and overall quality of life for these patients.

In conclusion, Vanreusel et al.[1] have made a significant contribution to understanding the role of vitamin D in exercise capacity in adults with CHD. However, I encourage further research into the potential benefits of seasonal vitamin D supplementation as a clinical intervention to improve exercise capacity, particularly in light of the seasonal fluctuations in vitamin D synthesis. This approach could represent an important addition to the clinical management of CHD young patients, with substantial implications for improving patient outcomes.

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