Concerns with Vitamin D Supplementation and Synthesis for Cardiorespiratory Function

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Dear Editor

We read with great interest the article published by Sun et al. [1], in which the authors examined the effects of vitamin D₃ supplements on body composition and physical fitness, including hand grip strength, leg extension power, and cardiorespiratory fitness in healthy adults. The authors reported that vitamin D₃ supplementation improved lean body mass but not physical fitness. However, we have 2 concerns regarding this paper, which we would like to point out.

First, higher doses of vitamin D₃ supplementation could have an effect on physical fitness. A previous meta-analysis [2] demonstrated that vitamin D₃ supplementation improved both upper and lower limb muscle strength in healthy individuals aged 18–40 years. The doses of vitamin D₃ reported in the previous meta-analysis [2] were between 14,000 and 60,000 IU/week, whereas the dose used in the study conducted by Sun et al. [1] was 2,940 IU/week. Therefore, increasing the vitamin D₃ dose could have resulted in improved muscle strength and cardiorespiratory fitness in their study.

Second, information about the duration of sun exposure, use of protective clothing such as long sleeves, and skin phototype (SPT) was not provided by the authors. Vitamin D₃ is synthesized through the action of ultraviolet radiation

in the epidermis, and the effective sun-exposed skin area and SPT are also known to influence vitamin D₃ synthesis [3]. Table 1 in their study [1] shows that there were many female participants; as women often use protective clothing for cosmetic reasons, this could have affected the effective sun-exposed skin area, possibly reducing vitamin D₃ synthesis. Moreover, Webb and Engelsen [4] reported that the duration of sun exposure required for vitamin D₃ production varies depending on SPT. Therefore, reporting information about SPT would help estimate vitamin D₃ synthesis because although most Japanese individuals have SPT III, the SPT ranges from II to IV [3]. To clarify this, additional information, indicating duration of sun exposure, use of protective clothing, and SPT, should be reported.

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Author Contributions

M.I. wrote the manuscript. S.T. and M.B. revised the manuscript. All authors read and approved the manuscript.

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