VU Research Portal

Re: Letter to the Editor – Comment on: 'sufficient levels of 25-hydroxyvitamin D and protein intake required to increase muscle mass in sarcopenic older adults – The PROVIDE study'

Verlaan, Sjors; Maier, Andrea; Cederholm, Tommy

published in

Clinical Nutrition

2018

DOI (link to publisher)

[10.1016/j.clnu.2018.08.026](https://doi.org/10.1016/j.clnu.2018.08.026)

document version

Publisher's PDF, also known as Version of record

document license

Article 25fa Dutch Copyright Act

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Verlaan, S., Maier, A., & Cederholm, T. (2018). Re: Letter to the Editor – Comment on: 'sufficient levels of 25-hydroxyvitamin D and protein intake required to increase muscle mass in sarcopenic older adults – The PROVIDE study'. *Clinical Nutrition*, 37(6, Part A), 2300-2300. <https://doi.org/10.1016/j.clnu.2018.08.026>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Letter to the Editor

Re: Letter to the Editor – Comment on: ‘Sufficient levels of 25-hydroxyvitamin D and protein intake required to increase muscle mass in sarcopenic older adults – The PROVIDE study’

We thank Dr Oliver for the letter to the editor regarding our PROVIDE post-hoc analysis published in Clinical Nutrition. Dr Oliver emphasized the relevance of the timing of dietary intake, in particular protein and vitamin D intake. An adequate intake of dietary protein, combined with physical exercise, is required to ensure sufficient postprandial muscle protein synthesis, and thereby maintaining and potentially increasing muscle mass [1]. Nutritional strategies to overcome the anabolic resistance in older adults have focused on providing an adequate amount of high-quality protein distributed over the meals throughout the day. Each meal should ensure the provision of 25–30 g protein per meal, with minimally 10–15 g readily available essential amino acids and about 3 g leucine to stimulate muscle protein synthesis in older adults [2]. For a maximal stimulation of muscle protein synthesis in older adults, even higher dosages up to 40 g of high-quality protein have been proposed recently [3] or ~0.40 g/kg body weight evenly distributed over breakfast, lunch, dinner [4].

In older adults, the amount of protein traditionally ingested at breakfast is between 5 and 10 g protein and also the protein intake during lunch is often insufficient [5]. These time frames were therefore used as targets in the PROVIDE study to increase the total muscle protein synthesis throughout the day. The participants of the PROVIDE trial were instructed to consume the vitamin D and leucine-enriched whey protein drinks twice daily throughout the 13-week intervention period [6]. According to protocol one serving of the product had to be taken in the morning, just before breakfast, and the second one just before lunch. This regime should ensure an adequate bolus of protein in addition to the meals. Furthermore, vitamin D has been absorbed well, possibly facilitated by the fat present in the study products and meals, and led to adequate increases in serum 25-hydroxyvitamin D levels.

Additional protein ingestion before bed time is another interesting approach to maximize the anabolic response in older adults that may support muscle preservation in aging and disease [3]. Moreover, appropriate timing of protein ingestion around physical activity, especially resistance exercise, has a positive and synergistic effect on skeletal muscle protein [7]. Even though protein synthesis in the first hour after exercise is maximized, the sensitivity of the muscle to protein feeding is enhanced for up to 24 h after exercise. As such, increasing the availability of essential amino acids during this period results in a maximum benefit of this improved anabolic window.

Overall, we agree with Dr Oliver that the timing of dietary protein intake during the day needs attention to maximize the anabolic effect in addition to ensuring an adequate quantity and quality of the protein intake, preferably in combination with physical exercise.

References

- [1] Deutz NE, Bauer JM, Barazzoni R, Biolo G, Boirie Y, Bosy-Westphal A, et al. Protein intake and exercise for optimal muscle function with aging: recommendations from the ESPEN Expert Group. *Clin Nutr* 2014;33(6):929–36.
- [2] Bauer J, Biolo G, Cederholm T, Cesari M, Cruz-Jentoft AJ, Morley JE, et al. Evidence-based recommendations for optimal dietary protein intake in older people: a position paper from the PROT-AGE Study Group. *J Am Med Dir Assoc* 2013;14(8):542–59.
- [3] Koww IW, Holwerda AM, Trommelen J, Kramer IF, Bastiaanse J, Halson SL, et al. Protein ingestion before sleep increases overnight muscle protein synthesis rates in healthy older men: a randomized controlled trial. *J Nutr* 2017 Dec;147(12):2252–61.
- [4] Traylor DA, Gorissen SHM, Phillips SM. Perspective: protein requirements and optimal intakes in aging: are we ready to recommend more than the recommended daily allowance? *Adv Nutr* 2018 May 1;9(3):171–82.
- [5] Tieland M, Borngonjen-Van den Berg KJ, van Loon LJ, de Groot LC. Dietary protein intake in community-dwelling, frail, and institutionalized elderly people: scope for improvement. *Eur J Nutr* 2012;51(2):173–9.
- [6] Bauer JM, Verlaan S, Bautmans I, Brandt K, Donini LM, Maggio M, et al. Effects of a vitamin D and leucine-enriched whey protein nutritional supplement on measures of sarcopenia in older adults, the PROVIDE study: a randomized, double-blind, placebo-controlled trial. *J Am Med Dir Assoc* 2015;16(9):740–7.
- [7] Cermak NM, Res PT, de Groot LC, Saris WH, van Loon LJ. Protein supplementation augments the adaptive response of skeletal muscle to resistance-type exercise training: a meta-analysis. *Am J Clin Nutr* 2012;96(6):1454–64.

Sjors Verlaan*

Department of Internal Medicine, Section of Gerontology and Geriatrics,
Amsterdam University Medical Centers, Amsterdam, the Netherlands

Andrea Maier

Department of Human Movement Sciences, Faculty of Behavioural
and Movement Sciences, Amsterdam Movement Sciences, VU
University, Amsterdam, the Netherlands

Department of Medicine and Aged Care, Royal Melbourne Hospital,
University of Melbourne, Melbourne, Australia

Tommy Cederholm

Department of Public Health and Caring Sciences/Clinical Nutrition
and Metabolism, Department of Geriatric Medicine, Uppsala
University Hospital, Sweden

Senior consultant, Theme Ageing, Karolinska University Hospital,
Stockholm, Sweden

* Corresponding author.

E-mail address: g.verlaan@vumc.nl (S. Verlaan).

17 August 2018