Impact of nutrition on muscle mass, strength, and performance in older adults

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Dear Editors,

The recent review by Mithal et al., (1) highlights the increasing attention given to the role of adequate nutrition in ameliorating the age-related decline of skeletal muscle mass and function in older adults, known as sarcopenia. The authors identify protein and vitamin D as important factors in the maintenance of muscle mass during ageing, and the European Working Group on Sarcopenia in Older People (EWGSOP) have encouraged a focus on these nutrients in particular in their recommendations for future research (2).

The Tasmanian Older Adult Cohort (TASOAC) study was not mentioned by the authors but is one of the few prospective cohort studies to examine associations of nutrient status with both muscle mass and strength in older adults. In this cohort of community-dwelling adults aged 50 to 80 years at baseline, participants who failed to meet the Australian recommended dietary intake for protein had lower appendicular lean mass (ALM), and those with serum 25-hydroxyvitamin D (25OHD) levels $\leq 50\text{nmol/L}$ had lower relative ALM, lower-limb strength and lower-limb muscle quality (strength normalised to muscle mass), than participants with normal dietary protein or 25OHD statuses, respectively (3, 4). In longitudinal analyses, we observed that total energy-adjusted dietary protein intake was a positive predictor of change in dual-energy X-ray absorptiometry-assessed ALM over 2.6 ± 0.4 years, but no association was observed between protein intake and change in knee extensor strength (3). Conversely, we have also reported that baseline serum 25OHD levels positively predicted change in lower-limb strength and muscle quality over 2.6 years, but was not associated with change in muscle mass (4).

Mithal et al., also provide evidence for the potential benefit of alkali-producing diets and those high in antioxidants in attenuating sarcopenia progression (1). Our finding that higher baseline dietary potassium intake was a positive predictor of change in ALM, even after adjustment for protein intake, is supportive of other research suggesting that alkaline

diets may have a role in maintenance of muscle mass in older adults (5). However, we observed inconsistent associations for antioxidants with ALM; beta-carotene was not associated with ALM, while vitamin C was positively associated with ALM in cross-sectional analyses only. Higher baseline intake of zinc, which appears to demonstrate antioxidant properties (6), was an independent positive predictor of change in ALM over 2.6 years (3).

Data from a growing number of observational and intervention studies internationally are providing evidence supporting adequate nutrition as a primary target in the prevention of age-associated declines in muscle mass and function. Clinical trials are now required to document the effects of dietary nutrients which have demonstrated promise for reducing and preventing sarcopenia progression, and to develop public health strategies for promoting healthy eating in the ageing community.

References

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