CLINICAL SUMMARY

Protein intake above the recommended dietary allowance is shown to improve muscle protein synthesis in aging adults

The recommended dietary allowance (RDA) for protein is 0.8 g/kg body weight per day, regardless of age, sex or health status. New research shows that aging adults require more protein, due in part to a decline in the muscle's ability to synthesize protein efficiently. In addition, higher protein intakes are needed to offset catabolic conditions associated with chronic diseases that commonly occur with aging.

Higher protein intakes are needed in older adults to support health, foster recovery from illness or injury and maintain functionality.

A team of researchers determined the whole body protein turnover and muscle protein fractional synthesis rate (MPS) in response to dietary protein in mixed meals at two doses and two intake patterns.

Twenty healthy, older adults 52-75 years of age were randomized into one of four groups: protein intake of 0.8g/kg/day (1xRDA) or 1.5 g/kg/day (2xRDA), with uneven (U:15/20/65%) or even (E: 33/33/33%) distribution of protein in mixed breakfast, lunch and dinner meals. To achieve a protein intake of 1.5 g/kg/day, supplemental protein was provided and included as part of each meal.

After three days of adaptation, followed by four days of consuming the study diets, whole body protein kinetics (protein synthesis [PS], protein breakdown [PB] and net protein balance [NB]) were determined in each participant using a continuous, 24-hour tracer isotope protocol. Biopsies from the quadriceps muscles were collected at the beginning and end of the 24-hour measurement period to determine MPS.

PB was reduced similarly for 1xRDA and 2xRDA, regardless of intake pattern. The table shows that PS and NB were greater with 2xRDA than 1xRDA. There was no main effect of protein distribution on protein synthesis, protein breakdown, net protein balance, or MPS. As with protein synthesis, MPS was greater with the higher protein intake, with no effect of distribution pattern.

Il-Young K, et al. Quantity of dietary protein intake, but not pattern of intake, affects net protein balance primarily through differences in protein synthesis in older adults. *Am J Physiol Endocrinol Metab.* 2014;308:E21-E28.

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CLINICAL SUMMARY

In the context of a mixed meal, whole body net protein balance was greater with protein intakes above the current RDA, with no apparent benefit of protein distribution. A greater net protein balance with protein intakes higher than the RDA was achieved mainly through increased protein synthesis and MPS.

Net balance and protein synthesis

	1xRDA	2xRDA	P-value
Net Balance	58.9 ± 4.9 g protein/ 750 min	94.8 ± 6.0 g protein/ 750 min	0.0001
Protein Synthesis	-18.0 ± 8.4 g protein/ 750 min	15.4 ± 4.8 g protein/ 750 min	0.0018

NUTRITION CONCLUSION

The benefits of higher protein intake for aging adults on overall positive protein balance is important in preserving and building muscle mass, muscle strength and maintaining functionality.

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