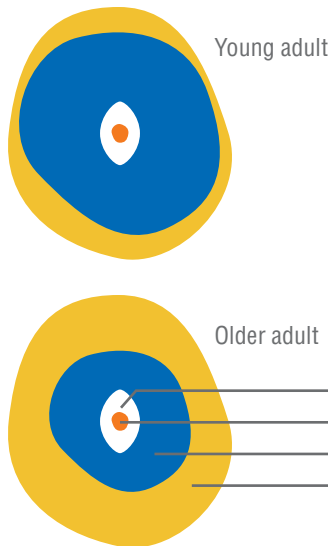


Make a Plan for Protein



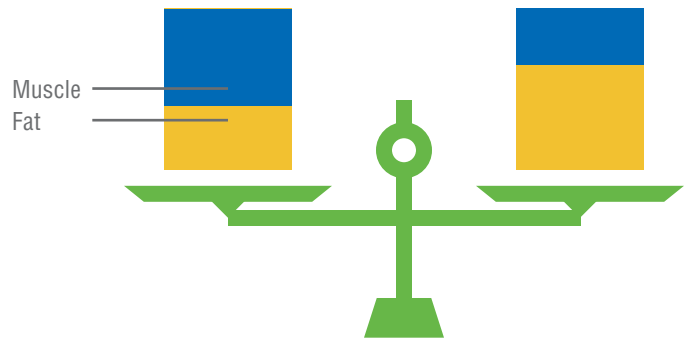
A 3-Step “Whey” to Help Maintain Muscle with Aging

Thigh Muscle Cross-Sections*



After turning 30, without quality nutrition and exercise:
You risk losing 3-8% or ~4-10 lbs of muscle per decade!^{1,2}**

Body weight may not reflect changes in body composition.



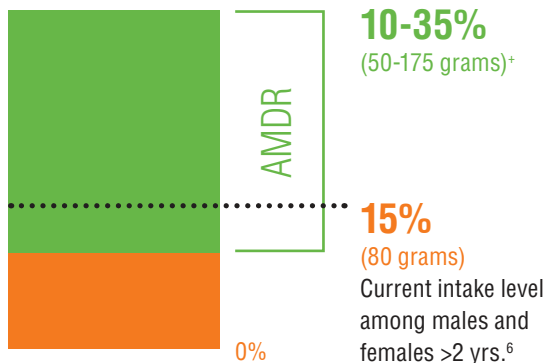
Maintenance of adequate muscle mass through diet and routine resistance exercise is important to support health and daily activity with aging.

Step 1

Understand Current Protein Recommendations

Increasing protein intake above the RDA but within the AMDR may help to maintain muscle with aging.^{2,3,4,5} But how much should be consumed?

% Total daily kcal from protein



Recommended Dietary Allowance (RDA): 0.8 g protein/kg body weight/day: estimate of the **minimum protein requirement.⁷**

Acceptable Macronutrient Distribution Range (AMDR): the range of intake for a particular energy source that is associated with reduced risk of chronic disease while providing intakes of essential nutrients.⁷

NHANES data: Average protein intakes are at the lower end of the AMDR.^{6,7}

Step 2

Power Up on Protein: Embrace the Wonders of Whey

Not all proteins are equal – choose sources higher in leucine, such as dairy foods and whey protein. Why? Leucine is unique among the amino acids in its ability to initiate and promote muscle protein synthesis.^{8,9} Foods vary in leucine content. Research suggests aiming for 2.5-2.8 g of leucine per meal.⁵

Food	Approximate amount* to provide 2.5 g Leucine	kcal per amount to provide 2.5 g Leucine	Protein (g) per amount to provide 2.5 g Leucine
Whey protein isolate	1 scoop	100	22
Soy protein isolate	1 1/3 scoop	170	32
Chicken breast	3 3/4 oz	180	33
Canned white tuna	5 oz	180	32
Sirloin steak	4 oz	250	35
Skim milk	~2 3/4 cups	250	24
Firm tofu	7 1/2 oz	300	34
Egg	5 eggs	360	31
Oatmeal	5 cups	820	29
Peanut butter	10 Tbsp.	940	38
Multi-grain bread	16 2/3 slices	1100	56

Sources: USDA National Nutrient Database for Standard Reference Release 27
 Supplement facts panel for generic whey and soy protein isolates

* For illustrative purposes only.

** Estimate based on a 180 lb individual with 30% body fat.

+ Based on a 2,000 kcal diet.

^ For illustrative purposes only.

Serving size should align with dietary guidance.



Whey protein is a convenient, versatile and complete protein naturally found in dairy.
For those that are sensitive to lactose, whey protein isolate may be a good option because it contains minimal amounts.

In addition to leucine content, the speed of digestion/absorption may also impact the ability of a protein to promote muscle protein synthesis. Faster absorption results in a faster delivery of leucine and other essential amino acids to muscle.^{8,9}

Protein Source	Absorption rate (g/h)
Whey isolate	8-10
Casein isolate	6.1
Soy protein isolate	3.9
Milk protein	3.5
Pea flour: globulins & albumins	3.4
Egg protein cooked	2.8
Pea flour	2.4
Egg protein raw	1.3

Table adapted from: Bilsborough S, et al. *Int J Sport Nutr Exerc Metab.* 2006;16:129-52.

Step 3

Spread it Out to Increase Effectiveness

Based on emerging research, many experts recommend that people shift their eating pattern to include ~30g of high quality protein at each meal.^{2,4,10,11}

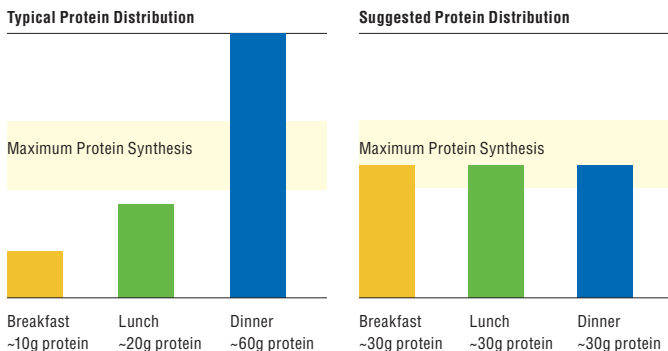


Figure adapted from: Paddon-Jones D, et al. *Curr Opin Clin Nutr Metab Care.* 2009;12:86-90.

TRY ADDING WHEY PROTEIN TO:

1 Tbsp. whey = 5 g protein



For recipes and educational resources, visit www.nationaldairycouncil.org/wheyprotein.

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