

The Whey to Improved Body Composition and Weight

As science continues to support the role of protein in building and maintaining lean muscle, maintaining weight and healthy aging, consumers are embracing the important role of protein in the diet. But not all proteins are created equal and it turns out that protein quality has an important role when it comes to body composition and managing a healthy weight.

Whey protein is a high-quality protein naturally found in dairy. It is a complete protein containing all the essential amino acids (“building blocks”) your body needs and is rapidly digestible. Whey protein is also one of the best sources of a subgroup of three essential amino acids, called branched-chain amino acids (BCAAs), which include leucine, isoleucine and valine. Unlike other amino acids, BCAAs are almost exclusively taken up and used by muscle. And, among common food sources of BCAAs, whey protein contains one of the highest levels of leucine, which has been shown to influence muscle growth.

BODY COMPOSITION

A recent meta-analysis shows that consumption of whey protein when combined with resistance exercise training is an effective strategy that aids in building valuable lean body mass in adults¹.

- Whey protein is naturally rich in leucine, an essential amino acid that stimulates cellular pathways leading to increased muscle protein synthesis².
- Consuming whey protein after exercise can enhance the rebuilding of muscle following exercise via enhanced muscle protein synthesis^{3,4}.
- Consuming whey protein in combination with resistance exercise can boost the rate at which the body synthesizes lean muscle, which may improve body composition^{3,5,6}.

- Combining whey protein with resistance exercise has been shown to be more effective at increasing lean muscle mass than either of the two alone, or when combining resistance training with ingestion of carbohydrates^{7,8,9,10,11,12,13}.

WEIGHT MANAGEMENT

High-quality protein, such as whey, may aid in weight maintenance by promoting satiety and improving body composition¹⁴.

- Increasing the amount of protein in the diet can lead to decreased total caloric intake and body weight¹⁵.
- Consuming meals higher in protein may help people eat fewer calories at subsequent meals¹⁵.
- Whey protein, as part of a diet higher in protein can help provide a feeling of fullness more than carbohydrate or fats¹⁵.
 - A reduced calorie, higher protein diet including whey protein may help in weight management. After a period of weight loss, diets high in protein preserve lean body mass, including muscle, during weight maintenance.^{16,17,18}.



REFERENCES & CITATIONS

- 1 Miller PE, Alexander DD, Perez V. Effects of Whey Protein on Body Composition: A Meta-Analysis of Randomized Controlled Trials. *J Am Coll Nutr.* 2014; 33 (2): 163-175.
- 2 Layman D. The role of leucine in weight loss diets and glucose homeostasis. *J Nutr.* 2003;133:261S-267S.
- 3 Tang JE, Manolagos JJ, Kujbida GW, et al. Minimal whey protein with carbohydrate stimulates muscle protein synthesis following resistance exercise in trained young men. *Appl Physiol Nutr Metab.* 2007; 32: 1132-1138.
- 4 Hulmi JJ, et al. *J Am Coll Nutr.* 2010; 7(1): 51.
- 5 Tipton KD, Elliott TA and Cree MG. Ingestion of casein and whey proteins result in muscle anabolism after resistance exercise. *Med Sci Sports Exerc.* 2004; 36: 2073-2081.
- 6 Tipton KD, Elliott TA, Cree MG, et al. Stimulation of net muscle protein synthesis by whey protein ingestion before and after exercise. *Am J Physiol Endocrinol Metab.* 2007; 292: E71-E76.
- 7 Burke DG, Chilibeck PD, Davidson KS, et al. The effect of whey protein supplementation with and without creatine monohydrate combined with resistance training on lean tissue mass and muscle strength. *Int J Sport Nutr Exerc Metab.* 2001; 11(3): 349-364.
- 8 Candow DG, Burke NC, Smith-Palmer T, et al. Effect of whey and soy protein supplementation combined with resistance training in young adults. *Intl J Sport Nutr Exerc Metab.* 2006; 16: 233-244.
- 9 Hulmi JJ, Kovanen V, Selanne H, et al. Acute and long-term effects of resistance exercise with or without protein ingestion on muscle hypertrophy and gene expression. *Amino Acids,* 2008.
- 10 Hartman JW, Tang JE, Wilkinson SB, et al. Consumption of fat-free fluid milk after resistance exercise promotes greater lean mass accretion than does consumption of soy or carbohydrate in young, novice, male weightlifters. *Am J Clin Nutr.* 2007; 86: 373-381.
- 11 Brown EC, DiSilvestro RA, Babaknia A, et al. Soy versus whey protein bars: effects on exercise training impact on lean body mass and antioxidant status. *Nutr J.* 2004; 3: 22.
- 12 Andersen LL, Turekovic G, Zebis MK, et al. The effect of resistance training combined with timed ingestion of protein on muscle fiber size and muscle strength. *Metab Clin Exp.* 2005; 54: 151-156.
- 13 Willoughby DS, Stout JR, and Wilborn CD. Effects of resistance training and protein plus amino acid supplementation on muscle anabolism, mass, and strength. *Amino Acids.* 2007; 32(4): 467-477.
- 14 Halton TL and Hu FB. The effects of high protein diets on thermogenesis, satiety and weight loss: a critical review. *J Am Coll Nutr.* 2004; 23(5): 373-385.
- 15 Weigle DS, Breen PA, Matthys CC, et al. A high-protein diet induces sustained reductions in appetite, ad libitum caloric intake, and body weight despite compensatory changes in diurnal plasma leptin and ghrelin concentrations. *Am J Clin Nutr.* 2005; 82: 41-48.
- 16 Layman DK, et al. A moderate-protein diet produces sustained weight loss and long-term changes in body composition and blood lipids in obese adults. *J Nutr.* 2009; 139: 1-8.
- 17 Leidy HJ, et al. Higher protein intake preserves lean mass and satiety with weight loss in pre-obese and obese women. *Obese.* 2007; 15(2): 421-9.
- 18 Westerterp-Plantinga MS, et al. High protein intake sustains weight maintenance after body weight loss in humans. *Annu Rev Nutr.* 2009; 29: 11.1-11.21.

ADDING WHEY PROTEIN TO THE DIET IS EASY:

Whey protein can be found in many energy bars and drink mixes, and is now available in some yogurts. Look for “whey protein” (isolate, concentrate, or hydrolyzed) near the beginning of the ingredient list. Whey Protein Powder, which is available in a variety of flavors, is a fast and easy way to add high quality protein for favorite foods.

- *Add 1/2 - 1 scoop of whey protein powder to milk, yogurt, pudding, oatmeal, milkshakes, smoothies, or cocoa.*
- *Add 2 or more scoops of whey protein powder to bread, cookie, pancake and muffin mixes or soups, chili, mashed potatoes, pasta, eggs, meatloaf, gravies, and sauces.*



Brought to you by



FOR ADDITIONAL RESOURCES, VISIT
www.wheyconsortium.org/meta-analysis

FOR MORE INFORMATION, CONTACT:

Whey Protein Research Consortium

c/o Dairy Research Institute
10255 W Higgins Rd, Suite 900
Rosemont IL 60018

Tel USA 847-627-3254

WPRConsortium@rosedmi.com