

# Protein and Weight Management\*

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More than one-third of Americans are obese, making obesity a very real public health concern [1]. Obesity comes with a host of health issues including cardiovascular disease, elevated risk of diabetes and metabolic syndrome. While individual situations can vary greatly, increasing protein levels in the diet has been shown to be an effective way to help combat obesity [2].

One of the ways protein can affect daily calorie intake is through its ability to increase satiety (a feeling of fullness). Although high carbohydrate meals can increase satiety following a meal, meals higher in protein (20 to 30 percent of the total energy provided by the meal) have been shown to have a more prolonged effect on satiety. According to a recent study, this feeling of satiety is attributed to the ability of protein to stimulate the release of a substance called glucagon-like peptide-1 (GLP-1) which controls the movement of food through the gut and slows stomach emptying [3], leading to the feeling of being “full.” Moreover, free amino acids released into the bloodstream when protein is digested can also increase the feeling of fullness [4].

In addition to inducing satiety, a high-protein diet has also been found to impact the body’s daily energy expenditure. *Daily energy expenditure* (the energy you use for daily activities)

can be broken down into different categories. *Active expenditure* (the energy you use to exercise or for physical activity) is the most variable form and results from physical activity. *Resting metabolic rate* (the energy you use to sleep, watch TV, rest, etc.) accounts for around 70 percent of one’s daily calorie use and doesn’t change much. One of the things that makes a difference in resting metabolic rate is amount of lean tissue (e.g., muscle) in the body [4]. Lean tissue can be increased or maintained by regular resistance exercise and a consistent intake of protein and calories in daily meals [4].

Protein not only has the potential to affect the amount of energy used in the long-term but can also affect calories burned directly after a meal (*diet-induced thermogenesis*) even more than carbohydrates and fats [5]. This is partly due to a greater protein breakdown. When the body is flooded with more protein than it can handle, it actively breaks down and eliminates the excess amino acids. This leads to an increase in heat production and higher energy expenditure [5]. Protein is a nutrient the body can use to make energy, but it is inefficient in doing so and uses energy in the process, which can account for up to 42 percent of the increase in energy expenditure following a high-protein, carbohydrate-free meal [4].

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Obesity is a complex issue that includes hormonal balance, genetic makeup and metabolic processes. But evidence from recent and ongoing studies suggests that protein can play an important role in body weight management.

## Easy High Protein Snacks

- Plain fat-free Greek yogurt, 6 oz – 18 g protein
- Almonds, 1 oz (23 almonds) – 6 g protein
- Low-fat string cheese, 1 stick – 7 g protein
- Hard-boiled egg – 6 g protein

## High Protein Recipes for Weight Management

### Easy Pulled Pork

Makes 8 servings

#### Ingredients

- 1 medium onion, thinly sliced
- 2 tablespoons brown sugar
- 1 tablespoon paprika
- 1 teaspoon salt
- ½ teaspoon freshly ground black pepper
- 3 pounds pork tenderloin, trimmed
- 6 tablespoons cider vinegar
- 1 cup low-sodium chicken broth
- 2 teaspoons Worcestershire sauce
- red pepper flakes to taste
- 1 teaspoon sugar
- 1 teaspoon dry mustard
- ½ teaspoon cayenne pepper

#### Directions

1. Place onion in a slow cooker.
2. In a small bowl, combine brown sugar, paprika, salt, and black pepper, mixing thoroughly.
3. Rub the mixture on the meat, coating evenly. Place the pork in the slow cooker.

4. In a medium bowl, combine the vinegar, chicken broth, Worcestershire sauce, red pepper flakes, sugar, mustard, and cayenne pepper, mixing thoroughly.
5. Add to the slow cooker. Cover and cook on low for 8 to 10 hours.
6. Remove the meat. Using two forks, shred the meat and onions coarsely and discard the fat.

#### Nutrition Information

Calories: 200	Protein: 33 g
Total Fat: 4 g	Fiber: 0 g
Saturated fat: 1 g	Cholesterol: 100 mg
Total Carbohydrates: 7 g	Sodium: 397 mg

#### Source:

<http://www.bodybuilding.com/fun/docs/2012/easy-pulled-pork.pdf>

## References

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