

# Nutrition *Action*

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Much of what you've heard about

# PROTEIN

may be wrong

WATER  
**HOW MUCH?**

**Smoothie  
SCAMS**

Outbreak!  
*Lower your risk*

Much of what you've heard about

# PROTEIN

may be wrong

BY BONNIE LIEBMAN



"Conquer your cravings," says the box of Fiber One Protein Caramel Nut Chewy Bars. "Go strong," says the bag of Special K Protein Bites.

Getting enough protein matters. Eat too little and you'll lose muscle. But does extra protein help you eat less, stay trim, and build muscle? Or are companies just using protein to sell cookies, bars, shakes, and other junk foods?

## Extra protein keeps you full?

"Satisfy your hunger," say Kellogg's Special K Shakes.

Does protein keep you satiated—that is, feeling full—for longer?

"The results of human studies are mixed," says Barbara Rolls, professor of nutritional sciences at Penn State.

One reason: many studies don't account for calorie density—that is, how many calories you're getting in, say, a bite of food.

"If you take some fat out and put some protein into foods, people are going to consume fewer calories because you're lowering the calorie density," explains Rolls. That's because, ounce for ounce, fat has more calories than protein.

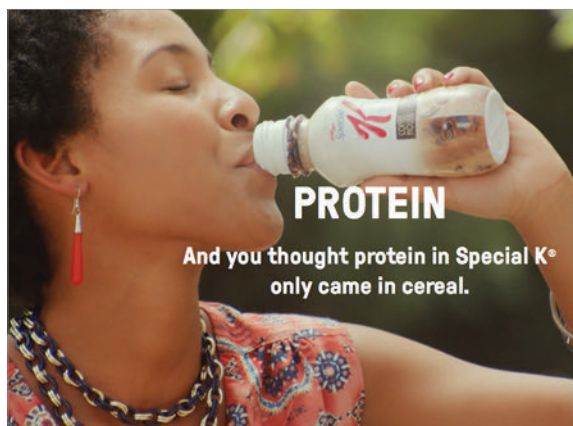
In a study that did take calorie density into account, women ate as much as they wanted of lunch and dinner entrées with 10, 15, 20, 25, or 30 percent of calories from protein, with starches making up the difference.<sup>1</sup> (Fat levels and calorie density didn't vary.)

"We used real food like chicken and shrimp, but everything was finely chopped in casseroles so people couldn't tell that there were differences in protein content," says Rolls.

The results: protein had no impact on how much people ate—or on how hungry or full they felt—throughout the day.

Of course, extra protein may curb appetite after a meal in some studies simply because people expect it to.

"Many people were raised to believe that protein is the center of a meal, and that a meal is more satisfying if it has meat or eggs or fish or legumes or



Protein may only "satisfy your hunger" if you think it does.

another protein source," says Rolls.

But that's a matter of expectations, not protein per se.

"If we're going to develop a high-satiety diet, it's not going to depend on one magic ingredient that you add to a food," says Rolls. "The hope that one simple tweak to your diet will automatically help you manage your food intake is way too simplistic."

## Extra protein helps you lose—or not gain—weight?

Conquering cravings and satisfying hunger are ad-speak for a bigger prize: getting or staying trim.

"To many people, protein is good because protein is lean," says Bettina Mittendorfer, professor of medicine and nutritional science at the Washington University School of Medicine in St. Louis.

But even when studies—often funded by the dairy, beef, pork, or egg industry—find that extra protein makes people feel more full, it has little or no impact on their weight.

For example, when researchers gave 151 dieters an extra 45 grams a day of whey protein or soy protein for six months, the dieters felt slightly more full after consuming the whey supplements, but they kept off no more weight than those who got a control powder (maltodextrin) with the same calories.<sup>2</sup>

Nor is protein weight-loss magic. In Pounds Lost, the largest, longest clinical trial to look, dieters who were randomly assigned to eat higher-protein diets lost no more weight after two years than those assigned to eat normal-protein diets.<sup>3</sup>

"Over the long term, there's really no good evidence that protein makes you leaner or makes you eat less," says Mittendorfer.

And there's no reason to believe that if you *overeat* protein, it's more likely to end up as muscle, not fat.

In a carefully controlled study, researchers fed 25 healthy young people diets that got 5 (low), 15 (normal), or



# Protein Counter

Looking for protein? Also check the calories and serving size.

	Calories	Protein (g)
Chicken or turkey breast, skinless (4 oz.) <sup>1</sup>	180	35
Beef or pork (4 oz.) <sup>1</sup>	280	30
Shrimp (4 oz.)	120	27
Salmon (4 oz.)	160	27
Tempeh (4 oz.)	220	23
Greek yogurt, plain, 0% (6 oz.)	100	17
Morningstar Farms Grillers Prime Veggie Burgers (1)	150	16
Starbucks Nonfat Caffè Latte (grande)	130	13
Cottage cheese, 2% (½ cup)	90	12
Canned tuna, light, in water (2 oz. drained)	50	11
Tofu, extra-firm (4 oz.)	110	11
Sliced deli turkey breast (2 oz.)	60	10
Soy nuts (¼ cup)	100	10
Yogurt, plain, nonfat (6 oz.)	100	10
Edamame, shelled (½ cup)	90	9
Spaghetti (1 cup cooked)	240	9
Milk, nonfat (1 cup)	80	8
Silk Original Soymilk (1 cup)	110	8
Beans (½ cup cooked) <sup>1</sup>	120	8
Quinoa (1 cup cooked)	220	8
Cheddar or Swiss cheese (1 oz.) <sup>1</sup>	110	7
Almond or peanut butter (2 Tbs.) <sup>1</sup>	190	7
Egg, large (1)	70	6
Brie or goat cheese (1 oz.) <sup>1</sup>	90	6
Gardenburger The Original Veggie Burgers (1)	110	5
Nuts (¼ cup) <sup>1</sup>	170	5
Whole wheat bread (1 slice, 1.5 oz.)	80	4
Campbell's Condensed Chicken Noodle Soup (1 cup prepared)	60	3
Frozen yogurt or ice cream (⅔ cup) <sup>1</sup>	160	3
Hummus (2 Tbs.)	70	2
Cream cheese (1 oz.)	100	2
Silk Original Almondmilk or Coconutmilk (1 cup) <sup>1</sup>	70	1

<sup>1</sup> Average. Source: USDA National Nutrient Database for Standard Reference and company information.

25 (high) percent of calories from protein.<sup>4</sup> All three diets had 40 percent more calories than the participants needed (about 1,000 extra calories a day).

After two months, all three groups had gained the same amount of body fat. The only difference: the low-protein group gained less weight (7 pounds) than the normal-protein (13 pounds) and high-protein (14 pounds) groups.

Why? “Those who didn’t get enough protein lost some muscle,” explains Mittendorfer.

So if you justify that oversized steak as harmless muscle fuel, you’re fooling yourself. “As you gain weight, you mostly put on fat, not muscle,” says Mittendorfer.

## Extra protein curbs muscle loss in dieters?

If you’re cutting calories, it makes sense to cut carbs and fat rather than protein. But does *extra* protein keep you from losing muscle as you lose weight?

Researchers randomly assigned 70 middle-aged women with obesity to a:

- **RDA-protein diet** that cut calories and averaged about 80 grams of protein a day, the Recommended Dietary Allowance (0.36 grams for each pound of body weight, which averaged about 215 pounds when the study started),

- **higher-protein diet** that cut the same number of calories but had about 50 percent more protein (115 grams, on average), thanks to extra whey protein, or

- **control group** that didn’t cut calories and had the RDA for protein.

After six months, women on the higher-protein diet had lost less lean body mass (mostly muscle) than the other dieters. But just slightly less.<sup>5</sup>

“The protein supplement blunted the loss of lean mass, but the difference was trivial,” says Mittendorfer.

Dieters who got the higher-protein diet lost a pound less lean body mass.

But that difference was so minimal

that their thigh muscles were no bigger or stronger than the muscles of dieters on the RDA-protein diet.

The surprise: the higher-protein diet had a downside.

In many people with excess weight, the body resists insulin’s attempt to admit blood sugar into cells. Losing weight should make their cells less resistant to insulin. But that didn’t happen in those who got more protein.<sup>6</sup>

“Protein supplementation during weight loss completely eliminated the beneficial effect on muscle insulin resistance,” says Mittendorfer. “It wasn’t just a blunting, but a complete elimination. The extent to which it happened was remarkable.”

And insulin resistance matters.

“Insulin resistance is at the core of many metabolic abnormalities,” she explains, especially type 2 diabetes.

Why might extra protein make cells more resistant to insulin?

“We know that when people consume protein, it causes an increase in insulin secretion,” says Mittendorfer. “If you chronically put out too much insulin, the body may adapt by making you more insulin resistant.”

Once someone has type 2 diabetes, replacing some carbs with protein may help, notes Mittendorfer. “In a person with diabetes, a higher-protein, low-carb diet may help control blood sugar. But that may be simply because it’s low-carb.”

But things are different in people with prediabetes.

“They already have high blood insulin levels to compensate for insulin resistance, so if they pump out more, it’s a vicious cycle that could be detrimental,” says Mittendorfer.

“It’s not proven,” she cautions. “But our study shows that there is a potential concern.”

## Extra protein builds muscle?

Does more protein in your food mean more muscle in *you*?

Over the last few years, some experts have recommended higher-than-RDA protein intakes to keep older people from losing muscle as they age.<sup>7</sup> In part, that’s because studies have reported that a high-protein meal boosts muscle protein synthesis for a few hours.

But many long-term studies have come up empty.



“You can’t simply increase your muscle mass by eating more protein,” says Mittendorfer. “That’s become quite clear.”

The latest evidence: the OPTIMen trial, which targeted people you’d expect extra protein to help—men aged 65 or older who were already eating just enough protein (the RDA) or less.<sup>8</sup> The men also had below-normal scores on tests of walking speed, stair climbing, or other measures of physical performance.

Researchers randomly assigned 92 of the men to eat either the protein RDA or roughly 60 percent more than the RDA (thanks to supplements of whey and casein, two milk proteins).

After six months, those who got more protein had lost 2½ pounds more body fat. (The average man started the study weighing 200 pounds, including 70 pounds of fat.)

But the extra protein had no impact on the men’s muscle mass, strength, or power. Nor did it improve their ability to walk, climb stairs, or lift weights.

“It’s amazing how little evidence there is around how much protein we need in our diet, especially the value of high-protein intake,” said lead investigator Shalender Bhasin, director of the Research Program in Men’s Health at Brigham and Women’s Hospital in Boston.

“Despite a lack of evidence, experts continue to recommend high-protein intake for older men.”

No one is marketing a carb bar or a fatty cookie. But protein sells. Welcome to high-protein junk food.

## Muscle Brownies?



“Filled with enough protein to feed your muscles and chase away hunger, our **Cookies & Cream Muscle Brownie** is the perfect meal replacement or snack,” says

**Lenny & Larry’s**. A 250-calorie brownie *should* “chase away hunger,” even without its 20 grams of protein.

Since when is a brownie that’s made (mostly) of whey, glycerin, soy protein, margarine, marshmallow nuggets, and cookie pieces a “perfect meal”?



## Piece of Cake?

Now you can have your cake and eat it too! **Think Thin Protein Cakes**—they look like Girl Scout Thin Mints without the mint—have 12 grams of protein in each two-cookie package.

And they’ve got only 1 gram of sugar, thanks largely to low-calorie sweeteners (like stevia and monk fruit extract) and sugar alcohols (maltitol or erythritol).

It’s not clear how 170 calories’ worth of cookies can keep you thin. Of course, many people *think* that protein keeps you thin. Maybe that’s why the brand is called Think Thin.

## Skinny Who?

“Thanks to our real, indulgent, full flavored desserts, protein never tasted so good,” says the box of **Skinny Cow Protein Sandwiches made with Light Ice Cream**.



Just what you needed: an excuse to indulge in a 170-calorie dessert. You’d get about the same calories in a Klondike Classic Vanilla ice cream sandwich.

How can they call that skinny? Oh, right. It’s just a name.

And yet, Bhasin’s study concluded, “protein intake equal to the RDA was sufficient to maintain lean body mass, muscle strength, and physical function in functionally limited older men.”

## Extra protein boosts muscle gains from strength training?

No matter your age, the tried-and-true way to gain muscle is to lift weights or do other strength (resistance) training. Does extra protein boost those gains?

“Despite an abundance of conflicting evidence, the belief persists that protein supplementation during resistance exercise training will enhance muscle mass and strength,” says Blake Rasmussen, professor and chair of the department of nutrition and metabolism at the University of Texas Medical Branch in Galveston.

“Protein supplementation is a several-billion-dollar industry supported by strong dogma and heavily promoted. It’s a solidified notion for the recreational and even the professional athlete.”

However, adds Rasmussen, there is now “an impressive collection of scientific findings indicating otherwise.”

For example, Rasmussen’s team randomly assigned 58 healthy young men to get either whey protein isolate (22 grams a day), a soy-dairy protein blend (22 grams a day), or a placebo (maltodextrin) while they participated in a resistance training program.<sup>9</sup> After 12 weeks, the protein groups had gained no more strength than those who got no extra protein. Studies on older adults had similar results.<sup>10</sup>

Some reviews or meta-analyses—which compile the results of many studies—agree.<sup>11</sup> Others don’t. But even some meta-analyses that do report a boost in muscle mass or strength find

only a minimal effect.

“It’s much, much smaller than what is marketed, and only a proportion of the population can actually benefit from it,” says Paul Reidy, a colleague of Rasmussen’s who is now at the University of Utah.

For example, in one recent meta-analysis, extra protein accounted for 11 ounces of extra lean mass and only

lean mass and negligible effects on muscle strength,” says Reidy.

### The Big Picture

It’s not that protein doesn’t matter. “Adequate protein is very important,” says Mittendorfer. “If you eat too little, you will lose muscle. But do you need more? No.”

The question is: How much is adequate?

Recent studies suggest that the RDA (0.36 grams of protein for every pound you weigh) is enough. That’s especially true if you’re carrying extra pounds, which are mostly fat, not muscle.

But the final answer isn’t in.

In the meantime, keep in mind that the average woman gets 35 percent more—and the average man about 65 percent more—than the RDA.

“Are most Americans, especially the more obese population, at risk of not eating enough protein?” asks Mittendorfer. “Absolutely not.” (Exception: 19 percent of women and 13 percent of men over age 70 get below the RDA.<sup>13</sup> To see how much is in some popular foods, check our “Protein Counter” on p. 4.)

And it’s far too early to say—based on Mittendorfer’s one study—that all adults

should cut back on protein to curb insulin resistance.

“There’s a potential risk,” she says, “but it’s not a given.”

Instead, aim for a healthy diet (see “The Bottom Line”). And don’t be tempted by high-protein cookies and ice cream.

“It’s a waste of money to buy anything that’s protein enriched,” says Mittendor-

## Resist It or Lose It



Want to keep your muscles strong? Do resistance exercise at least twice a week, says the Centers for Disease Control and Prevention.

A few examples:

- lifting weights
- using resistance bands
- doing push-ups, sit-ups, and other exercises that use your body weight for resistance.

Repeat each exercise until you can’t do it again, and try for at least one set (8 to 12 repetitions). If you can do an exercise more than 12 times, it may be too easy.

And work all the major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms). For videos, go to [cdc.gov/physicalactivity/basics/videos/index.htm](http://cdc.gov/physicalactivity/basics/videos/index.htm).


9 percent of the gain in strength. (The rest was due to exercise.)<sup>12</sup> And protein had no impact on people who were untrained—that is, they hadn’t already done strength training—when they entered the study.

“Most people are just throwing away hundreds of dollars on protein supplements to gain maybe one pound of extra

## The Bottom Line

It’s not clear if the RDA for protein is enough, but most Americans exceed it. So you can put away your calculator and aim for eating a healthy diet.

Here’s a guide—based on the DASH diet—of what to eat if you consume 2,100 calories a day. It’s got about 85 grams of protein (and about 105 grams if you choose poultry, fish, or lean meat as your “Wild Card”).

	Daily Servings
 <b>Vegetables &amp; Fruit</b> 1 serving: ½ cup (or 1 cup greens) or 1 piece fruit	11
 <b>Grains</b> 1 serving: ½ cup pasta or rice or cereal or 1 slice bread	4
 <b>Low-fat Dairy</b> 1 serving: 1 cup milk or yogurt or 1½ oz. cheese	2
 <b>Legumes &amp; Nuts</b> 1 serving: ½ cup beans or ¼ cup nuts or 4 oz. tofu	2
 <b>Poultry, Fish, Lean Meat</b> 1 serving: ¼ lb. cooked	1
 <b>Oils &amp; Fats</b> 1 serving: 1 Tbs.	2
 <b>Desserts &amp; Sweets</b> 1 serving: 1 tsp. sugar or 1 small cookie	2
 <b>Wild Card</b> Poultry, Fish, Lean Meat or Oils & Fats or Grains or Desserts & Sweets	1

fer. “There’s plenty of protein in a mixed diet, and we don’t need that much.” 🍌

<sup>1</sup> *J. Am. Diet. Assoc.* 111: 290, 2011.  
<sup>2</sup> *Am. J. Clin. Nutr.* 106: 684, 2017.  
<sup>3</sup> *N. Engl. J. Med.* 360: 859, 2009.  
<sup>4</sup> *JAMA* 307: 47, 2012.  
<sup>5</sup> *Obesity* 26: 854, 2018.  
<sup>6</sup> *Cell Rep.* 17: 849, 2016.  
<sup>7</sup> *Clin. Nutr.* 33: 929, 2014.  
<sup>8</sup> *JAMA Intern. Med.* 178: 530, 2018.  
<sup>9</sup> *J. Nutr.* 146: 1660, 2016.  
<sup>10</sup> *J. Nutr.* 142: 1532, 2012.  
<sup>11</sup> *Osteoporos. Int.* 28: 1817, 2017.  
<sup>12</sup> *Br. J. Sports Med.* 52: 376, 2018.  
<sup>13</sup> *Am. J. Clin. Nutr.* 108: 1, 2018.